NATURAL RESOURCES JOURNAL

Volume 65
Issue 1 *Winter*

Winter 2025

A Horse Named "Stream Depletion Theory": The History and Negotiation of the Upper Colorado River Basin Compact

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Cover Page Footnote

Katherine is grateful to both Eric and John for their excellent tutelage.

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A HORSE NAMED "STREAM DEPLETION THEORY": THE HISTORY AND NEGOTIATION OF THE UPPER COLORADO RIVER BASIN COMPACT

Science Be Dammed Working Paper No. 5

ABSTRACT

The 1922 Compact only apportions the beneficial consumptive use of the river system's waters between two geographic sub-basins, an Upper Basin and a Lower Basin. The 1922 Compact negotiators left the task of allocating water to individual states to future negotiations among the sub-basins. The five states with Upper Basin lands completed this task in 1948. The negotiations of the Upper Colorado River Basin Compact provide significant context for understanding the Law of the River, particularly considering ongoing Post-2026 Colorado River Operations discussions. This article examines the dynamics between the states, the role of the United States, the debate over how to measure beneficial consumptive use and the decision to utilize the Stream Depletion Theory, and tribal water allocations with an eye towards the future implications of these frameworks.

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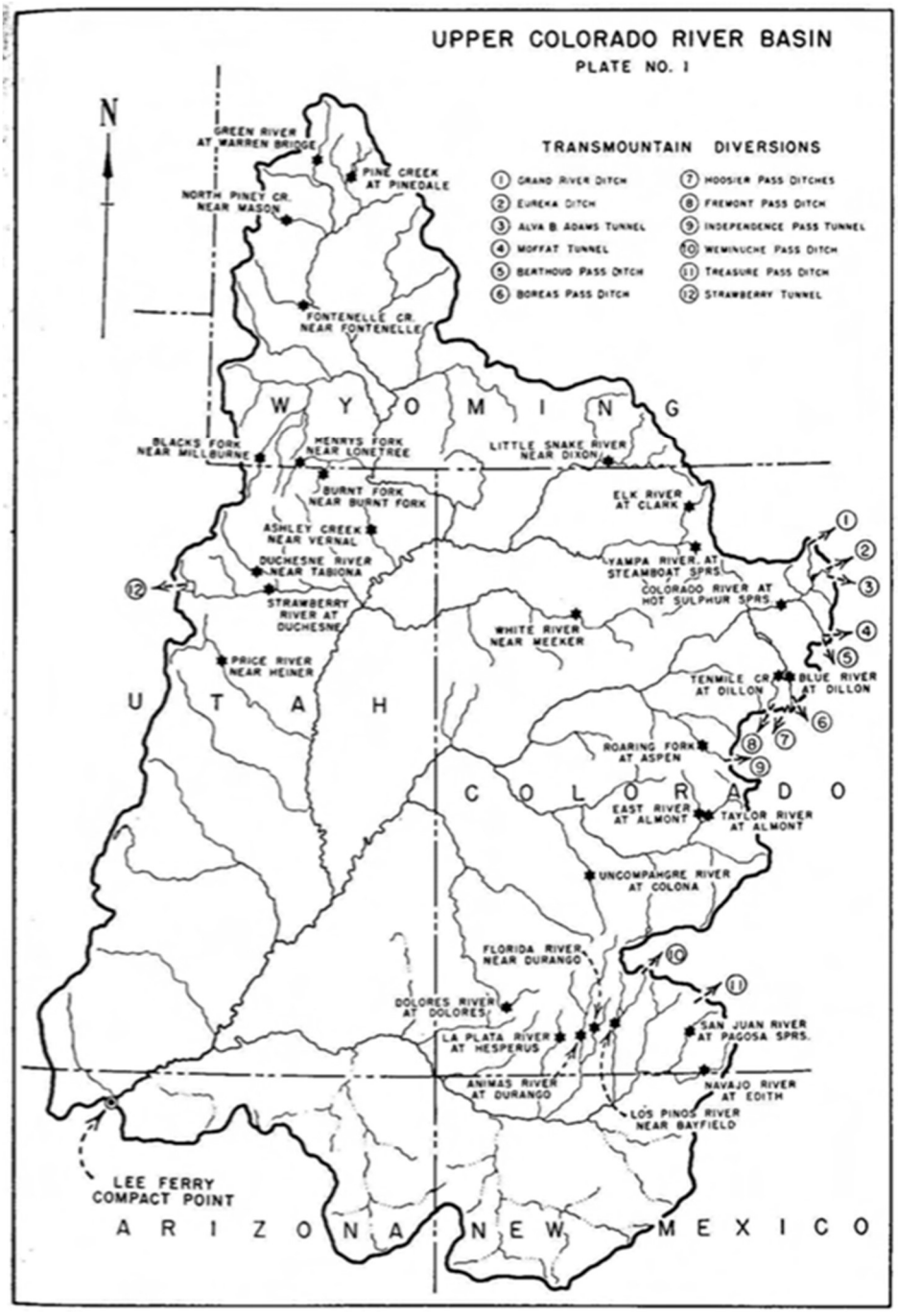

Figure 1: Plate 1 from the Upper Colorado River Basin Compact Commission Inflow – Outflow Manual.

EXECUTIVE SUMMARY

The Upper Colorado River Basin Compact was signed by representatives from Arizona, Colorado, New Mexico, Utah, and Wyoming on October 11, 1948, after over two years of negotiations.[1] It was an attempt to resolve the allocation of water among the five states. For three quarters of a century it performed that task well.

As we approach the middle of the third decade of the 21st century, however, the challenges of Colorado River overallocation, over-appropriation of the available water supply, and climate change reducing the river's flows, the Upper Basin Compact and the extended body of rules in which it is embedded are showing their age.

At its simplest, the Upper Basin Compact divided the water use available from the 7.5 million acre-feet per year apportioned to the Upper Basin by the 1922 Colorado River Compact.[2] The compact accomplished two major tasks:

First, it apportioned the consumptive use of water among the Upper Basin states using percentage allocations.[3] Colorado received 51.75%, New Mexico 11.25%, Utah 23%, and Wyoming 14% of the water available for use in the Upper Basin. Arizona received a fixed 50,000 acre-feet per year.[4]

Second, it defined the obligations of Colorado, New Mexico, Utah, and Wyoming ("the Upper Division states") to deliver water to the Lower Basin at Lee Ferry to satisfy the requirements of the Colorado River Compact.[5]

Colorado River management has always suffered controversy and ambiguity around the question of how to measure consumptive use.[6] The Colorado River Compact did not include a definition of "beneficial consumptive use."[7] In the century since it was signed, two competing (and conflicting) methods have been

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1. Upper Colorado River Basin Compact, Pub. L. No. 81-37, ch. 48, 63 Stat. 31 (1949). For the records, *see generally* UPPER COLO. RIVER BASIN COMPACT COMM'N, OFFICIAL RECORD, vols. I–III (1948) [hereinafter OFFICIAL RECORD], https://www.varuna.io/LOTR/1948/UCRC_Record_Vol_1.pdf; https://www.varuna.io/LOTR/1948/UCRC_Record_Vol_2.pdf; https://www.varuna.io/LOTR/1948/UCRC_Record_Vol_3.pdf. The first meeting was held in Cheyenne, Wyoming on July 22, 1946. This meeting was referred to as a "Governors Conference" because two states had not formally appointed compact commissioners. The Upper Colorado River Basin Compact (Upper Basin Compact) was signed at the end of the eighth meeting in Santa Fe, New Mexico on October 11, 1948. *See* Upper Colorado River Basin Compact, preamble, 63 Stat. at 31. Colorado River Compact, art. III (1922); *see also* Colorado River Compact Approval, 43 U.S.C. § 617l (2022). The Colorado River Compact was signed by the commissioners on November 24, 1922. It was approved by Congress under the Boulder Canyon Project Act, Dec. 21, 1928. Article III apportions to the Upper Basin 7.5 million acre-feet per annum of beneficial consumptive use.

2. Colorado River Compact, art. III (1922); *see also* Colorado River Compact Approval, 43 U.S.C. § 617l (2018). The Colorado River Compact was signed by the commissioners on November 24, 1922. It was approved by Congress under the Boulder Canyon Project Act, Dec. 21, 1928. Article III apportions to the Upper Basin 7.5 million acre-feet per annum of beneficial consumptive use.

3. Upper Colorado River Basin Compact, art. III, 63 Stat. at 32–33.

4. *Id.*

5. *Id.* art. IV, 63 Stat. at 33–34.

6. *Id.*

7. *Id.*

used: diversions less return flow and stream depletion.[8] On some scales, they may look the same. But on large enough scales, they do not, in ways that have profound implications for 21st Century river management decisions.

Under the stream depletion theory, each basin's consumptive use is measured as the net reduction in natural flow caused by man-made activities.[9] For example, the Upper Basin's consumptive use would be calculated as the amount that upstream uses deplete the natural flow of the river at Lee Ferry. During the Upper Basin Compact negotiations, Colorado and Arizona were the main proponents of this theory.[10] It was ultimately adopted in Article VI of the compact as the method for measuring consumptive use.[11]

While large Native American water needs and legal entitlements were identified before the Upper Basin Compact was negotiated, tribal communities were excluded from the negotiations.[12] Instead, Indian water use, which the negotiators knew was legally perfected long before 1922, was lumped into state allocations, with each state being responsible for meeting tribal needs from its share of the water.[13] This gamble set up a potential conflict between the apportionments made by the Upper Basin Compact, and the protections provided Indian rights under the Colorado River Compact.

A decade after the compact was signed, this conflict became real. In response, Upper Basin leaders took steps to limit tribal water rights and prevent full use of tribal entitlements by inserting provisions in project authorizing legislation.[14] The implications today are a legacy of intentional discrimination against tribes, unresolved legal questions around tribal water rights, and provisions that treat Native Americans as second-class citizens.[15]

INTRODUCTION

The Upper Colorado River Basin Compact is the legal mechanism that puts flesh on the water management skeleton created by the 1922 Colorado River Compact—which was needed to turn abstract ideas into usable water projects, the dams and ditches that would supply water to farms and cities in the Upper Basin

8. *Id.*

9. *Id.*

10. OFFICIAL RECORD, *supra* note 1, vol. II. at 42–56. This subject is explored in more detail in the section titled "AT THE FIFTH MEETING, THE COMPACT BEGAN TO TAKE SHAPE" at *infra* pp. 90-92.

11. Upper Basin Compact, art. VI, 63 Stat. at 35.

12. Representatives of the Bureau of Indian Affairs corresponded with the Commission and attended several negotiating meetings. The Official Record of the UCRC lists all the attendees and their affiliations for all the meetings. OFFICIAL RECORD, *supra* note 1. As far as the authors can tell, no tribal member attended any of the meetings.

13. Upper Colorado River Basin Compact, art. VII, 63 Stat. at 35. The decisions by the Commission to address the Indian issues are explored in more depth in the paper, *see infra* pp. 76, 92-94, 104, 111.

14. The Indian issues associated with Upper Basin Compact surfaced during the Congressional debate over the authorization of the San Juan-Chama and Navajo Indian Irrigation Projects. Act of June 13, 1962, Pub. L. 87-483,76 Stat. 96 (1963); 43 U.S.C. § 620 (2018).

15. Eric Kuhn et al., *Unfinished Business: 21st Century Questions Posed by Ambiguities in the Upper Colorado River Basin Compact and the Law of the River*, SSRN (June 4, 2024), at 24, https://ssrn.com/abstract=4853972.

states. The 1922 Compact, which celebrated its one hundredth anniversary in November 2022, only apportioned the beneficial consumptive use of the river system's waters between two geographic sub-basins, an Upper Basin and a Lower Basin (Arizona, Nevada, and California).[16] The Compact framers left the more difficult task of dividing the use of water among the individual basin states to future sub-basin compacts. The five states with lands in the Upper Basin completed this task on October 11, 1948.[17] Like its parent Colorado River Compact, the Upper Colorado River Basin Compact was signed at the Hall of Governors in Santa Fe, New Mexico.[18] It was quickly ratified by the states and approved by Congress, becoming effective on April 6, 1949.[19]

When Upper Basin State Governors met in Cheyenne, Wyoming on July 22, 1946, to hold a compact negotiations kickoff meeting, the governors and their senior water officials were already of a like mind on what the Upper Basin Compact Commission needed to accomplish.[20] It needed to reach agreement on how to divide (or apportion) among the States of Arizona, Colorado, New Mexico, Utah, and Wyoming the 7.5 million acre-feet per annum of beneficial consumptive use apportioned to, and available for use, in the Upper Basin by Article III(a) of the Colorado River Compact.[21] Further, it needed to define the responsibilities of the States of Colorado, New Mexico, Utah, and Wyoming (the States of the Upper Division) to deliver water at Lee Ferry under Article III of the Colorado River Compact.[22] Arizona has a small amount of land in the Upper Basin, but it is not a State of the Upper Division.[23]

At stake was "a billion-dollar development program" (roughly $20 billion in 2023 dollars) of dams and diversions across the Colorado River Basin.[24] Communities in the Upper Basin states were anxious to get the same sort of federal help that had built Hoover Dam and the other Lower Basin water infrastructure, but before the work could proceed, the federal government and the states needed clarity about who was entitled to how much water.[25] "There are more projects that water to supply them," Reclamation Assistant Commissioner, William E. Warne, explained.[26]

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16. *See generally* ERIC KUHN & JOHN FLECK, SCIENCE BE DAMMED (2019), ch. 3.

17. OFFICIAL RECORD, *supra* note 1, vol. I, Foreword, at i.

18. *Id.*

19. OFFICIAL RECORD, *supra* note 1, vol. I, Foreword, at i; *see also* 43 U.S.C. § 617l (2018).

20. OFFICIAL RECORD, *supra* note 1, vol. I , at 4. Because at the Cheyenne meeting neither New Mexico nor Arizona had officially appointed Compact Commissioners, this initial meeting was referred to as a governor's conference.

21. OFFICIAL RECORD, *supra* note 1, vol. I , Foreword, at ii.

22. OFFICIAL RECORD, *supra* note 1, vol. I (covers the Governor's Conference and Meetings 1–5); OFFICIAL RECORD, *supra* note 1, vol. II (covers meetings 6–11).

23. OFFICIAL RECORD, *supra* note 1, vol. I, at ii.

24. *See generally* KUHN & FLECK, *supra* note 16, at ch. 12.

25. *Id.*

26. The report, titled *The Colorado River*, H.R. Doc. No. 80-419 (1946), was authorized by Section 15 of the 1928 Boulder Canyon Project Act, 45 Stat. 1057, 1065, and reauthorized by the 1940 Boulder Canyon Project Adjustment Act, 54 Stat. 774 [hereinafter Blue Book]. It was an important document for all the states, except for perhaps California. Commonly referred to as the "Blue Book," it provided preliminary engineering and hydrologic data on numerous potential water projects, including almost all the projects Reclamation built in the Upper Basin and the Central Arizona Project in Arizona. The Blue

"Since the states, and not the federal government, have the responsibility for local water rights, they must indicate now how and where the waters to which they are entitled best can be used."[27]

The Upper Basin Compact Commission held its formal organizational meeting on July 31, 1946, in Salt Lake City, Utah.[28] It was the first of eleven official meetings, eight before the Compact was signed and three post-compact meetings to address ratification issues.[29] In addition to the official meetings, there were numerous meetings of the Commission's Legal and Engineering Committees.[30] The Engineering Committee issued a formal report,[31] but there are no official minutes of the committee meetings. The negotiations were complicated, difficult, and at times contentious. From the beginning, the Upper Basin Compact Commissioners sought a thorough understanding of the legal and engineering facts and issues.[32] They relied heavily on input from their advisors and from the Bureau of Reclamation.[33]

Although the Commission had no official time deadline, the negotiators were under considerable pressure to get the job done. In June 1946, the Bureau of Reclamation (Reclamation) submitted a draft comprehensive report on the development of the Colorado River to the basin states for their review.[34] The report, commonly referred to as the "Blue Book", was authorized by Congress in the Boulder Canyon Project Act.[35] It contained an enticing list of potential water projects throughout the basin, but it also contained a warning.[36] The 1946 draft report stated that "there was not enough water available in the Colorado River for the full expansion of existing and authorized projects and for all potential projects," concluding "(t)he need for a determination of the rights of the respective States to deplete the flow of the Colorado River consistent with the Colorado River Compact and its associated documents, therefore, is most pressing."[37] The stress inherent in these conversations is further evidenced in the statement, "[w]e hope that this requirement will not result in a water lawyers' holiday or a deadlock between the states over division of the available water," Reclamation Commissioner Michael

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Book was not as important to California because by 1947 most its Colorado River Projects were either completed or close to completion. Blue Book, *supra* note 26. Warne's remarks are included in the letter of transmittal at the beginning of the report.

27. *Agreement on Water is Key*, GRAND JUNCTION DAILY SENTINEL, July 24, 1946, at 1.

28. OFFICIAL RECORD, *supra* note 1, vol. I, at i.

29. OFFICIAL RECORD, *supra* note 1, vol. I (covers the Governor's Conference and Meetings 1–5); OFFICIAL RECORD, *supra* note 1, vol. II (covers meetings 6–11).

30. *See generally* OFFICIAL RECORD, *supra* note 1, vols. I, II, & III.

31. *Id.*

32. OFFICIAL RECORD, *supra* note 1, vol. I, Govenors' Conference, at 5.

33. OFFICIAL RECORD, *supra* note 1, vol. III, Engineering Advisory Committee, at 1.

34. Blue Book, *supra* note 26.

35. *Id.*

36. STONE, *infra* note 78, at 6–7. Colorado Commissioner Clifford Stone emphasized the importance of the Secretary's message in his formal report to the Colorado Governor and General Assembly where he writes "development of Colorado's share of Colorado River water is at a standstill until a compact apportioning the use of such water among the interested States is consummated." *Id.*

37. Blue Book, *supra* note 26, at 80-419.

Straus told reporters, as he unveiled the report, "for we want to get on with the work."[38]

In July 1947, Secretary of the Interior, Julius Krug, raised the stakes for the Basin.[39] In his letter transmitting the report to Congress he noted, "I am transmitting the report to you in order that the Congress may be apprised of this comprehensive inventory of potential water resources developments in the Colorado River Basin and of the present situation regarding water rights in that basin."[40] Then in his concluding remarks he added, "further development of the resources of the Colorado River Basin, particularly large-scale development, is seriously handicapped, if not barred, by lack of determination of the rights of individual states to utilize the waters of the Colorado River system."[41] In simple terms, the secretary was telling the Upper Basin States and their Congressional allies–without a compact, there will be no federal money available for project development.

The drive to develop the Upper Basin was eyed warily from the Colorado River's lower reaches. The Los Angeles Times framed the Blue Book as a threat to California's ability to continue expanding its use of the river's water for a growing Los Angeles, noting that the Colorado River Aqueduct and All-American Canal could move more water than they were currently carrying, but that full development elsewhere might make that impossible.[42]

The Upper Basin Compact negotiations began during a post-war period of great national pride and optimism.[43] The pre-war engineering successes of the Reclamation, particularly the construction of Hoover Dam and Grand Coulee Dam, were heralded for their contributions to the war effort.[44] There was broad public support for the development of additional water projects throughout most of the Western United States.[45] From the beginning, Department of the Interior officials were active supporters and participants in the Compact negotiations.[46] Reclamation had much to gain or lose—successful compact meant that it would soon be undertaking the design and construction of a new generation of large technically complex projects such as Glen Canyon Dam, Flaming Gorge Dam, the Central Utah Project, and the San Juan-Chama Project.[47] President Truman's appointment of former Reclamation Commissioner Harry Bashore as the United States

38. *Not Enough Water in Colorado River for All Projects*, GRAND JUNCTION DAILY SENTINEL, June 18, 1946, at 1.

39. Blue Book, *supra* note 26, Transmittal Letter from Secretary of the Interior J. A. Krug to Hon. Joseph W. Martin, Speaker of the House of Representatives.

40. *Id.* at 9.

41. *Id.* at 13.

42. Warren B. Francis, *Congress Told Colorado Water May Run Short*, L.A. TIMES, Jun. 18, 1946, at 2.

43. KUHN & FLECK, *supra* note 16, at 129–30.

44. *Id.*

45. *Id.*

46. OFFICIAL RECORD, *supra* note 1, vol. I, Governor's Conference, at 9 for the remarks of USBR Assistant Commissioner William Warne. See also OFFICIAL RECORD, *supra* note 1, vol. II, Eighth Meeting, at 30, for remarks of USBR Commissioner Straus.

47. *See generally* DEP'T. OF THE INTERIOR, THE COLORADO RIVER-A NATURAL MENACE BECOMES A NATURAL RESOURCE (1946); *see also* H.R. Doc. No. 80-419 (1946).

Representative on the commission signaled that the Department of the Interior and the Reclamation would be fully supportive of the negotiations.[48]

Within the Colorado River Basin, however, there was no peace. The states had split into opposing camps over the ratification of the Treaty with Mexico.[49] California and Nevada had opposed Senate ratification.[50] Arizona and the four Upper Division States had strongly and successfully supported it.[51] Further, the release of the Blue Book, which included the Central Arizona Project, had turned the long-simmering battle between Arizona and California into open political warfare in the Halls of Congress.[52] There simply was not enough water in the river to meet the desires of both Arizona and California.[53] "Water officials here contend there's not enough Colorado river water for allocations already legally made, much less for the new (Arizona) project," California journalist Lewis Thomas told his readers.[54]

Despite numerous attempts by the States of the Lower Division to settle their differences and negotiate a Lower Basin Compact, litigation seemed inevitable.[55] In fact, Arizona had unsuccessfully sought leave to file suit against California in the Supreme Court of the United States (SCOTUS) three times to adjudicate Arizona's claims to the Colorado River by mid-1936.[56]

Consistent with how the country then dealt with its Native Americans, no tribal members were invited to the negotiations, the Congressional debates, or litigation that shaped the river as we know it today. For most of the basin's Native Americans, life in the 1940s was marked by horrific discrimination and utter lack of access to resources.[57] Federal Indian policy was entering the "termination era" where the goal was to assimilate Native Americans into "mainstream society."[58] The federal government knowingly established tribal reservations on economically undesirable land and adjudications for the determination of Indian water rights under the *Winters* doctrine had not yet begun in earnest.[59] To that end, the Bureau of Indian Affairs had thus far declined to take on an active role in advocating for tribal interests, federally.[60]

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48. OFFICIAL RECORD, *supra* note 1, vol. II, Eighth Meeting, at 31–32.

49. *See generally* KUHN & FLECK, *supra* note 16, at ch. 10.

50. *Id.*

51. *Id.*

52. *Id.* at 132.

53. *Id.* at 139.

54. Lewis Thomas, *Water Wrangle*, L.A. MIRROR, Oct. 28, 1948, at 32.

55. *See generally* RAY L. WILBUR & NORTHCUTT ELY, THE HOOVER DAM DOCUMENTS, at chapter XIII Litigation (Washington D.C., U.S. Government Printing Office, 1948) [hereinafter 1948 Hoover Dam Documents].

56. *Id.*

57. MELODY L. MCCOY & THE NATIVE AMERICAN RIGHTS FUND, INDIAN EDUCATION LEGAL SUPPORT (1994), https://narf.org/wordpress/wp-content/uploads/2015/01/red.pdf; *see also Indian New Deal & Navajos*, CNM, https://mytext.cnm.edu/lesson/indian-new-deal-navajos/ (last visited Aug. 7, 2024); PROJECT 10 (2000).

58. *See* EXEC. ORD. OF AUTHORS AND ED., COHEN'S HANDBOOK OF FEDERAL INDIAN LAW (Nell J. Newton et al. eds., 2012), at ch. 1 for more information on the termination era.

59. *Id.*

60. DANIEL MCCOOL, COMMAND OF THE WATERS 114–22 (1987).

On reservations, communities had been systematically deprived of their traditional ways of life, and were the last to gain access to commonplace 20th Century technical advancements such as safe and reliable drinking water.[61] Indeed, access to safe drinking water remains a serious problem today.[62] The 1922 Colorado River Compact deliberately did not consider how water might be apportioned to Tribes across the basin, instead opting for boilerplate language, "[n]othing in this Compact shall be construed as effecting the obligations of the United States of America to Indian Tribes."[63]

After their July 1946 organizational meeting in Salt Lake City, the Commission did not get down to negotiating the hard details of the compact until December 1947.[64] During that time, the Commission only held a few short status meetings and held four public hearings, while its Engineering and Legal Committees were busy.[65] Beyond the committee work, there was a sense of urgency in the public eye that Federal money would be needed to turn water development plans and dreams into reality, Upper Basin communities knew, and any delay risked Mexico and the U.S. Lower Basin states laying claim to the river's limited supply.[66] "Conditions in Mexico and in the states of the lower basin warn the states of the upper basin that no time should be lost in building the major project in each state," William R. Wallace and Grover A. Giles wrote in Utah's Desert News.[67] The Engineering Committee, chaired by Reclamation Chief Hydrologist Randy Riter, was charged by the Commission to answer a detailed list of specific technical questions.[68] It conducted new and expanded upon existing hydrologic and water use studies throughout the Upper Basin.[69]

A thorough investigation of the Upper Basin Compact demonstrates remarkable ambiguity. The paper begins by explaining the context for the Upper Basin Compact, including the 1922 Colorado River Compact and the politicking that preceded the formal Upper Basin Compact process. We then detail each of the formal meetings leading up to the signing and ratification of the Upper Basin Compact. Each

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61. *Universal Access to Clean Water for Tribal Communities*, TRIBAL CLEAN WATER, https://tribalcleanwater.org (last visited May 13, 2024).

62. *Id.*

63. Colorado River Compact, art. VII (1922), 43 U.S.C. § 617l; Lloyd Burton, *The American Indian Water Rights Dilemma: Historical Perspective and Dispute-Settling Policy Recommendations*, 7 UCLA J. ENV'T L. & POL'Y 1, 16 (1987).

64. OFFICIAL RECORD, *supra* note 1, vol. I, Fifth Meeting. The fifth meeting, which began on December 2, 1947, was the first multiple-days negotiating meeting.

65. *Id.*

66. William R. Wallace & Grover A. Giles, *The Colorado River*, DESERET NEWS, Nov. 19, 1947, at 8.

67. *Id.*

68. OFFICIAL RECORD, *supra* note 1, vol. I, Fifth Meeting, at 3–15.

69. At one time both Reclamation and the Colorado Water Conservation Board had each dedicated four full-time engineers to gather and analyze the data that would go into the Engineering Report. To assist them, the Committee obtained the services of irrigation specialists H.F. Blaney and W.D. Criddle, developers of the Blaney-Criddle methodology for determining crop evapotranspiration rates. Their method was first developed in 1942 for use on the Pecos River in New Mexico. Theodore Sammis et al., *The Transition of the Blaney-Criddle Formula to the Penman-Montieth Equation in the Western United States*, 5 J. SERV. CLIMATOLOGY 1-11, Table 1 (2011).

of the eight meetings leading up to the signing of the Compact is explained in chronological detail with special emphasis on the development of the Stream Depletion Theory, issues of tribal water rights, and the foundations for much of the present-day ambiguity around river management.

By delving into the sociopolitical history of the Compact's creation, we can better understand the driving forces behind how water allocations in the Basin are governed today. Additionally, we can use future Colorado River governance negotiations as opportunities to clarify the uncertainties within the Upper Basin Compact and update portions that are no longer applicable in the 21 Century. In this paper, we explain the context and process for the Upper Basin Compact to the lay the groundwork for future conversations about Colorado River Governance.

THE COLORADO RIVER COMPACT CREATED AN ESSENTIAL FOUNDATION FOR THE UPPER BASIN COMPACT

To better understand and conceptualize the negotiations of the Upper Basin Compact, it is necessary to view the 1922 Colorado River Compact not as we think of it today but as it was understood by the negotiators in 1948. The Colorado River Compact was signed by representatives of each of the seven states within the Colorado River Basin and the federal government on November 24, 1922.[70] Arizona initially refused to ratify the compact, forcing the remaining states to adopt a six-state strategy.[71] After a lengthy ratification process, the compact finally became effective as a six-state compact on June 25, 1929.[72] Arizona balked for more than an angry decade—it feared that the Compact favored California's use over its own, but ultimately ratified the compact on February 24, 1944.[73]

When the Compact Commissioners first met in January 1922, they fully intended to negotiate a compact to apportion water use among all seven states, but that goal was beyond their reach.[74] As a compromise they apportioned water use among the two sub-basins, which created the necessity for two sub-basin compacts, one for the Upper Basin and one for the Lower Basin.[75] The five states with lands in the Lower Basin have never completed a compact. The 1963 Supreme Court decision in *Arizona v. California* apportioned uses on the mainstem of the river below Lee Ferry, but since the Lower Basin tributaries are also included in the compact's

70. KUHN & FLECK, *supra* note 16, at 55.

71. *Id.* at 68.

72. 43 U.S.C. §§ 617–19(b). The Boulder Canyon Project Act, passed in December 1928, included a six-state approval, subject to several contingencies and a six-month waiting period to give Arizona another chance to ratify the compact. Arizona did not do so. On June 25th, 1929, President Hoover signed a proclamation declaring the BCPA effective making the six-state compact effective. WILBUR & ELY, *supra* note 55, at 61.

73. Joe Gelt, *Sharing Colorado River Water: History, Public Policy and the Colorado River Compact*, WATER RES. RSCH. CTR. (Aug. 1, 1997), https://wrrc.arizona.edu/publication/sharing-colorado-river-water-history-public-policy-and-colorado-river-compact#.

74. KUHN & FLECK, *supra* note 16, at ch. 3.

75. *Id.*

definition of "Colorado River System," the decision falls short of a Lower Basin Compact.[76]

While there may be differing, perhaps even evolving, interpretations of the Colorado River Compact today,[77] for understanding the Upper Basin Compact, it's important to consider how the negotiators in 1948 viewed it. In his 1948 Upper Basin Compact Report to the governor and Colorado state legislature, Colorado's Clifford Stone (also Colorado Water Conservation Board (CWCB) Director) summarized the Colorado River Compact as follows:

> It divides the Colorado River Basin into an Upper and Lower Basin. The dividing point is at Lee Ferry . . . one mile below the mouth of the Paria River. Colorado and Wyoming are entirely within the Upper Basin. California and Nevada are entirely within the Lower Basin. Arizona, Utah, and New Mexico include territory within each of the two Basins.[78]
>
> It makes no apportionment of water among the seven States of the Colorado River Basin, but it divides the beneficial consumptive use of water between the Upper and Lower Basins. The beneficial consumptive use of 8,500,000 acre-feet annually is apportioned to the Lower Basin and the beneficial consumptive use of 7,500,000 acre-feet annually to the Upper Basin.[79]
>
> It also creates two classes of Colorado River Basin States, namely "States of the Lower Division" and "States of the Upper Division." The States of the Lower Division are Arizona, California, and Nevada. The States of the Upper Division are Colorado, New Mexico, Utah, and Wyoming. The Compact provided that the States of the Upper Division:

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76. Colorado River Compact, art. II(a) states: "The term 'Colorado River System' means that portion of the Colorado River and its tributaries within the United States of America." In its 1957 amended filing in its lawsuit against California, Arizona challenged the idea that the plain language definition—Article II(a) —includes the Lower Basin tributaries. Amended Bill of Complaint, Arizona v. California, No. 10 Original, 1957 Term (U.S.) Landmark decision: Arizona v. California, 373 U.S. 546 (1963). Section XXII, page 23, "(4) that tributary waters which naturally drain into the Colorado River below Lee Ferry are waters of the Colorado River System not covered by the Compact." *See generally* Kuhn et al., *supra* note 15.

77. For a good summary of the disputed and unresolved issues, see generally Lawrence MacDonnell, *Sources of Controversy in the Law of the Colorado River: An Upper Basin View*, UNIV. OF COLO. AT BOULDER SCH. OF L. (2021), https://ssrn.com/abstract=3874212.

78. CLIFFORD STONE, REPORT AND SUBMISSION OF THE UPPER COLORADO RIVER BASIN COMPACT 14–16 (1948).

79. This sentence is an example of where today's Upper Basin water officials may not agree with Stone and his contemporaries. Referring to Article III(a) today's officials often state that the Colorado River Compact apportioned equal amounts of water to each sub-basin. This argument ignores the extra million acre-feet apportioned to the Lower Basin by Article III(b) or relegates it for uses on the tributaries only. It's obvious from Stone's summary and his numerous testimonials before Congressional committees that Stone took the more traditional view there is no distinction between the III(a) and III(b) water apportioned to the Lower Basin.

> *** will not cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet for any period of 10 consecutive years . . .
>
> It should be noted that this provision constitutes a joint and several obligation of the States of the Upper Division to deliver at Lee Ferry the 75,000,000 acre-feet of water during each consecutive ten-year period for use of the States of the Lower Division.
>
> It treats any water over and above the total 16,000,000 acre-feet apportionment for beneficial consumptive use in the two Basins as "surplus;" and it specifies that if the United States- "shall recognize in Mexico any right to the use of any waters of the Colorado River system, such waters shall be supplied first from"- such surplus. If such surplus proves insufficient to meet recognized rights to use of water in Mexico, then,
>
> *** the burden of such deficiency shall be equally borne by the upper basin and the lower basin, and whenever necessary the States of the Upper Division shall deliver at Lee Ferry water to supply one-half of deficiencies so recognized***

Not included in Stone's summary of Article III(c), is the additional language that requires the Upper Division States to deliver to Lee Ferry their share of the Mexican treaty obligation deficiency in addition to the water required by Article III(d), the 75 million acre-feet every ten years.[80]

BETWEEN 1929 AND THE 1946, PRECURSORS TO THE UPPER BASIN COMPACT NEGOTIATIONS PLAYED A CRITICAL ROLE IN WHAT WOULD EVENTUALLY BECOME THE COMPACT

It was seventeen years between when the Colorado River Compact became effective and when the Upper Basin Compact negotiations began.[81] During that time, however, the Upper Division States were laying the groundwork for the day they would begin the negotiations. In 1934, they agreed to and created a provision with an interim approach where water projects could proceed provided all four states believed that the water use associated with the proposed development would be within the sponsoring state's Upper Basin apportionment.[82] This provision primarily benefited Colorado and specifically, the authorization of the Colorado-Big Thompson Project (another water storage project in Colorado) in 1937.[83]

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80. Upper Colorado River Basin Compact, art. III(d), Pub. L. No. 81-37, ch. 48, 63 Stat. 31, 33 (1949).

81. The Colorado River Compact became effective as a six-state compact on June 25, 1929. The negotiations of the Upper Basin Compact began in July 1946. *See also* OFFICIAL RECORD, *supra* note 1, vol. I.

82. KUHN & FLECK, *supra* note 16, at 141.

83. *Id. See generally* JEAN S. BREITENSTEIN, MEMORANDUM TO THE COLORADO WATER CONSERVATION BOARD ON COLORADO RIVER MATTERS (Aug. 3, 1947).

From 1938-1944, representatives from all four Upper Division States actively participated as members of the Committees of Fourteen and Sixteen.[84] The Committee of Fourteen was formed to advise the U.S. State Department after it informed the states that it was preparing to restart negotiations with Mexico for a water treaty, but it did much more.[85] It became actively involved in reviewing the progress of the Bureau of Reclamation's efforts to prepare a comprehensive report on the development of the Colorado River.[86] Progress on this study was slow in the early war years but accelerated in 1944 and 1945. The completion of Reclamation's draft comprehensive report, the Blue Book, became a catalyst for the negotiations of the Upper Basin Compact.[87] It provided a long list of potential projects and a clear warning from the Department of the Interior that the states needed to decide among themselves how to divide up their share of the water use apportioned to them under the Colorado River Compact.[88]

The Upper Division States were also very active in the battle over the Senate ratification of the Treaty with Mexico, the effort that politically split the Basin States into two camps and effectively ended the Committee of Fourteen process.[89] The Upper Division States allied with Arizona and Texas to support the treaty, forming the Six-State Committee.[90] California and Nevada opposed the treaty, forming the Colorado River Water Users Association.[91] The treaty became effective on November 8, 1945, after ratification by both the United States and Mexico.[92]

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84. KUHN & FLECK, *supra* note 16, at 119–22. The Committee of Fourteen was comprised of two representatives from each Basin State. The Committee of Sixteen added two representatives of Hoover Dam power users.

85. For example, the Committee heard regular reports from Reclamation personnel on the status of the comprehensive report on the development of the Colorado River. The Committee was also a forum for state discussion of the Boulder Canyon Project Adjustment Act. PROCEEDINGS OF THE COMMITTEE OF FOURTEEN AND SIXTEEN OF THE SEVEN STATES OF THE COLORADO RIVER BASIN AND POWER ALLOTEES, L.A., Cal., Oct. 22–23, 1941. The discussion items included a report of S.J. Robinson, chairman of the sub-committee of three on the Boulder Canyon Adjustment Act, at 5–6, and a report by E. B. Debler as to progress of investigations within the Colorado River Basin, at 35–42. Based on the proceeding, the committee meetings operated as a forum to discuss numerous issues related to the Colorado River.

86. *See generally id.*

87. STONE, *supra* note 78, at 6–7.

88. *Id.*

89. NORRIS HUNDLEY, JR., DIVIDING THE WATERS, 97–136 (University of California Press, 1966).

90. *Id.* After ratification, Texas dropped out and the Six-State Committee became the Basin States Committee which occasionally met in conjunction with the Upper Basin Compact Commission.

91. *From Hotbed of Conflict to Collaborative Management*, CRWUA (Dec. 17, 2020), https://crwua.org/wp-content/uploads/2023/12/CRWUA-Historical-Overview.pdf. *See generally Colorado River Water Rights: Hearings Before a Subcomm. of the S. Comm. on Interior and Insular Affs.*, 80th Cong. (1948); *see also From Hotbed of Conflict to Collaborative Forum*, CRWUA (2023), https://crwua.org/wp-content/uploads/2023/12/CRWUA-Historical-Overview.pdf.

92. WILBUR & ELY, 1948 Hoover Dam Documents, *supra* note 55, at 166.

ARIZONA AND COLORADO COLLABORATED ON THE "STREAM DEPLETION THEORY" THAT SHAPED SO MUCH OF COLORADO RIVER GOVERNANCE

The Stream Depletion theory was introduced in the 1940s but the theory continues to color Colorado River discussions into 2025—the theory's development illuminates its significant limitations. The mutually beneficial alliance between Arizona and Colorado—anchored in an arcane-sounding methodology for defining consumptive use—shaped how the Upper Basin Compact was written in a way that remains salient today. In 1941, Interior Secretary Harold Ickes asked Colorado Water Conservation Board (CWCB) Director and then Chair of the Committee of Fourteen Clifford Stone to serve as a mediator in the Hoover Dam water contract negotiations between the Department of the Interior and Arizona.[93]

California fiercely fought any deal in an effort to protect its Colorado River water supply.[94] However, Arizona prevailed, and Ickes' February 9, 1944, signature on a contract for Arizona's 2.8 million acre-feet of Hoover Dam water moved World War II news off the top of the front page of the Arizona Republic.[95] "Arizona Protection Assured," the Republic told its readers.[96] This opened the door for Arizona to finally ratify the Colorado River Compact, now confident that it would have access to the water it always felt was its due.[97]

In his seminal book on the Treaty with Mexico, *Dividing the Waters*, historian Norris Hundley raises the possibility that later in 1944, Arizona Governor Sidney Osborn and water attorney Charles Carson met with Stone, his attorney Jean Breitenstein, and his engineering advisor Royce Tipton (collectively referred to as the Upper Basin's "Three Wise Men") where they agreed that in return for Arizona supporting ratification of the Mexican Treaty, Colorado (and presumably its Upper Division State allies) would support Arizona in its battle with California over authorization of the Central Arizona Project (CAP).[98] Soon thereafter Tipton began working as a consultant for the Central Arizona Project Association, a non-governmental organization that lobbied for the CAP, while continuing his role as a consultant to the CWCB.[99]

Whether there was a backroom "deal" between Colorado and Arizona is a matter of dispute,[100] but the authors suggest, from technical and legal memos written by Tipton and Breitenstein, that Colorado and Arizona reached a common

93. *Arizona Protection Assured*, A.Z. REPUBLIC, Feb. 10, 1944, at 1.

94. *Id.*

95. *Id.*

96. *Id.*

97. *Ickes Signs Contract: Colorado Pact Ratification Meeting Called*, A.Z. REPUBLIC, Feb. 10, 1944, at 1.

98. KUHN & FLECK, *supra* note 16, at 136–37; *See also* HUNDLEY, *supra* note 89, at 212 (Univ. of Cal. Press, 1966).

99. *Hearings before a Subcomm. of the Comm. of Interior and Insular Affs.*, U.S. Senate, Eightieth Congress, Second Session, on S.J. Res. 145, May 10–14, 1948. At the beginning of Tipton's testimony on page 252, he explains that he is working for Arizona with the consent of Colorado.

100. Even if there was such an agreement, that doesn't necessarily mean it was wrong or illegal. By the standards of the day, and in an era when Congressional water politics was a blood sport, these kinds of deals were likely very common.

understanding on how to measure "beneficial consumptive use" under the Colorado River Compact that would benefit each.[101] The Colorado trio agreed to support Arizona's stream depletion theory for measuring consumptive use, which it then believed was essential to showing that there was a legal water supply for the CAP.[102] Under the stream depletion theory, the Upper Basin's consumptive use would be measured as the net impact of the Upper Basin's depletions on the virgin (natural) flow of the Colorado River at Lee Ferry, and for the Lower Basin it would be the net impact of the Lower Basin's depletions on the natural flow of the Colorado River at the international boundary with Mexico.[103] This definition would allow Arizona to take advantage of salvaged water and consume two million acre-feet per year of water on the Gila River system, but only be charged for one million acre-feet of Colorado River Compact apportionment.[104] Likewise, Tipton believed that under certain circumstances the Upper Basin could benefit from salvaged water by 400,000 to 600,000 acre-feet per year.[105]

Stone, Breitenstein and Tipton, with help from Arizona's Charles Carson, used the Upper Basin Compact negotiations to convince the other three Upper Division States to adopt and support the stream depletion theory.[106] Defining the stream depletion as the net impact of the Upper Basin's depletions to the natural flow of the Colorado River at Lee Ferry became an essential element of the Upper Basin Compact, as evidenced by the language of Article VI.[107]

INTRODUCING THE UPPER BASIN COMPACT COMMISSIONERS AND KEY ADVISORS

When the Commission convened in Salt Lake City on July 31, 1946, there were no strangers in the room.[108] They were a homogeneous group: white, male, middle-class, and highly educated (mostly lawyers and engineers).[109] Most had worked together on both the Committee of Fourteen and on the Six-State Committee that worked for the ratification of the Treaty with Mexico.[110] The five states had a common foil: California had opposed the Mexican Treaty.[111] The state had long opposed Arizona's plans for the CAP and in its recent comments on the draft Blue

101. *See generally* COLORADO WATER CONSERVATION BOARD, CONCERNING MISCELLANEOUS ITEMS RELATING TO THE COLORADO RIVER, STATEMENT BY R. J. TIPTON (1945).

102. KUHN & FLECK, *supra* note 16, at 135.

103. *Id.* at 133–35.

104. *Id.*

105. *Id.*

106. OFFICIAL RECORD, *supra* note 1, vol. II, Seventh Meeting, at 42–57. The technical case for adopting the stream depletion theory was made by Colorado Engineering Advisor Royce Tipton with support by Arizona Engineering Advisor R. I. Meeker.

107. Upper Colorado River Basin Compact, art. VI, Pub. L. No. 81-37, ch. 48, 63 Stat. 31, 35 (1949).

108. *See infra* pp. 83-86.

109. *Id.*

110. Colorado's Stone, Tipton, and Breitenstein, Utah's Wallace and Watson, Arizona's Carson, and Wyoming's Bishop all participated in the meetings of the Committee of Fourteen. *See Committee of Fourteen Meeting Minutes*.

111. HUNDLEY, *supra* note 89.

Book where it had signaled its opposition to the use of power revenues generated by federally built power dams to subsidize water development in the Upper Basin.[112]

Beginning with Colorado, a state which held outsize power in much of this process, was commissioner Clifford Stone.[113] In 1937, as a member of Colorado's House of Representatives from Gunnison, Stone was the primary proponent and sponsor of the state legislation that created the CWCB.[114] After his bill was signed, he stepped down from the legislature to become its first executive director.[115] His principal engineering advisor Royce Tipton was a self-taught engineer with extensive compact experience.[116] He became active in Colorado River issues in the early 1930s while first working for proponents of the Colorado-Big Thompson Project.[117] During the negotiations of the Mexican Treaty, he worked as a consultant for the International Boundary Commission.[118] Breitenstein, a 1924 graduate of the University of Colorado Law School, was the CWCB's first attorney.[119] He worked directly for the CWCB.[120] He also served as assistant Attorney General for Colorado from 1925-1929.[121]

Utah designated its State Engineer, Edward Watson, to be its official commissioner.[122] His principal advisors were William R. Wallace, a wealthy oil company executive and Chair of Utah's Water and Power Board, [123] and Grover Giles, Utah's Attorney General from 1941 through 1949. Giles was tapped by the Commission to serve as Secretary.[124]

New Mexico initially appointed Thomas McClure, its State Engineer.[125] After McClure died in late 1946, he was replaced by Fred Wilson, an attorney for the Interstate Stream Commission. Wilson was advised by then-current State Engineer, John Bliss.[126]

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112. KUHN & FLECK, *supra* note 16, at 153.

113. *See* BIOGRAPHY OF CLIFFORD STONE (1952), https://varuna.io/LOTR/1952/Biography_of_Clifford_Stone_1952.pdf (last visited May 16, 2024).

114. *Id.*

115. *Id.*

116. *Papers of Royce J. Tipton*, COLO. STATE UNIV. LIBRS. (2023), https://archives.colostate.edu/repositories/2/resources/217. Tipton completed two years of college before joining the Army in 1917 when the U.S. entered WWI. After the war, he did not return to college. The University of Colorado awarded Tipton an honorary engineering degree in 1940.

117. *Id.*

118. HUNDLEY, *supra* note 89, at 106.

119. Walter A. Steele, *The Honorable Jean S. Breitenstein - A Profile*, 62 DENV. U. L. REV. 1 (1985). *See also* Several Meeting Minutes from the Colorado River Commission (1949), http://www.riversimulator.org/Resources/UCRC/MinutesUpperColoradoRiverCommission1949August.pdf.

120. Steele, *supra* note 119.

121. *Id.*

122. OFFICIAL RECORD, *supra* note 1, vol. I, First Meeting, at 4.

123. *See generally* JOHN MCCHRYSTAL WALLACE, JOHN MCCHRYSTAL WALLACE AND WILLIAM ROSS WALLACE PAPERS (1880–1989), https://archiveswest.orbiscascade.org/ark:80444/xv83288.

124. OFFICIAL RECORD, *supra* note 1, vol. I, First Meeting, at 8.

125. *Id*. at 4.

126. OFFICIAL RECORD, s*upra* note 1, vol. I, Fourth Meeting, at 2.

Wyoming also appointed its State Engineer, L.C. "Clark" Bishop.[127] His most important advisor was attorney William J. Wehrli.[128] Both Bishop and Wehrli were cautious in accepting the statements of their Colorado neighbors and were the state negotiators that most often challenged the wisdom of the Three Wise Men.[129]

Arizona designated Charles A. Carson, special legal counsel for Colorado River Matters, as its commissioner.[130] As an engineering advisor during the critical seventh meeting, Carson turned to R.I. Meeker, then a water engineer from Phoenix.[131] Twenty-six years earlier, Meeker had been Colorado's Deputy State Engineer and Delph Carpenter's engineering advisor during the negotiations of the Colorado River Compact.[132] Prior to that, irrigation engineer Meeker had performed numerous calculations introduced as exhibits by Colorado in *Wyoming v. Colorado* (259 U.S. 419 (1922)) and had been employed by the state of Colorado to conduct an investigation and survey of the ditches and irrigated lands in both New Mexico and Colorado during the 1919 irrigation season. This work supported the negotiation of the La Plata compact signed on November 27, 1922.[133] There were a few others that made appearances at both negotiations, but Meeker is the only person that was a significant participant in both negotiations.[134]

The United States commissioner was retired Reclamation Commissioner Harry Bashore. Bashore began his career for the Reclamation Service in 1906, retiring in 1945.[135] His primary advisor was John R. (Randy) Riter, longtime Chief of the Hydrologic Branch of the Bureau of Reclamation.[136] He was designated Chair

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127. Bishop was Wyoming's lead negotiator for five (of seven) of Wyoming's interstate river compacts: the Belle Fourche River (1943), the Upper Colorado River Basin (1948), the Snake River (1949), the Yellowstone River (1950) and the Bear River Compacts (1958). To this list can be added the Cheyenne River (1949), which compact was rejected by the United States Congress over a water rights issue. Bishop served as the State Engineer during the trial portion of the Nebraska v. Wyoming litigation over the North Platte River and initiating the post-Decree administration of the October 8, 1945, North Platte Decree of the United States Supreme Court. As a result of this firsthand experience, Bishop was tireless in his negotiations of water use compacts with other western states. Typical of his oft-expressed views on the matter, he stated: "I am always glad to speak about interstate compacts because I sincerely believe in this method of settlement of interstate water controversies," in an address delivered at the Wyoming Development Association's meeting in Riverton in October 1956. John W. Shields, Email to Eric Kuhn (Nov. 27, 2023) (on file with author).

128. *See, e.g.*, OFFICIAL RECORD, *supra* note 1, vol. II, Seventh Meeting, at 57, 64.

129. *Id.*

130. OFFICIAL RECORD, *supra* note 1, vol. I, First Meeting, at 3.

131. OFFICIAL RECORD, *supra* note 1, vol. II, Seventh Meeting, Appearances.

132. *See generally* DELPH CARPENTER, THE COLORADO RIVER COMPACT: REPORT OF DELPH E. CARPENTER, COMMISSIONER FOR COLORADO (1922). Carpenter acknowledges the efforts of Meeker at the end of his report.

133. HERBERT C. YOUNG, UNDERSTANDING WATER RIGHTS AND CONFLICTS 90 (2nd ed. 2003).

134. Dr. John Widtsoe, an education specialist for the Church of Jesus Christ of Latter Day Saints (LDS Church) and former president of Utah State Agricultural College (now Utah State University), appeared as an advisor for Utah in both negotiations, but the minutes do not reflect he participated in the discussions in a meaningful manner. OFFICIAL RECORD, *supra* note 1, vol. II, Seventh Meeting, at 128 (noting Dr. Widstoe's agreement with the decision and absence from the meeting).

135. OFFICIAL RECORD, *supra* note 1, vol. I, First Meeting, at 10. *See also Harry W. Bashore Papers*, UNIV. WYO. (2011), https://archiveswest.orbiscascade.org/ark:/80444/xv586978.

136. OFFICIAL RECORD, *supra* note 1, vol. I, Second Meeting, at 6–7. For more information on Riter's career, see Britt Alen Story, *Oral Interview of William W. Reedy*, U.S. BUREAU OF RECLAMATION,

of the Engineering Committee.[137] While the Interior Department representatives were careful to be neutral on the political and legal issues that divided the basin states, both Bashore and Riter understood that the great California and Washington projects were in Reclamation's past; its future lie in the deserts of Arizona and the deep canyons of the Upper Basin.[138]

Although they were represented by officials from the Bureau of Indian Affairs, no Upper Basin tribal members were invited to participate in or observe the negotiations.[139]

THE FIRST FOUR MEETINGS SET THE STAGE FOR THE COMPACT AND SERVED TO GATHER DATA

The first four meetings in the process established the internal politics that would ultimately govern the creation of the Compact. The first meeting dealt with many organizational issues such as the acceptance of credentials, designating Harry Bashore as Chair, covering the costs of meetings and transcription services, and dealing with the press.[140] The Commission had two substantive discussions.[141] First, Stone suggested that they agree they were meeting as sovereign states using their constitutional authority to negotiate a compact, subject to approval by Congress, not under the authority of Section 19 of the Boulder Canyon Project Act which specifically authorized the states to negotiate subcompacts.[142] Stone and Breitenstein were concerned that if they used Section 19 as their convening authority, California would claim that it also needed to ratify the compact.[143]

The second broad area of discussion involved the need to gather data and study the facts. Chairman Bashore made the case for a broad study of water supply, existing and future water uses, and project economics.[144] His mention of project economics created one of the Commission's first disputes.[145] From Bashore's perspective, he was stating the obvious; Congressional authorization would require an analysis of project economics.[146] For Wyoming's Bishop, however, the mention of project economics opened old wounds.[147] In Wyoming's battles with Colorado over the Laramie River and with Nebraska over the North Platte River, Wyoming's neighboring states had argued that the corn and sugar beets they grew were of higher value than the higher-elevation and/or mountain meadow hay crops grown in

https://www.usbr.gov/history/OralHistories/REEDY,WILLIAM(WILL)W.pdf (last visited Aug. 21, 2024).

137. OFFICIAL RECORD, *supra* note 1, vol. I, Second Meeting, at 6–7.

138. This is a conclusion of the authors based on the comments made by Interior Department officials.

139. *See* Burton, *supra* note 63.

140. OFFICIAL RECORD, *supra* note 1, vol. I, Second Meeting, at 13, 17, 22.

141. *Id.* vol. I, First Meeting, at 15–24.

142. *Id.*

143. OFFICIAL RECORD, *supra* note 1, vol. I, First Meeting, at 8. *See also* Boulder Canyon Project Act, Pub. L. No. 642-70, 45 Stat. 1057, 1065.

144. OFFICIAL RECORD, *supra* note 1, vol. I, First Meeting, at 26–32.

145. *Id.*

146. *Id.*

147. MIKE MACKEY, PROTECTING WYOMING'S SHARE: FRANK EMERSON AND THE COLORADO RIVER COMPACT 99 (2013).

Wyoming, thus they deserved more water than Wyoming.[148] Stone then suggested they study supply and use issues first and delay any discussion of project economics until later.[149]

Stone made a motion identifying the specific questions the engineers should study then withdrew it after Utah asked for more time to consider it.[150] Instead, the Commission assigned the detailed development of an engineering scope of work to an engineering advisory committee.[151]

At the Commission's second meeting in Santa Fe, New Mexico, September 17-18, 1946, the Engineering Advisory Committee reported on their proposed scope of work.[152] Committee Chair Randy Riter went through his committee's recommendations. The committee recommended three basic tasks:[153]

1) The preparation of a detailed map of the Upper Basin showing gage locations, irrigated lands, and existing projects, two maps for each state.
2) A detailed hydrologic investigation at 44 locations throughout the basin. This task had five subtasks: compiling and completing the historical gage record, extending the individual gage records, estimating the discharge from areas not currently measured, estimating present depletions above each of the key gages, and estimating channel losses along the mainstems of the Green, Colorado, and San Juan Rivers.
3) A reservoir operations analysis to determine how much carry-over storage the Upper Basin would need at full development to meet its Colorado River Compact obligations during a drought of similar magnitude and duration to that experienced in the 1930s.

The Commission agreed with the general direction of the Special Engineering Committee's recommendations (all but Carson and Stone had attended the committee's meetings).[154] Riter and other committee members emphasized the proposed work would require each state and Reclamation to commit significant manpower to the effort.[155] Bashore implied that with the Engineering Committee's workload, it was unlikely that they would finish the negotiations before the 1947 legislative sessions.[156] As the authors understand it, this was a big deal. It meant that in the era when state legislators only met in general sessions every other year, the next window for obtaining legislative ratifications would be 1949, delaying the incredibly necessary Compact by two years.[157]

148. *Id.*
149. *Id.*
150. OFFICIAL RECORD, *supra* note 1, vol. I, First Meeting, at 26, 34.
151. *Id.*
152. *Id.* at 6–8.
153. *Id.*
154. *Id.* at 13.
155. *Id.* at 11.
156. *See id.* at 3–4.
157. *See id.* at 5.

Before adjourning, the Commission voted to make the Engineering Committee permanent and decided to hold a series of public meetings in each of the four Upper Division States.[158]

The third official meeting consisted of four public meetings, one in each of the four Upper Division States and a short executive session where the Commission appointed a standing legal committee.[159] Arizona Commissioner Carson was appointed the legal committee chair. Stone described the purpose of the public meetings as "to obtain the views and comments of the people . . . and to enable the Commission to explain its proposed procedure and objectives and the need for a Compact."[160] The public meetings were held as follows:

- October 28, 1946, Rock Springs, WY
- October 30, 1946, Grand Junction, CO
- October 31, 1946, Price, UT
- November 2, 1946, Farmington, NM

The meetings laid out to the communities of the Upper Basin the importance of the decisions to be made "of vital interest . . . that will affect generations unborn," as Walter Johnson wrote in Grande Junction's Daily Sentinel following the October 30 gathering.[161]

Over ten months later, on September 8, 1947, the Commission held its fourth meeting in conjunction with a Western Governors meeting in Cheyenne, WY.[162] The meeting was short, only two and one-half hours, but consequential.[163] Although the Commission had intentionally decided not to meet until the Engineering Committee had made progress on the tasks it was assigned, the individual commissioners and their advisors were anxious to begin making progress on an actual compact.[164]

The meeting opened with a sense of urgency: "It is quite obvious," Wyoming Governor Lester C. Hunt said, "that no new projects will be authorized in the Colorado River Basin until the states get together on the division of the water."[165] After accepting the credentials of Fred Wilson as New Mexico's Commissioner replacing Tom McClure, the meeting heard from Chairman Bashore.[166] Alluding to comments made by Utah's Governor Maw earlier in the day, Bashore suggested "the Commission attempt to negotiate this compact on the basis of percentage without attempting a lot of fine-haired calculations as to what the water is because it will

158. *Id.* at 21–22.

159. *Id.* vol. I, Third Meeting, at 126–27.

160. STONE, *supra* note 78, at 9.

161. Walter Johnson, *Division of Colorado River Water Will Determine Future of Slope*, GRAND JUNCTION DAILY SENTINEL, Oct. 31, 1946, at 1.

162. *See* OFFICIAL RECORD, *supra* note 1, vol. I, Fourth Meeting.

163. *Id.* at 2, 28.

164. *Id.* at 2–3.

165. Editorial, *Utah Should Press Vigorously for a Division of Colorado River Water*, SALT LAKE TELEGRAM, Sep. 10, 1947, at 10.

166. OFFICIAL RECORD, *supra* note 1, vol. I, Fourth Meeting, at 2–3.

change from year to year."[167] Adding that he was putting it to them plainly and "was not pulling any punches," Bashore noted he would like "you folks on the Commission to do the same thing."[168]

Wyoming's L.C. Bishop immediately responded that there was no need to wait for the report of the Engineering Committee.[169] It was now time "to go ahead and negotiate the compact with the information we have."[170] He further noted that there are more lands than there is water, so it was time for the "horse-trading."[171] Colorado's Stone objected, noting "maybe in the end there will be an element of horse-trading in it, but Colorado feels we shouldn't trade horses in the dark," but added "there is an end and a limit to engineering studies and adding that there was much that could be done while the engineering work was being completed."[172]

Utah's Watson and New Mexico's Wilson were somewhere in between, each supporting continuing the engineering work, but anxious to begin work on the compact.[173] Watson endorsed the concept of apportioning by percentage, adding that "we should have relatively quick action . . . the criticism made by our Chairman of our slow procedure is somewhat justified."[174]

The Fourth Meeting exposed the tensions between Colorado, which produced about 70% of the runoff, and the other four states which collectively produced the remaining 30%.[175] It is likely that the other commissioners believed that the engineering studies would be used by Stone to show that Colorado was entitled to a very large share of the use of the Upper Basin's waters. Stone understood that if the Colorado Legislature was going to ratify the compact, he needed to negotiate a share that was in line with Colorado's contribution to the river.[176] He often reminded the other commissioners of this reality.[177]

The Fourth meeting brought forward two fundamental issues that would be integral to the compact. The first issue was the use of percentages to make apportionments, and the second issue was the unbuilt large reservoirs needed for the Upper Division States to meet their Lee Ferry obligations during droughts that would evaporate a lot of water—this consumptive use would be charged against the Upper Basin's apportionment.[178] The first four meetings, together with the engineering committee work, set the stage for the work to come.

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167. *Id.*

168. *Id.*

169. *Id.*

170. *Id.* at 4.

171. *Id.*

172. *Id.* at 4–5.

173. *Id.* at 15.

174. *Id.*

175. Before the engineering work was completed, the estimate was that Colorado produced between 65 and 75% of the runoff. The engineering report showed 70%. *See generally* R. J. TIPTON, REPORT ON WATER SUPPLY OF THE COLORADO RIVER AND ALLIED MATTERS (1938); OFFICIAL RECORD, *supra* note 1, vol. II, Seventh Meeting, at 22.

176. OFFICIAL RECORD, *supra* note 1, vol. II, Sixth Meeting, at 53–54.

177. *Id.*

178. *Id.* Fourth Meeting, at 12–14.

AT THE FIFTH MEETING, THE COMPACT BEGAN TO TAKE SHAPE

By the fifth meeting of the Commission, conversations that would shape the Compact were underway. This meeting was held in Denver, Colorado from December 1-4, 1947.[179] The meeting was originally scheduled for Santa Fe, but had to be moved to Denver because of the lack of available accommodations. The purposes of this four-day meeting were to get a report from the Engineering Committee and begin a broad discussion of the basic principles that would be incorporated into the Upper Basin Compact. Issues of salvage, stream depletions, the data necessary to create the Compact, and Indian water rights received significant attention. While most of the topics were met with enthusiasm, state representatives were reluctant to discuss tribal water sovereignty. This reluctance is reflected in the final language of the Upper Basin Compact.

The meeting began with tension. In the days before the meeting opened, Colorado's Clifford Stone spoke obliquely but publicly about apparent tension between Colorado and some of the other basin states that Colorado's insistence on the development of detailed data amounted to "stalling".[180]

The meeting began with a report from the Engineering Committee.[181] Riter handed out a 61-page draft report with a 3-page cover letter.[182] The bottom line was that while the committee had made significant progress, they had not yet completed all their assigned tasks.[183] The three areas where they still working were estimating channel losses, quantifying stream depletions, and conducting a reservoir operations analysis to determine how much system storage the Upper Division States needed to meet their Lee Ferry obligations during a repeat of the 1931-1940 drought.[184]

The Engineering Committee members and the commissioners had a detailed discussion of the draft report.[185] The issue of channel losses was a complicated subject that evolved into a broad discussion of the concept of "salvage by use."[186] The concept is that consuming water upstream reduces the flow and width of the river, which in turn reduces the evaporation from the surface of the channel and the associated transpiration by vegetation on the banks of the stream and in adjacent sloughs.[187] Colorado's view was that this "salvaged" water should not be charged against the Upper Basin's compact apportionment.[188] In a later meeting Royce Tipton said that at full development, there might be 400,000-600,000 acre-feet per year of salvaged water.[189] This meant that, in theory, the Upper Basin could

179. *See id.* vol. I, Fifth Meeting.

180. *Colo. River Too Important for any Hasty "Horsetrading" Deal*, GRAND JUNCTION DAILY SENTINEL, Nov. 30, 1947, at 1.

181. OFFICIAL RECORD, *supra* note 1, Fifth Meeting, at 3–40.

182. *Id.* at 3.

183. *Id.* at 4.

184. *Id.*

185. *Id.* at 15–23 (full discussion).

186. *Id.* at 23 (Riter explains salvage by use at the top of the page).

187. *Id.*

188. *Id.*

189. OFFICIAL RECORD, *supra* note 1, vol. II, Seventh Meeting, at 47.

consume 7.9-8.1 million acre-feet per year but only deplete the flow at Lee Ferry by 7.5 million acre-feet per year.[190]

The concept of salvage by use was at the heart of the "technical agreement" Stone, Tipton, and Breitenstein had reached with Arizona.[191] In the hydrologic appendix to the Blue Book, Reclamation had concluded that there was on average a million acre-feet per year of salvaged water on the Gila River system.[192] Under Arizona's stream depletion theory, it could consume about 4.8 million acre-feet per year of water, but only be charged for using 3.8 million acre-feet per year of the Lower Basin's total apportionment of 8.5 million acre-feet.[193] At the time, Arizona believed its stream depletion theory was essential to showing that there was a legal water supply for its Central Arizona Project (CAP).[194] Later during the negotiations, the Colorado trio would find out that there was not complete agreement on this matter within the Upper Division States, and California of course, had a completely different theory of how beneficial consumptive use under the Colorado River Compact should be measured.[195]

A related issue had slowed the Engineering Committee's progress on determining the Upper Basin's stream depletions. The data on stream depletions were necessary to determine natural (virgin) flows at critical locations throughout the Upper Basin, including the contribution each state made to the natural flow at Lee Ferry.[196] The issue was the consumptive use of irrigated fields on lands had they not been supplied by a ditch system and would have been naturally irrigated (or sub-irrigated) by the river.[197] An example of this would be a field partially surrounded by an oxbow. Colorado's theory was that the Upper Basin should only be charged, or possibly even credited, for the difference between the consumptive use by the crops and the consumptive use that would have occurred by native vegetation.[198] For the analysis that Reclamation had conducted for the Blue Book, it had assumed that Upper Basin's depletions would be based on all irrigated lands under ditch systems, but Colorado would not accept this methodology.[199] To reach an approach acceptable

190. *Id.* (7,500,000 + 400,000 = 7,900,000).

191. COLORADO WATER CONSERVATION BOARD, CONCERNING MISCELLANEOUS ITEMS RELATING TO THE COLORADO RIVER, STATEMENT BY R. J. TIPTON (1945).

192. *Id. See also* Blue Book, *supra* note 26, 236.

193. KUHN & FLECK, *supra* note 16, at 132–37.

194. This was Arizona's original theory. In 1957, during the Arizona v. California case, it changed its approach to one that was based on the concept that the 1928 Boulder Canyon Project Act was a Congressional apportionment of the Colorado River Mainstem. Under this approach, the stream depletion theory was not necessary to demonstrate a water supply for the CAP. Arizona v. California, 373 U.S. 546, 595 (1963).

195. California advocated for the "diversions minus return flows" theory. Each basin's compact apportionments would be measured as the aggregate of diversions minus return flows at every point of use. For a discussion of California's reasoning *see* KUHN & FLECK, *supra* note 16, at ch. 11.

196. OFFICIAL RECORD, *supra* note 1, vol. I, Fifth Meeting, at 12–13. See the explanation by Riter starting at the bottom of page 12.

197. *Id.*

198. *Id.*

199. *See id.* Fifth Meeting. It's not completely clear from the Official record, but the other Upper Division Engineering Committee members likely supported or didn't object to Colorado's objections to the Reclamation approach.

to all, the Engineering Committee had to tediously adjust the Reclamation data to remove irrigated lands that were naturally irrigated.[200] The result reduced the Upper Basin's total consumptive use by over 10%.[201]

The natural flow data were also a prerequisite for completing the reservoir operations analysis.[202] The need for large storage to allow the Upper Basin to meet its Lee Ferry obligations was becoming an increasingly important issue for the Commission.[203] Large storage reservoirs raise complications, such as the assessment of evaporation, but could also provide significant potential benefits.[204] Utah's Watson made the following observation:

> . . . these reservoirs would serve as a means to develop power and the profits from that power would go towards paying Wyoming's expenses for their projects, and Colorado's expenses for their projects, and Utah's expenses for our projects inasmuch as we are unable to fulfill the requirements of the Bureau of Reclamation 100 percent. In other words, inasmuch as we have to be subsidized, won't these reservoirs help us all in a community way to help us pay our way?[205]

Although they may not have used the term "cash register dam", the prospect of using hydropower to subsidize water development was a major motivation for negotiating an Upper Basin Compact.[206]

The Commission then went on to a short discussion with the Legal Committee.[207] Committee Chair Charles Carson reported that pending additional guidance from the Commission, his committee's efforts had largely been studying other water compacts.[208] Bashore then briefed the Commission on his efforts to obtain input from other federal agencies on the federal water interests and issues that the Commission needed to consider.[209]

The letter that got everyone's attention came from the Office of Indian Affairs, which is now the Bureau of Indian Affairs (BIA). The BIA's letter summarized the surveys and planning studies it had completed to identify the water needs of the tribes in the Upper Basin.[210] It bears noting that this letter was part of a new era for the BIA, where, for the first time, the Bureau engaged actively in

200. *Id.* at 5–6.

201. From 2.2 million acre-feet per year in the 1946 report (Blue Book) to 1.93 million acre-feet in the Engineering Committee Report. Blue Book, *supra* note 26, at 13. *See also* OFFICIAL RECORD, *supra* note 1, Fifth Meeting, at 13, and Seventh Meeting, at 21.

202. OFFICIAL RECORD, *supra* note 1, vol. I, Second Meeting, at 8–9.

203. *Id.* Fifth Meeting, at 20–21.

204. *Id.* Fourth Meeting, at 13.

205. OFFICIAL RECORD, *supra* note 1, vol. I, at 21. A more detailed discussion of this topic can be found in Eric Kuhn et al., *21st Century Pol'y Considerations for the Upper Colo. River Compact* (Science Be Dammed, Working Paper #6, 2024).

206. OFFICIAL RECORD, *supra* note 1, vol. I, Fifth Meeting, at 21.

207. OFFICIAL RECORD, *supra* note 1, vol. I, Fifth Meeting, at 40.

208. *Id.*

209. *Id.* at 42–60.

210. *Id.* at 49–51.

advocacy for tribal issues.[211] Despite the obvious legal entitlement of Tribes to the water, the size and scope of the projects being contemplated by the BIA probably shocked the commissioners. In total, these Indian projects would divert about 1.4 million acre-feet per year and consume 585,000 acre-feet per year, about two-thirds in the State of New Mexico.[212]

The BIA letter went beyond identifying tribal water needs, it made clear that the Department of the Interior would assert the rights of the Tribes under the now 40-year-old Winters Doctrine.[213] The letter stated, "it is our position that the water rights for these Indian Lands were perfected rights . . . long prior to 1922, and that by provisions of the Colorado River Compact 'they are not impaired' by that compact."[214]

This position had clear implications for the Commission. The Upper Basin Compact would be subject to and could not violate the Colorado River Compact, but what if the apportionment made to an individual state was not sufficiently large to satisfy the Indian pre-compact rights within that state? Would that result in a violation of the Colorado River Compact? No one dared answer that question out loud. Later during the Fifth Meeting New Mexico's John Bliss and Fred Wilson laid out the two basic options, "should allocations to Indians be a part of each state's obligation or should the allocations in the Compact to Indians be made separately, as though a sixth state?"[215]

What followed was a spirited debate between Wilson and Utah's William R. Wallace. Wallace expressed his concern that Federal claims for Indian water rights under the Winters Doctrine that would pre-date the compact created uncertainty for the states.[216] He therefore suggested that a committee be appointed to go back to Washington and meet with the Director of the BIA and the Secretary of the Interior and seek an arrangement where "the Indians get a square deal and progress need not be stopped."[217]

Wilson responded that it was unlikely that such a committee could accomplish much noting that "the Indians are citizens, they are landowners, and if they own land within the Colorado River Basin, they have certain rights and I doubt . . . if those rights can be made any more certain than they are now."[218]

Wallace was not persuaded.[219] The Commission decided to defer the question of Indian rights and delegate this matter to their legal committee for a

211. *See* MCCOOL, *supra* note 60, ch. 5–6.

212. OFFICIAL RECORD, *supra* note 1, vol. 1, at 49–51.

213. *Id.*

214. William Douglas Back & Jefferey S. Taylor, *Navajo Water Rights: Pulling the Plug on the Colorado River*, 20 Nat. Res. J. 71, 79–81 (1980).

215. OFFICIAL RECORD, *supra* note 1, vol. I, Fifth Meeting, at 134. Bliss was New Mexico's State Engineer and Wilson's engineering advisor. Bliss made the presentation. The discussion also exposed a difference of opinion between Wilson and his State Engineer Bliss.

216. *Id.* at 136–37.

217. *Id.* at 136. The dialogue between Wallace and Wilson takes up several pages of the official record. We recommend that readers with an interest in Indian water rights matters read the record from pages 134–38.

218. *Id.*

219. *Id.* at 136–37.

recommendation.[220] At no point were tribal representatives outside of the BIA involved in the process.[221] Despite the raised hackles resulting from this conversation, newspapers at the time were notably silent in reporting on tribal water issues, which may have contributed to the exceptionally long latency between the BIA letter and the actual determination of tribal water rights on the Colorado.

Much of the meeting was spent discussing factors that would be considered in the Compact, and agreeing on principles that would become a part of or addressed in the Compact. Each state was asked to give a presentation on the factors that would be addressed by the Compact. Breitenstein made the first presentation on behalf of Colorado. He listed several questions and factors, many of which had already been discussed:[222]

- Should apportionments be made in acre-feet or by percentage?
- Should there be an administrative agency, and if so, what would its powers be and how would it be funded?
- Should the Upper Division State's joint and several obligations at Lee Ferry be divided as state obligations or by major tributaries or uses or some combination of all these factors?
- How would beneficial consumptive use be defined and measured?
- How should the evaporation from future joint-benefit reservoirs be assessed?
- Should tributary issues between individual states, for example a division of the uses of the San Juan among Colorado, New Mexico, and possibly Utah, be handled by the Upper Basin Compact or in separate subcompacts?
- How should a project built in one state for the benefit of another state be handled, for example the *proposed* San Juan–Chama project?

After a detailed discussion on the questions and factors raised by Colorado, the Commission agreed to tentatively make apportionments based on percentages.[223] During the discussion that preceded the decision to use percentages, CWCB engineer Charles Patterson made two important observations.[224] First, he cautioned the commissioners that using a percentage allocation system meant they need to carefully define "what," the amount of water that the percentages would be applied to and second, using the percentage established for the "what," gives a quantity of water.[225] Although in the Compact and in their reports, individual commissioners were careful to define the "what" as the amount of water apportioned to and available

220. *Id.* at 136.

221. *See generally* OFFICIAL RECORD, *supra* note 1, vol. I, Fifth Meeting.

222. *Id.* at 68–71.

223. *Id.* at 83–85.

224. *Id.* at 78–80. Patterson was the CWCB's Chief Engineer. He resigned from the CWCB effective February 28th, 1948. He continued to work on the Engineering Committee through mid-February but did not attend the sixth meeting in late February.

225. *Id.*

for use in the Upper Basin. Seventy-five years later, the impacts of climate change have raised new uncertainties.[226]

It's clear that there have always been uncertainties associated with the obligation of the Upper Division States to Mexico under Article III(c).[227] The negotiators referred to it as an "undefined" obligation and likely anticipated that in years when there was not a sufficient surplus, there could be disputes between the sub-basins.[228] The additional uncertainty raised by climate change relates to Article III(d) – the 75 million acre-feet every ten years.[229] In 1948, there was little debate and no dispute over this obligation. Today, both the impacts of climate change on the flow of the river and Upper Basin depletions could be causes for the ten-year flows at Lee Ferry to be depleted below 75 million acre-feet, thus raising new questions concerning the obligation of the Upper Division States.

Patterson's second caution was that development might proceed faster in one state than in another, causing problems in the future.[230] He noted that percentages by themselves are meaningless, they "must be based on something you can compute back in terms of water or else a state will not know in quantities of water what projects come within its share." [231]

It was because of Patterson's cautions that the Commission decided to "tentatively" agree to use percentage apportionments.[232]

The other state presentations were akin to Colorado's—all agreed on the need to address state-to-state tributary issues.[233] Wyoming pointed to the Little Snake River which crisscrosses the border of Colorado and Wyoming multiple times near Baggs, WY.[234] Several ditches divert water in one state for use in the other.[235] New Mexico mentioned that because it generated very little runoff, its uses on the San Juan were totally dependent upon Colorado delivering enough water to meet New

226. In his compact report, Stone defines *what* as the amount of water remaining in the Upper Basin after the Upper Division States have met their collective Lee Ferry obligations. Now because of climate change, some Upper Division State officials are questioning the seventy-five million acre-feet per ten-year non-depletion provision, asking the basic question – "if climate change, not Upper Basin depletions, is the cause of Lee Ferry flows falling below the 75 million acre-feet per ten-year benchmark, is that a compact violation?" If that position prevails, it may make "what" nearly impossible to determine. Note that this is a conclusion of the authors based on the assumption that as the atmosphere continues to warm, the impact of climate change on natural flows at Lee Ferry will never be a fixed amount. Therefore, if the Lee Ferry flow obligations are adjustable for the impacts of climate change, the ten-year obligation will be continually changing.

227. Upper Colorado River Basin Compact, art. III(c), Pub. L. No. 81-37, ch. 48, 63 Stat. 31, 33 (1949).

228. An example of a dispute over the interpretation of III(c) that was known in 1948 is whether the Upper Division States were responsible for transit losses incurred during the delivery of their fifty percent of the deficiency from Lee Ferry to Mexico. *Id.*

229. Upper Colorado River Basin Compact, art. III(d), 63 Stat. at 33.

230. OFFICIAL RECORD, *supra* note 1, vol. I, Fifth Meeting, at 78–80.

231. *Id.*

232. *Id.* Sixth Meeting, at 51.

233. *Id.* vol. I, Fifth Meeting, Wyoming at 86–87, Utah at 129–32, and New Mexico at 134–35.

234. *Id.* at 86–87.

235. *Id.*

Mexico's apportionment and Utah focused on the need to supply water for coal, oil and gas, and other mineral development in Eastern Utah.[236]

The Commission passed additional motions agreeing that an administrative agency was necessary, assigning the details to the Legal Committee, agreeing that the delivery of water to meet their Lee Ferry requirements would be "state obligations,"[237] and tentatively agreeing to the same water use preferences as provided for in Article IV of the Colorado River Compact.[238] They assigned several important tasks to the Legal Committee, including the Indian questions, how to assess evaporation from joint-benefit reservoirs, payments in lieu of taxes, and projects built in one state for use in another.[239]

Before adjourning, the Commission decided to meet again in Denver in late February for another week-long meeting.[240]

THE SIXTH MEETING GROUND THROUGH SOME SERIOUS ISSUES

Three of the states arrived at the sixth meeting hoping to discuss the percentage allocations for each state, however Colorado refused to discuss these quantities in the absence of the engineering report. This meeting was held from February 17-21, 1948, in Denver, Colorado.[241] The meeting was well attended; in addition to the six commissioners, over 60 individuals, including several reporters attended.[242] The list included the attorneys-general from three states and an Arizona Interstate Stream Commission member named Barry Goldwater.[243]

The negotiators gathered under a shadow left by the reiteration of stark warnings of what might happen should they fail to act.[244] "Colorado River Upper Basin States Hear Warnings to Guard Rights," the Salt Lake Tribune headlined an editorial shortly before the Upper Basin Compact session got underway.[245] Increasing diversions from the basin might leave the Upper Basin without the water to meet what the Tribune editorial writer characterized as a "debt" created by the 1922 Colorado River Compact, while California's Arvin B. Shaw Jr. was quoted warning that diversions across the Continental Divide to Colorado's eastern slope cities "held peril for other upper basin states."[246]

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236. *Id.* at 129–32.

237. *Id.* at 121–25. Utah Legal Advisor J. A. Howell summarized a complicated discussion and motion stating, "what we are doing is agreeing by contract (compact) as to how we (the Upper Division States) will be meeting our joint and several obligations at Lee Ferry."

238. *Id.* at 161.

239. *Id.* at 138, 141, 154, 158–59.

240. *Id.* at 167.

241. *See generally id.* vol. II, Sixth Meeting.

242. *Id.* at "Appearances."

243. The AGs from Wyoming, Utah, and Colorado attended. As Secretary to the Commission, Utah AG Giles attended all the meetings. Goldwater's appointment to the Arizona Interstate Stream Commission in 1946, an important political body, preceded his first elected office as a Phoenix city councilman in 1949. *Personal and Political Papers of Senator Barry Goldwater 1880s-2008*, ASU LIB., http://www.azarchivesonline.org/xtf/view?docId=ead/asu/goldwater.xml (last visited May 15, 2024).

244. *See, e.g.*, *Colorado River Upper Basin States Hear Warnings to Guard Rights*, SALT LAKE TRIBUNE, Feb. 2, 1948, at 8.

245. *Id.*

246. *Id.*

The fear of California loomed large in the pieces of the discussion reporters chose to highlight for readers back home.[247] On the session's opening day, the Associated Press quoted Salt Lake City attorney Edward Clyde pondering what might happen if the Upper Basin failed to develop its share of the river: "Will California be able to claim the unused water?"[248]

But tensions within the Upper Basin states were also on display. Walter Johnson of Grand Junction's Daily Sentinel pointedly noted that, within Colorado, twice as much money was being spent on developments to divert water away from Colorado's West Slope to the growing cities of the Front Range as was being spent on water development projects "on the slope of origin."[249] Beyond Colorado's West Slope, other states appeared afraid of the same thing: "Utah and other states to a lesser degree fear demands on Colorado river water for transmountain diversion to eastern Colorado," the Associated Press explained.[250]

The need for an Upper Basin Compact in order to enable federal Reclamation projects continued to resonate, driving much of the public discussion outside the meetings.[251] Utah Senator Arthur Watkins pointedly introduced legislation for a Central Utah Reclamation Project and was explicit about the reason behind his timing: "The introduction of this bill should help speed up the agreement," he said.[252]

To make the most effective use of the Commission's time, Stone had prepared and distributed a draft agenda.[253] Stone's agenda was detailed and lengthy.[254] In addition to reports by the Engineering and Legal Committees, he identified 29 questions or factors in six subject groups the Commission needed to address.[255] Utah's Watson grudgingly agreed, noting that they needed to get through the list before they could address the "main question we are here for, dividing the water."[256]

The first grouping of questions involved the basics of the compact. The Commissioners easily agreed that the term of the compact would be perpetual, but they bogged down on a proposal by Colorado to include flexibility in the compact to adjust the percentage apportionments in the future.[257] Breitenstein made the case for flexibility by pointing out that down the road if a state had not developed its apportionment, it would only benefit the Lower Basin.[258] Stone added that based on

247. *Upper Basin States Map Lasting Pact*, DESERET NEWS, Feb. 17, 1948, at 1.

248. *Id.*

249. Walter Johnson, *Cost of Planning Water Diversion Twice As Great as Expenditures on West Slope*, GRAND JUNCTION DAILY SENTINEL, at 1.

250. *Upper Basin States Oppose M'Carran Plan*, A.Z. DAILY STAR, Feb. 22, 1948, at 6.

251. *Watkins Warns Against Optimism Over Central Utah*, ROOSEVELT STANDARD, Feb. 12, 1948, at 1.

252. *Id.*

253. OFFICIAL RECORD, *supra* note 1, vol. II, Sixth Meeting, at 6.

254. *Id.*

255. *Id.* at 3–6.

256. *Id.* at 7.

257. *Id.* at 8–19.

258. *Id.* at 8–9.

Colorado's experience with the Rio Grande Compact, flexibility was important.[259] Led by Wyoming's Wehrli, the other states opposed Colorado's suggestion.[260] Wehrli made the case that if adjustments were needed the states could always formally amend or negotiate a new compact.[261]

Carson gave the legal report, which ultimately influenced the final language on Indian water rights in the Compact.[262] His committee had developed draft language on the issues referred to them during the fifth meeting, including the administrative agency, facilities in one state for the benefit of another, charging reservoir losses, preferential uses of water, and tribal issues.[263] Their recommendations concerning Indian rights included inserting in the Upper Basin Compact language identical to Article VII of the Colorado River Compact.[264] This language was inserted in Article XIX of the Upper Basin Compact; and second, that Indian uses be charged against the state in which they occur, which provision was inserted in Article VII.[265]

Riter told the Commission that the Engineering Committee was still working on calculating Upper Basin depletions and it would likely be June before they were finished.[266] Agreement on depletions was necessary before the committee could determine each states' contribution of natural flows at the state boundaries and at Lee Ferry.[267]

During the fifth meeting, Wyoming's negotiators had expressed their frustrations with the slow progress of negotiating the compact's primary purposes, dividing the use of the water among the five states and determining the Lee Ferry obligations of the four.[268] Now they were joined by Utah, but Colorado forcefully opposed starting the discussion of how much water each state would get until the engineers had given them the natural flow data.[269]

In a statement choreographed with Stone, Colorado engineering advisor Frank Merriell told the group that from his Western Colorado perspective "the water from Colorado is going to pay the bill."[270] He added "Colorado has been accused of a desire to prolong this thing, to evade it . . . It isn't that at all . . . You are about to

259. *Id.* at 15–16.

260. *Id.* at 15–19.

261. *Id.* at 13–15. Wehrli was a private attorney from Casper that represented Wyoming on several interstate compact matters and was Wyoming's Chief Counsel during most of the *Nebraska v. Wyoming* litigation before the SCOTUS. This was his first meeting. He quickly became one of the most influential state advisors.

262. *Id.* at 25–33.

263. *Id.* at 27–33.

264. *Id.* at 33.

265. *Id.* at 26–27, 33.

266. *Id.* at 41–42.

267. *Id.*

268. *Id.* vol. I, Fifth Meeting, at ii, 74–75, 86, 89.

269. *Id.* vol. II, Sixth Meeting, at 57–60.

270. *Id.* at 42–43. Merriell was the Secretary-Engineer of the Colorado River Water Conservation District (River District), before that he was Superintendent of the federal Grand Valley Project. Note, of all the commissioners and their formal advisors (as listed by Stone in his Commissioner's Report) Merriell was unique, he was the only member of the Colorado team that worked and lived in the Upper Colorado River Basin.

get up from the table and leave a check for us to pick up and we would like to know . . . the size of that check."[271]

Utah's Watson and Wallace wanted more discussion of what minimum facts were needed before the Commission could start the real negotiations, and Wehrli handed out a proposal by Wyoming to expedite the Commission's progress.[272] The discussion turned to one of the marquee items that the Commission needed to address: the definition of "beneficial consumptive use."[273] Breitenstein asked Riter if the Engineering Committee was ready to recommend a formula for measuring beneficial consumptive use.[274] Breitenstein noted "if you cannot measure something, what good does it do you to divide it," pointing out that one of the weaknesses of the Colorado River Compact is it had no method of measurement, and adding "why should we make another compact with that same weakness?" [275] Riter threw the question back on Breitenstein stating that the Commission, or its Legal Committee, first needed to give his committee a legal definition.[276] It was a classic what comes first, the "chicken or the egg" discussion. Wehrli noted the matter of defining and measuring consumptive use was on the agenda for later discussion and urged the Commission to get back to the committee reports.[277]

The Wyoming suggestion, which had Utah's support, was for the Commission to proceed with a "hypothetical" apportionment of water to the states, subject to refinement once the Engineering Committee had completed its work, but Colorado refused to go there.[278] Without Colorado, the other states accepted the reality that the discussion of how much water each state would get would have to wait until the next meeting.[279] Stone suggested the Commission get back to the work of addressing as many of the issues listed on the agenda as soon as possible.[280]

The Commission spent the remaining three days working through the long agenda. It decided that the state-to-state tributary issues needed to be a part of the Upper Basin Compact and requested that the affected states meet to work out the details.[281] It rejected including a dispute resolution provision like Article VI of the Colorado River Compact.[282] Concerning the definition of "beneficial consumptive use," it asked both committees to work together and jointly suggest a definition and method of measurement.[283]

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271. *Id.* at 43.

272. *Id.* at 40.

273. *Id.* at 50–52.

274. *Id.* at 47.

275. *Id.* at 51–52.

276. *Id.* at 47–49, 52.

277. *Id.* at 56, 58.

278. *Id.* at 53–54.

279. *See id.* at 50–65. This is a simplification of what happened. The Wyoming proposal is not included in the official record, its contents can only be inferred from the discussion—which is confusing. Colorado's Stone appears to be referring to the Wyoming proposal on pages 53 and 54 and again on page 60 in response to a question from Mr. Clyde of Utah.

280. *Id.* at 65.

281. *Id.* at 113–19.

282. *Id.* at 109.

283. *Id.* at 129–31.

It addressed several issues related to the water needs of the federal government, apart from the Tribes, including a suggestion by the International Water and Boundary Commission that it include a provision that nothing in the Upper Basin Compact affects the treaty obligations of the United States to Mexico.[284] In response, it passed a motion that the compact should contain language relating to the deliveries of water at Lee Ferry for use by Mexico in the event there is not sufficient surplus water as defined by the Colorado River Compact.[285] What was more interesting may have been the dialogue between Stone and Arizona's Carson over the issue of water deliveries to Mexico.[286]

Carson explained that from Arizona's perspective, as a State of the Lower Division, the obligation of the Upper Basin to deliver water to Mexico went beyond just if there is a deficiency.[287] He reviewed the system hydrology pointing out that based on Reclamation's Blue Book hydrology the average natural flow at the international boundary was 17.72 million acre-feet per year.[288] Therefore, on average, after delivering 1.5 million acre-feet per year to Mexico, all of the river system's waters except 220,000 acre-feet per year was now allocated for use.[289] Carson told his Upper Division colleagues that in addition to their 75 million acre-feet every ten years obligation, if the surplus was the source of Mexico's water, then the Upper Basin had an obligation to deliver to Lee Ferry that portion of the surplus that originated in the Upper Basin.[290] He added that more engineering work may be needed.[291] Since about 90% of the natural flow of the river originates in the Upper Basin, this meant under surplus conditions the Upper Division States were responsible for delivering almost all of Mexico's water.[292]

Stone's response responded in a manner that might surprise the present UCRC. While he told Carson that he did not quite follow him on the need for more

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284. *Id.* at 94–98.

285. *Id.* at 98–99.

286. *Id.* at 95–96. Unlike today, in 1948 the Upper Division State Commissioners were candid and open about their obligation to Mexico. The general belief was that with an average natural flow of 17.7 million acre-feet per year at the border with Mexico, the surplus was sufficient to satisfy Mexico in most years. During drought periods like the 1930s, however, there was agreement that they may have to deliver to Lee Ferry up to 8.3 million acre-feet per year.

287. *Id.*

288. *Id.; See generally* Blue Book, *supra* note 26. *See also* OFFICIAL RECORD, *supra* note 1, Seventh Meeting, at 74. *See generally supra* note 27.

289. *See* Blue Book, *supra* note 26. The math is simple. If the natural flow at the border with Mexico is 17.72 million acre-feet per year subtracting sixteen million acre-feet per year of apportionments to the Upper Basin and Lower Basin and another 1.5 million acre-feet per year for Mexico, the resultant quantity is 220,000 acre-feet per year. What Carson did not say is that his analysis was based on two basic assumptions: the 17.72 million acre-feet per year natural flow at the United States and Mexico boundary and the Arizona/Colorado stream depletion theory for measuring the Lower Basin's compact apportionment. Under California's alternative "diversions minus return flows" theory, the surplus is much larger—over one million acre-feet per year.

290. OFFICIAL RECORD, *supra* note 1, vol. I, Sixth Meeting, at 95–96. Approximately eighty-five to ninety percent of the total runoff of the Colorado River system originated above Lee Ferry.

291. *Id.*

292. At least Arizona has been consistent in this position. *See* W. Patrick Shiffer, Herbert R. Guenther, & Thomas G. Carr, *From a Colorado River Compact Challenge to the Next Era of Cooperation Among the Seven Basin States*, 49 ARIZ. L. REV. 217 (2007).

engineering data, he responded, "we must recognize, of course, the obligation on that surplus to make deliveries at Lee Ferry. That is a legal matter."[293]

Before the Commission adjourned, it set the next meeting for July 7-21 in Vernal, UT and it approved two important procedural motions.[294] First, at the recommendation of Wehrli, it gave the Legal Committee broad instructions to go beyond just those tasks that had been formally referred to it by the Commission and to "prepare such additional introductory and formal provisions as the Committee believes should properly become a part of the compact."[295] Second, at the recommendation of Breitenstein, it instructed the Legal and Engineering Committees to correlate and coordinate their efforts.[296] This meeting concluded in time for all attention to turn toward Congressional Hearings related to the Lower Basin.

CONGRESSIONAL HEARINGS INTERRUPT THE NEGOTIATIONS

During the interlude between the sixth and seventh meetings, the Lower Basin dispute between Arizona and California over the authorization of the CAP boiled over. Members of the California delegation in the House and Senate introduced joint resolutions that would direct the U.S. Attorney General to initiate Supreme Court litigation to settle the differences between Arizona and California over the interpretation of the Colorado River Compact.[297] The potential for litigation had serious implications for Upper Basin negotiations. First, Supreme Court litigation over the interpretation of the Colorado River Compact could bring in the Upper Division States. If that happened, it could delay Congressional approval of an Upper Basin Compact for many years. A few years later, during the early phase of Arizona v. California, California did, in fact, file a motion to bring the Upper Division States into the case—which was rejected.[298] Second, one of the basic disputed issues between Arizona and California was the question of how apportionments are measured under the Colorado River Compact.[299]

The states lined up as they did over the ratification of the Mexican Treaty. California and Nevada supported the resolution while Arizona and the four Upper Division States opposed it.[300] Subcommittees of the Senate Interior and Insular Affairs Committee and the House Judiciary Committee held hearings.[301] Stone and

293. OFFICIAL RECORD, *supra* note 1, vol. II, Sixth Meeting, at 96. The issue of "if there is surplus water for delivery to Mexico where is it located?" is rarely discussed by Upper Division State water officials. The Stone response also explains a comment made during the Mexican Treaty ratification hearings by Tipton that under surplus conditions the Upper Division States might have to deliver more water than under deficiency conditions.

294. *Id.* at 132–34.

295. *Id.* at 132.

296. *Id.* at 133.

297. In the Senate SJR-145 was introduced by Knowland of California and McCarron of Nevada. In the House, several California Representatives introduced identical resolutions, HJR-225, -226, and -230. All were titled "resolution authorizing commencement of an action by the United States to determine interstate water rights in the Colorado River."

298. KUHN & FLECK, *supra* note 16, at 163.

299. *Id.* at 20–21.

300. *See generally Colorado River Water Rights: Hearings Before a Subcomm. of the S. Comm. on Interior and Insular Affs.*, 80th Cong. (1948).

301. *Id.*

Breitenstein testified for Colorado, and Carson and Tipton testified for Arizona.[302] Tipton did so with the specific approval of the CWCB.[303]

Among the several issues Stone testified about was the question of how compact apportionments were measured.[304] He stated Colorado's position that the Upper Basin's 7.5 million acre-feet apportionment was measured as the net impact of upstream man-made depletions on the natural flow of the Colorado River at Lee Ferry.[305] Likewise, he told both committees that the Lower Basin's 8.5 million acre-feet was measured as the net impact of its man-made depletions on the natural flow of the Colorado River at the international boundary with Mexico.[306] Under Stone's approach the Upper Division States would not be charged under the Colorado River Compact for the consumption of salvaged water upstream of Lee Ferry, and Arizona would not be charged for its consumption of what was probably over a million acre-feet per year of salvaged water on the Gila and Little Colorado Rivers.[307] Breitenstein supported Stone's positions and addressed the legal issues related to Congress directing the Attorney General to initiate Supreme Court litigation.[308] He testified that under some circumstances, it might be appropriate for Congress to authorize the Attorney-General to file a suit, but this was not one of them.[309]

Carson and Tipton also testified in favor of the stream depletion theory and addressed a wide range of other Lower Basin issues related to the authorization of the CAP.[310] There was not, however, complete agreement between Carson and Stone on all the disputed compact issues.[311] Carson presented the long-held Arizona position that the one million acre-feet of Article III(b) water apportioned to the Lower Basin was intended to be for the exclusive use of Arizona.[312] Whereas Stone took the position that the Colorado River Compact apportioned a total of 8.5 million acre-feet per year, where and how that water is to be used was up to the five states with Lower Basin interests to decide.[313]

The proposed resolutions ultimately failed, in part, because the Truman Administration's Justice Department agreed with Breitenstein and numerous other legal scholars that Congress should not be instructing the Executive Branch to file such a suit.[314]

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302. *Id.*

303. *Id.* Tipton's testimony is on pages 252–81

304. *Id.* Stone's testimony is on pages 276–83.

305. *Id.*

306. *Id.*

307. *Id.*

308. *Id.*

309. *Id.* Breitenstein's testimony is on pages 197–228, 457.

310. *Id.* Stone's testimony is on page 280. Carson's testimony is on page 291.

311. *Id.*

312. *Id.*

313. *Id.* During Stone's testimony he refers to the Supreme Court decision in 292 U.S. 341 (1934), pointing out that the court concluded that the compact only apportioned water between the basins and not to individual states. Because Stone agreed with Arizona that the Boulder Canyon Project Act limited California to 4.4 million acre-feet per year of the water apportioned under both III(a) and III(b) and because Arizona conceded that Utah and New Mexico deserved a small amount of the III(b) water for their Lower Basin tributary uses, the on-the-ground differences between Stone and Carson were trivial.

314. *See generally Colorado River Water Rights Hearings*, *supra* note 300, at 10.

DURING THE MARATHON SEVENTH MEETING, THE STATES REACHED AN AGREEMENT

To call the seventh official meeting, July 7-July 21,[315] a "marathon" might be an understatement. The Upper Basin Compact negotiators spent as much time in Vernal on this one meeting as the Colorado River Compact negotiators spent in Santa Fe.[316] There were, of course, breaks for individual state caucuses, states only caucuses, and informal meetings.[317] The attendance list approached one hundred, most there for the duration.[318] The meeting agenda included the topics the commissioners had been anxiously waiting for over a year: a final report of the Engineering Committee and the negotiations that would decide how much water each state would get to use and how much each of the Upper Division States would be obligated to deliver at Lee Ferry.[319]

As the commissioners gathered, Utah prepared both to put on a show for its guests and make clear its demands. Vernal Mayor B.H. Stringham chaired an "entertainment committee," which planned a fish fry and staged three airplanes at the Vernal airport to ferry visitors to the Echo Park Dam site and to follow the course of the states' proposed Central Utah Project.[320] The hospitality backed Utah's hopes for the meeting, described in a report issued by the state's water and power board on the eve of the gathering: "Utah needs an additional 1,441,200 acre feet of water from the Colorado for the maximum development of its economy," the Salt Lake Tribune explained.[321]

As the hearings opened, the newspaper-reading public also got its first detailed look at the heart of the water allocation problems that had emerged since the Colorado River Compact was signed in 1922, as Riter explained the evolving understanding of the river's hydrology.[322] While newspaper coverage all along had continually beaten the drum about the need for an Upper Basin Compact to clear the way for Upper Basin Reclamation projects, a deeper truth was becoming clear.[323] "The upper basin states are obligated by treaty (sic) to furnish 7,500,000 acre feet annually to the lower basin," the Salt Lake Telegram explained, quoting from Riter's report.[324] "In periods of drouth [sic]", such as 1931 to 1940, there was only an average of 10,150,000 acre feet in the river at the dividing point. Mr. Riter pointed out that during these "[drought] years there would be less than 4,300,000 acre feet available for use by the upper basin. This drouth limitation would prevent the

315. OFFICIAL RECORD, *supra* note 1, vol. II, Seventh Meeting, at 136.

316. The 1922 Compact negotiators arrived in Santa Fe on November 10th and 11th, 1922. The 1922 Compact was signed on November 24th, 1922. The Seventh Meeting of the Upper Basin Compact negotiators met from July 7th, 1948 through July 21st, 1948. *Colorado River Water Rights: Hearings Before a Subcomm. of the S. Comm. on Interior and Insular Affs.*, 80th Cong. 281 (1948).

317. OFFICIAL RECORD, *supra* note 1, vol. II, Seventh Meeting.

318. *Id.* at 1–3.

319. *Id.* at 85.

320. *Entertainment Planned for River Commissions*, DESERET NEWS, July 6, 1948, at 9.

321. *Board Fixes Utah Split of Colorado River*, SALT LAKE TRIBUNE, July 6, 1948, at 17.

322. *River Meeting Opens in Utah*, SALT LAKE TELEGRAM, July 7, 1948, at 1.

323. *Id.*

324. *Id.*

construction of large-scale reclamation projects in the upper basin unless it can be overcome by construction of large storage dams." [325]

After welcoming everyone to Vernal, Chairman Bashore reported that in the week before the Vernal meeting the Legal and Engineering Committees had held a joint five-day meeting in Denver where they made substantial progress on what he referred to as a "skeleton compact."[326] Formal reports from both committees were on the agenda.[327] He then proceeded with updating the Commission on the input received from federal agencies.[328]

A representative of the BIA attended with the goal of advocating for language that would provide greater protection for Indian water rights. Bashore introduced Geraint Humphreys from the BIA.[329] Humphreys told the Commission that he was in attendance to verbally call their attention to language in the letter from Deputy Interior Secretary Warne to Chairman Bashore, suggesting language that would protect Indian water rights.[330] The proposed language was "Apportionment of water for which provision is made in this compact is subject to the first and prior rights for Indians, for Indian Tribes, and for Indian reservations whether such first and prior water rights are inchoate or covered by Federal court decrees."[331]

The federal government's push for protection of Native American water rights emerged immediately in the public discourse about the gathering, leading Deseret News reporter James O. McKinney's coverage of the meeting's first day.[332] But McKinney characterized it not as a need on the part of the Native American communities themselves, but rather a claim being made by the federal government, on an equal footing with the Forest Service and Fish and Wildlife.[333] New Mexico's claim that it needed a large allocation for "potential development of Indian lands" was also highlighted in the state's hometown papers, though the tribal communities were never named, no Native American voices were heard, and beyond a few repeated references to New Mexico's insistence on getting enough water to meet Native American claims, the question of tribal water rights receded from public view.[334]

After reviewing the input and recommendations from the other federal agencies, Stone suggested they be taken up in due course as the Commission discussed the details of the compact.[335] The Commission ultimately chose to ignore

325. *Id.*

326. OFFICIAL RECORD, *supra* note 1, vol. II, Seventh Meeting, at 5.

327. *Id.*

328. *Id.*

329. *Id.*

330. *Id.* at 5–7.

331. *Id.* at 6.

332. James O. McKinney, *River Water Compact Parley Opens*, DESERET NEWS, July 7, 1948, at 9.

333. *Id.*

334. *Colorado River Basin States Strive for Compromise on Demands,* ALBUQUERQUE J.*,* Jul. 11, 1948, at 6.

335. The consumptive uses of the water requests from the other federal agencies for uses like campgrounds, visitor centers, wildlife refuges, and stock ponds were relatively small. Like Colorado, many of the federal agencies suggested a flexible compact that did not prematurely determine water needs, which, was ignored. OFFICIAL RECORD, *supra* note 1, vol. I, at 43–60. In its letter on page 44, The National

the BIA suggestion, sticking with its Legal Committee's suggestion to use language identical to Article VII of the Colorado River Compact.[336]

The Engineering Committee then presented a comprehensive report on the hydrology of the Upper Colorado River Basin.[337] The committee decided to use a 32-year period of record from 1914-1945.[338] This period included 16 years of relatively wet conditions (1914-1929) and 16 years of relatively dry conditions (1930-1945).[339] The committee did not use data before 1914 due to a lack of gaged flow data and a lack of confidence in the pre-1914 data that did exist.[340] Riter summarized his committee's findings on the historical flows, Upper Basin depletions, and natural flows.[341] The commissioners were most interested in the data at Lee Ferry and the state lines; that data would most help inform the negotiations.[342]

Historic Contributions at Lee Ferry (in acre-feet/year)
1914 through 1945

State	at State Lines	at Lee Ferry	% of Total
Arizona	133,200	132,200	0.960
Colorado	10,408,400	9,952,800	72.180
New Mexico	186,100	178,400	1.290
Utah	2,022,800	2,016,800	14.630
Wyoming	1,610,600	1,508,400	10.94
Total	14,361,100	13,788,600	100.00

Man-made Depletions (in acre-feet/year)

State	at Use Point	at State Lines	at Lee Ferry
Arizona	4,000	4,000	4,000
Colorado	1,062,800	1,042,800	1,016,100
New Mexico	72,200	71,300	69,500
Utah	556,500	544,800	544,300
Wyoming	227,700	226,400	216,000
Total	1,923,200	1,889,300	1,849,900

Natural Flow at Lee Ferry (in acre-feet/year)

State	at State Lines	at Lee Ferry	% of Total
Arizona	137,200	136,200	0.87
Colorado	11,452,200	10,968,900	70.14
New Mexico	257,400	247,900	1.58
Utah	2,567,600	2,561,100	16.38
Wyoming	1,837,000	1,724,400	11.03

Park Service made the following suggestion: "the National Park Service favors a flexible compact which will not prematurely limit the allocation of land and water . . .".

336. Upper Basin Compact, art. XIX(a).

337. OFFICIAL RECORD, *supra* note 1, vol. II, Seventh Meeting, at 16–29.

338. *Id.*

339. 1914–1929 were considered wet with an average natural flow of 18.19 million acre-feet per year. 1930–1945 were considered dry with an average natural flow of 13.84 million acre-feet per year. *Colorado River Basin Natural Flow and Salt Data*, 1/24/2024 edition, U.S. BUREAU OF RECLAMATION, https://www.usbr.gov/lc/region/g4000/NaturalFlow/provisional.html (last visited May 5, 2024).

340. OFFICIAL RECORD, *supra* note 1, vol. III, Engineering Committee Report, Foreword.

341. *Id.* vol. II, Seventh Meeting, at 18–23.

342. *Id.* vol. II, Sixth Meeting, at 58–60.

Total	16,250,400	15,638,500	100.00

The take-home messages from the data were obvious. Colorado provided the lion's share of the water, over 70% of both the historical and natural flows at Lee Ferry. Utah and Wyoming provided decent amounts of water, but their ambitions exceeded their contributions. New Mexico and Arizona, the states with the largest amounts of tribal lands, provided very little water to the river. The second message was that the Engineering Committee data showed that salvage by use was real but not large, about 73,000 acre-feet per year at 1945 levels of development.[343]

The Engineering Committee recommended that to meet the Lee Ferry obligations of the Upper Division States under full development conditions a total storage capacity of 34,200,000 acre-feet, with a live capacity of 29,200,000, was necessary.[344] With this amount of storage, the storage would be full and spilling from 1920-29 and would then be drawn down to reach dead pool from 1931-1940.[345]

Riter acknowledged the help they had received from Harry Blaney and Wayne Criddle (irrigation experts of the day and developers of the Blaney-Criddle method of calculating irrigation water us) in determining depletions.[346]

After hearing from the Engineering Committee, the Commission went on to a lengthy discussion of the Legal Committee report. The report included 16 draft compact articles, attachments A – Q.[347] Included within these draft articles were several important principles that would be critical to the compact:

- The committee recommended that in the event a curtailment of uses was necessary to meet their collective obligations at Lee Ferry under Article III of the Colorado River Compact, each Upper Division State would have to deliver an amount that would bear the same relationship to the deficiency as each state's uses bear to the aggregate uses of the four states. In simple

343. Total consumptive use in the Upper Basin upstream of Lake Powell is currently about twice what it was in 1945, so using the Engineering Committee methodology, the authors calculate upstream salvage by upstream use in the Upper Basin is currently about 150,000 acre-feet per year. Adding in another ~ 250,000 acre-feet per year for "salvaged" evaporation from Lake Powell and Flaming Gorge (the difference between the surface evaporation and the natural losses that would have occurred had the reservoirs not been built) makes the total Upper Basin salvaged water approximately 400,000 acre-feet per year (there may be some double accounting here). This is a significant number, but since the Upper Basin is currently using far less than its apportionment, does it matter? Note that this math was done by the authors.

344. OFFICIAL RECORD, *supra* note 1, vol. II, Seventh Meeting, at 22–23. During the Seventh Meeting, E. O. Larsen, Reclamation's Region 4 Regional Director (now Upper Colorado River Region) told the Commission that his staff confirmed and agreed with the Engineering Committee's findings that about thirty million acre-feet of active storage was needed.

345. *Id.*

346. OFFICIAL RECORD, *supra* note 1, vol. II, Seventh Meeting, at 20, 24. Blaney and Criddle co-developed what is referred to as the "Blaney-Criddle" method for estimating consumptive use by irrigated agriculture. For more information on the Blaney Criddle methodology see WRDS Library, *Procedures for Estimating Evapotranspiration*, UNIV. OF WYO., http://library.wrds.uwyo.edu/wrp/87-06/ch-04.html (last visited Aug. 22, 2024).

347. OFFICIAL RECORD, *supra* note 1, vol. II, Seventh Meeting, at 30–41.

term, if a state was consumptively using 50% of the four-state total, it owed 50% of the deficiency.[348]

- All consumptive uses existing prior to November 24th, 1922, the date the Colorado River Compact was signed by the commissioners, would be excluded from the calculation. In simple terms, the amount of the deficiency each state had to deliver would be based on post-compact uses only.[349]
- If during the previous ten years, any state was consumptively using more than its share of the water under this compact, such state would be required to deliver to Lee Ferry the excess amount before a demand was made on any other state.[350]
- The committee recommended the compact not include a definition of "beneficial consumptive use."[351] Instead, the committee recommended the compact include a provision for measuring water consumed through the activities of man, including evaporation from canals, ditches, or irrigated areas, and from any reservoir.[352]
- The definition was for the sole purpose of measuring consumptive uses by the signatory states and had no relationship or bearing upon the definition of "exclusive beneficial consumptive use" under Article III(a) of the Colorado River Compact. The recommendation was made in hopes of avoiding a Congressional ratification dispute with California.[353]

Carson told the Commission that the legal committee was not in full agreement on the definition of the term "use" and that these recommendations were being provided to the Commission for further discussion.[354] The Commission voted to "receive" the reports of the Engineering and Legal Committees, but before proceeding with a more detailed discussion of the reports, Chairman Bashore introduced Colorado Engineer Royce Tipton to make a presentation.[355] The differences among the states over this broad issue would become apparent during the Tipton discussion.[356]

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348. *Id.* at 34.

349. How Tribal rights are treated under Article IV(c) is a complicated issue the UCRC may be forced to address in the future. The Upper Basin Compact negotiators intended to exclude consumptive water use that was occurring before November 24th, 1922. We would assume that an argument could be made that, based on *Arizona v. California*, Indian rights could be considered perfected or in use as of the dates of the reservations, and all such Indian uses would be excluded. 373 U.S. 546 (1963). But we can also see an argument that under the plain language of the article, consumptive uses with priority dates that predate the compact, but were not actually consuming water before 11/24/1922 would not be excluded. To complicate matters further, what about Indian rights that under settlement agreement provisions are subordinated to rights perfected after 11/24/1922?

350. OFFICIAL RECORD, *supra* note 1, vol. II, Seventh Meeting, at 34. The Legal Committees initially proposed one long article, which was later split into three paragraphs (Article IV(a), (b), and (c)).

351. *Id.* at 36. The negotiators later dropped this "defensive" position. California House members raised the issue during the Congressional ratification hearings. *See id.* at 46–47.

352. *Id.* at 36.

353. *See id.* The authors find the recommendation to be a clear indicator of a desire on the part of the committee to reduce the risk of a Congressional hold-up.

354. *Id.* at 32–33.

355. *Id.* at 41.

356. *Id.*

Tipton told the Commission he was going to talk about two phases of apportionment.[357] The first phase is the subject of "what is it that this Commission is going to apportion?"[358] He added the only thing the Commission can apportion is that which was apportioned to the Upper Basin by the Colorado River Compact.[359] The second phase is the subject of "the means of measuring that which the Commission here will apportion among the states."[360] He began his presentation with:

> "It is my opinion the record is crystal clear to the effect that the Colorado River Compact Commission in 1922 apportioned a certain part of the virgin flow of the Colorado River between the two basins . . . That which was apportioned to the Upper Basin was 7,500,000 acre-feet of the virgin flow of the Colorado River at Lee Ferry."[361]

Drawing on his experience and knowledge of other river basins, Tipton went on to give a lengthy and thorough technical explanation of how salvage by use could benefit the Upper Basin.[362] To measure how much water was being depleted at Lee Ferry, Tipton proposed using what he referred to as the "input-output" method.[363] He told the Commission that by defining and measuring use as he proposed, the Upper Basin could consume 7.9 million acre-feet per year, maybe more, but only deplete the natural flow at Lee Ferry by 7.5 million acre-feet per year.[364] As an example, he used a hypothetical transmountain diversion out of the headwaters that might export 500,000 acre-feet per year.[365] After calculating the salvaged water, he suggested the net depletion from that diversion at Lee Ferry, hundreds of miles downstream, might only be 450,000 acre-feet.[366]

Tipton's presentation was supported by Arizona engineering advisor, R. I. Meeker.[367] He told the Commission he was present for the Santa Fe meetings and that he worked with Reclamation's Arthur Powell Davis to reconstruct the natural flow of the river at Lee Ferry.[368] He told the Commission, "I am in perfect accord with Mr. Tipton's statement as to the apportionment of the virgin flow in 1922."[369]

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357. *Id.*

358. *Id.* vol. II, Seventh Meeting, at 42–43.

359. *Id.*

360. *Id.*

361. *Id*.

362. *Id.*

363. *Id.* at 48–49.

364. *Id.* at 47.

365. *Id.* at 52–53.

366. *Id.*

367. *Id.*

368. *Id.*, vol. II, Seventh Meeting, at 55–56. Authors' note: there is little doubt that Meeker made a significant contribution to the negotiations of the Colorado River Compact. The minutes suggest his most valuable contribution may have been to work with A. P. Davis to show the Commissioners that the flows at Lee Ferry, where there were no gage data, were the same as the flows at Laguna Dam where they did have flow information.

369. *Id.*

The Utah and New Mexico negotiating teams may have been impressed with the Tipton/Meeker presentation, but Wyoming was not. Wehrli made several specific points.[370] He read out loud the actual language of Article III(a) emphasizing that the Colorado River Compact used the term "beneficial consumptive use" not "depletions."[371] If the Commission had intended to apportion depletions to the natural flows at Lee Ferry, why didn't they say so?[372] He added that from a legal perspective "there may be considerable substance to the position taken by California."[373] He concluded that use of the stream depletion theory would benefit the Lower Basin more than the Upper Basin.[374] It would give the Upper Basin an additional 400,000 acre-feet per year of III(a) water for a total of 7.9 million acre-feet, but it would give the Lower Basin an additional 2.15 million acre-feet of III(a) water for a total of 9.6 million acre-feet.[375] Wehrli pointed out that the Lower Basin could consume a total of 9.6 million acre-feet per year.[376] Had he considered Article III(b), the total would have been 10.6 million acre-feet per year.[377] The next day Wehrli told the Commission that his Lower Basin number was wrong, he should have used 1.5 million acre-feet for the Lower Basin.[378] He did not state it, but conclusion that the Lower Basin would benefit more than the Upper Basin, 1.5 million acre-feet vs. 400,000 acre-feet, was still valid.

Wehrli pointed out to the Commission that because the Article III(c) definition of surplus as "the aggregate of the quantities specified in paragraphs (a) and (b)" or 16 million acre-feet, allowing the Lower Basin to consume more water could increase the deficiency resulting in an increased obligation of the Upper Division States to deliver their one-half of the deficiency to Mexico.[379] He also stated that if the Upper Basin had any possible expectation of sharing any surplus water that might become available under Articles III(f) and III(g), "that will be foreclosed with the adoption of the proposed construction."[380] Finally, Wehrli told the Commission "Wyoming is desirous of staying completely out of the controversy between Arizona and California, Lower Basin States."[381]

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370. *Id.* at 57–60.

371. *Id.*

372. *Id.*

373. *Id.* Had Wehrli had Delph Carpenter's March 20, 1923, Supplemental Compact Report available, he might have pointed out that Carpenter appears to agree that "beneficial consumptive use" is defined by "diversions minus return flows," although his sentence can probably be read to support either theory: "'beneficial consumptive use' refers to the amount of water exhausted or lost to the stream in the process of making all beneficial uses. As recently defined by Director Davis, of the United States Reclamation Service, it is the 'diversion minus return flow.'" *See* WILBUR AND ELY, 1948 Hoover Dam Documents, *supra* note 55, Appendix 210, https://www.varuna.io/LOTR/1948/The_Hoover_Dam_Documents_1948.pdf.

374. OFFICIAL RECORD, *supra* note 1, vol. II, at 57–60.

375. *Id.*

376. *Id.*

377. *Id.*

378. *Id.* at 64. During Wehrli's presentation, Arizona's Carson suggested that his 2.15 million acre-feet figure was in error and too high and that he get together with the engineers.

379. *Id.* at 59.

380. *Id.*

381. *Id.* at 60.

Wyoming and Colorado were, now at least, at a temporary stalemate. Bashore suggested they return to their agenda and review the compact articles proposed by the Legal Committee where there was agreement, but before they did, Colorado put a proposal on the table.[382] Stone offered that Colorado would accept a 56% apportionment with four conditions; Tipton's proposed definition of use, the input-output method for measuring compact apportionments, the assessment of reservoir evaporation as recommended by the Legal Committee, and the curtailment provisions as recommended by the Legal Committee.[383]

Wyoming's Bishop responded that Wyoming would accept a 16% apportionment but was not in agreement with all of Colorado's four conditions.[384] Utah offered 28%,[385] and New Mexico 15% contingent upon an acceptable agreement with Colorado for sharing the San Juan River.[386] Arizona indicated it would accept an apportionment that would let it use only the amount of water that was generated by precipitation on its lands within the Upper Basin, about 137,000 acre-feet per year plus 1000 acre-feet of Paria water.[387]

The five states had now put their cards on the table. The problem was simple—the total requested by the four Upper Division States was 115%. The next step was for each state to make a presentation and provide a written statement justifying its request. Since the total Upper Basin consumptive use of existing projects plus the potential projects identified in the Blue Book was over nine million acre-feet,[388] no state had a problem doing so.

During the discussions that followed, it became obvious that no state was willing to publicly reduce their request.[389] Based on a suggestion by Stone that Reclamation's Blue Book was the only unbiased or independent analysis available, the Commission decided to assign a committee of one engineer from each state to consider that report and determine the relationship (the percentage) between each state's potential projects and the Upper Basin's total potential projects.[390]

The special engineering committee reported the next day with Tipton as their spokesman.[391] Tipton reported that the committee had reached agreement after making some modifications to the Blue Book data.[392] They also added the BIA projection to the appropriate state and Upper Basin total.[393] The committee report

382. *Id.*

383. *Id.* at 63.

384. *Id.* at 67–68.

385. *Id.* at 68.

386. *Id.* at 70.

387. *Id.* at 69. Under today's climate conditions, the idea that the few streams in Arizona's Upper Basin lands that are mostly dry except after big storms or very wet winters could generate 137,000 acre-feet per year seems unrealistic, but in 1948, the Commission had confidence in its Engineering Committee data.

388. OFFICIAL RECORD, *supra* note 1, vol. II, Seventh Meeting, at 96, 116. The Blue Book number was 9.136 million acre-feet per year but adding the 558,000 acre-feet for Indian projects made the total 9.684 million acre-feet. This included 831,000 acre-feet per year of common-use reservoir evaporation.

389. *Id.*

390. *Id.* at 105–10.

391. *Id.* at 112–13.

392. *Id.*

393. *Id.*

closed the gap but did not result in an agreement.[394] The percentages reported were Arizona 0.6%, Colorado 52.5%, New Mexico 9.5%, Utah 25.4%, and Wyoming 12.0%.[395]

To get to a final agreement, at the urging of Wyoming's Wehrli, Bashore suggested the Commission break for a series of states only and state-to-state caucuses.[396] It was also now time for Bashore to conduct some shuttle diplomacy. Stone, who up until this point had resisted any "horse trading," realized he now needed to make some trades. He needed a horse named "The Stream Depletion Theory." It appears that to get that horse, he gave Wyoming a horse named, "A 14% Apportionment."[397]

Reaching agreement on the percentages took up most of the two-week meeting. The states made their presentations on July 10, Tipton's special committee met on July 12. On July 19, Bashore made his proposal for a settlement.[398] The next evening on July 20th, the Commission voted by secret ballot to approve the Bashore proposal.[399]

The final approved apportionments were Arizona 50,000 acre-feet annually, Colorado 51.75%, New Mexico 11.25%, Utah 23%, and Wyoming 14%.[400] The final deal included all states accepting Colorado's four conditions.[401]

The following table shows the amounts each state asked for, each state received, and a percentage comparison with the natural flow each contributes to Lee Ferry.[402]

State	Ask	Final	Apportionment/Contribution
Colorado	56%	51.75%	.5175/.702 = 73.7%
New Mexico	15%	11.25%	.1125/.0158= 712%
Utah	28%	23%	.23/.1638= 140%
Wyoming	16%	14%	.14/.1103= 127%
Arizona (in a-f)	138,200	50,000	50/137.2= 36.4%

By the metric of the amount apportioned to a state divided by the amount of natural flow they contributed, New Mexico was the big winner. Its apportionment is over seven times its flow contribution. The Commission believed it was necessary to cover the needs of both its tribal and non-tribal users.[403] Utah and Wyoming were also winners. Colorado, as expected, had to give up the most water, but Colorado also got, by far, the largest apportionment. Arizona accepted a fixed apportionment

394. *Id.* at 112–14.

395. *Id.* at 113.

396. *Id.* at 117–21.

397. Yes, this is speculation by the authors, but from the results there was very likely a horse trade.

398. OFFICIAL RECORD, *supra* note 1, vol. II, Seventh Meeting, at 123–24.

399. *Id.* at 128–29. Bashore told the Commission that by using a secret ballot, none of the individual commissioners could ever be accused of being the first to "blink."

400. Upper Colorado River Basin Compact, art. III, Pub. L. No. 81-37, ch. 48, 63 Stat. 31, 32 (1949).

401. *Id.*

402. *See* OFFICIAL RECORD, *supra* note 1, vol. II, Seventh Meeting.

403. STONE, *supra* note 78, at 18.

of 50,000 acre-feet per year,[404] smaller than its theoretical contribution. But it's likely that no one in the room was happier than Arizona's Carson; the package deal included the stream depletion theory for defining and measuring consumptive use.[405]

The agreement on how to divide the water was a major accomplishment. Now, they focused their efforts on completing the details of the compact. The Commission used its remaining time in Vernal to focus on the drafting of individual articles.[406] Before adjourning, it turned down an offer by Wyoming to hold the next meeting in Jackson.[407] Instead, it voted to return to Santa Fe with the hopes of meeting at the Bishop's Lodge the week of October 4 to finalize the pact and sign it at the Hall of Governors.[408]

AT THE EIGHTH MEETING, THE COMPACT WAS FINALLY SIGNED

The Eighth Meeting was called to order on the morning of October 4, 1948, at the historic Bishop's Lodge, just outside of Santa Fe, New Mexico.[409] The major policy decisions such as how to measure beneficial use and the apportionments to each state were behind them, but there were still a few details that needed to be wrapped up. There was still drafting needing to be finalized and, before final approval, the Commission needed to review the compact, article by article, and line by line. Additionally, on October 6, Commissioner of the Bureau of Reclamation, Michael Strauss, was scheduled to meet and congratulate them.[410]

The Commission heard reports from the Engineering Committee and the Legal Committee, which had transitioned into a drafting committee.[411] Riter reported that work on the input-output manual would take time, and it would not be ready for final approval until after the compact was signed.[412]

They also heard reports from each of the state-to-state caucuses. Three of the four caucuses reported that they had reached agreement in principle.[413] The Wyoming and Utah Green River caucus, however, had not yet completed their discussion.[414] There were four special articles dealing with tributaries that needed to be included in the Compact: an agreement between Colorado and Wyoming on the

404. OFFICIAL RECORD, *supra* note 1, vol. II, Seventh Meeting, at 1078. Carson turned down an offer to accept a one percent share in favor of a fixed 30,000 acre-feet. With 20-20 hindsight, he made a brilliant deal for Arizona. In his view the 50,000 acre-feet he accepted was enough to cover the 49,000 acre-feet of potential projects identified by both Reclamation and the BIA. Further, Arizona is not charged for any of the evaporation from Lake Powell. To Carson, the Upper Basin's approval of the stream depletion theory potentially gave it access to the additional use of over a million acre-feet per year of Lower Basin water. Under the stream depletion theory, a million acre-feet per year of salvaged water on the Gila River does not count as a compact apportionment.

405. Upper Colorado River Basin Compact, art. VI, 63 Stat. at 35.

406. OFFICIAL RECORD, *supra* note 1, vol. II, Seventh Meeting, at 130–54.

407. *Id.* at 143–44.

408. *Id.*

409. *Id.* vol. II, Eighth Meeting.

410. *Id.* at 29–34.

411. *Id.* at 9–10.

412. *Id.*

413. *Id.* at 12–15.

414. *Id.* at 21.

Little Snake River, Article XI;[415] an agreement between Wyoming and Utah on the tributaries of the Green River that flow from Utah into Wyoming, Article XII;[416] an agreement between Colorado and Utah on the Yampa River, Article XIII;[417] and an agreement between Colorado and New Mexico on the San Juan, Article XIV.[418]

Commissioner Strauss congratulated the Upper Basin states on what they had accomplished.[419] He indicated that Reclamation and Interior had been following what they had been doing very closely and were thrilled.[420] He reminded them that after they had signed the pact, it still needed to be ratified, telling them, "I could even guess where some opposition might come from, I won't do so."[421] Straus's public messaging remained consistent with the way the negotiations had been framed in newspaper coverage through the proceedings–quick ratification of the Upper Basin Compact would be critical to the states getting the water development projects they desired.[422] "It was six years before ratification of the original Colorado River Compact was achieved," the Santa Fe New Mexican quoted Straus as saying. "You don't have six years now. The need for development in the upper basin is too urgent."[423]

The drafting committee had made both formatting and non-substantive wording changes and had assembled the Articles in a logical order.[424] The Commission tediously reviewed and, with little debate, approved each Article.[425]

On Monday, October 11th, 1948, at 2:00 PM, the Commissioners gathered at the Hall of Governors and signed the compact.[426] The next step was ratification.

COMMISSIONER'S REPORTS AND RATIFICATION BY THE STATES

After approving the compact, the commissioners had a discussion of the next steps Colorado's Stone identified as three major tasks: (1) Preparation and preservation of the record of the Compact Commission, including the report of the Engineering Advisory Committee; (2) Ratification by the States though their respective legislatures; and (3) Approval by the Congress of the United States.[427] He added that in Colorado "it has been the practice for the Compact Commissioner to prepare and print a statement which includes the negotiated compact, reasons for it, and explanation of various articles."[428] He recommended each Commissioner do the

415. *Id.* at 12 (Upper Basin Compact Article XI).

416. *Id.* at 54–55 (Upper Basin Compact Article XII).

417. *Id.* at 15 (Upper Basin Compact Article XIII).

418. *Id.* at 14–15. (Upper Basin Compact Article XIV). The San Juan River also flows through Utah, but for reasons that are not totally clear, it decided not to participate in the Colorado-New Mexico negotiations of Article XIV.

419. *Id.* vol. II, Eighth Meeting, at 29.

420. *Id.*

421. *Id.* at 30.

422. *Straus Urges Quick Action on Compact*, SANTA FE NEW MEXICAN, Oct. 7, 1948, at 1.

423. *Id.*

424. OFFICIAL RECORD, *supra* note 1, vol. II, Seventh Meeting, at 41–60.

425. *Id.*

426. *Id.* at 81–85.

427. *Id.* at 76.

428. *Id.*

same.[429] Utah's Wallace asked if it should be a group effort or individual effort.[430] In response, Stone noted that "the argument for the compact may not be identical for all of the states" preferring that each Commissioner tailor his report to "the conditions and views of those supporting the Compact in that state."[431]

Colorado's Stone prepared the most thorough and detailed report.[432] After approval by the CWCB, his 40-page report was printed as a booklet and given wide distribution throughout the state.[433] The full report was used as a template by the other states and became a part of the record of the proceedings of the Congressional Subcommittee that held hearings on approval of the Upper Basin Compact.[434]

Stone's report includes a background section on the need for a compact, a summary of the negotiating process, excerpts from the Engineering Committee Report, a short summary of the Colorado River Compact, and an article-by-article explanation of the Upper Basin Compact.[435]

In his introduction to the Colorado River Compact summary, he affirmatively states, "the Upper Colorado Basin Compact must be in conformity with, and may not violate, the Colorado River Compact of 1922."[436] Articles I & II identify the purposes of the Upper Basin Compact and define the terms.[437]

Article III is the apportionment provision.[438] Stone gave this article considerable background explanation. He first explains that the "1922 Compact does not apportion water, but instead the use of water."[439] He then explains, in detail, why the Commission chose to apportion water use by percentages, and he carefully defines the "what" to which the percentages apply:

> While the 1922 Compact, by its paragraph III(a), apportions to the Upper Basin the beneficial consumptive use of 7,500,000 acre-feet of water annually, such use is subject to the availability of water. The States of Upper Division are required by the 1922 Compact to maintain certain flows at Lee Ferry. *The water available for use in the Upper Basin is that remaining after the Lee Ferry delivery requirements are satisfied* (emphasis added). In view of the uncertainty as to the total amount of water which might be available for the Upper Basin the Compact Commission determined that so far as the States of the Upper Division are concerned the apportionment must be in terms of percents of the

429. *Id.* at 76–77.

430. *Id.* at 77.

431. *Id.*

432. *See generally* STONE, *supra* note 78.

433. *Id.* When co-author Kuhn began working at the Colorado River District, he found about half of a box of water damaged reports in the district's records basement.

434. *The Upper Colorado River Basin Compact: Hearings on H.R. 2325–H.R. 2334 Before the Subcomm. on Irrigation & Reclamation of the H. Comm. on Pub. Lands*, 81st Cong. 74–75 (1949) [hereinafter Upper Basin Compact hearings]. Portions of Commissioner Stone's Report are included in the hearing record, pages 74–75.

435. *See generally* STONE, *supra* note 78.

436. *Id.* at 14.

437. *Id.* at 16–17.

438. *Id.* at 17–18.

439. *Id.*

> total amount of water apportioned to, and available for use in, the Upper Basin.[440]

Utah's Watson used identical language in his report to his governor and legislature.[441] New Mexico's Wilson used very similar language.[442] According to the legislative record, Wyoming's Bishop did not submit a report.[443] Although today there may be differing views and no consensus understanding among the Upper Division States as to the definition of the "what", that is measurements of water, to which the percentages are applied, in late 1948 when the Compact Commissioners signed the compact and wrote their reports, they had a clear and unanimous understanding of how to define the "what."[444]

Stone clarified Arizona's 50,000 acre-feet fixed apportionment is subtracted from the water available for use in the Upper Basin before the percentages are applied.[445]

Concerning Colorado's 51.75% apportionment, he stated that before agreeing to that amount he and his advisors made a careful study and concluded that it was sufficient to meet the existing and future needs of both the West Slope and East Slope.[446] Stone also brought attention to the 11.25% apportionment given to New Mexico: "the Commission wisely determined the water allocation should be such as to satisfy fully the needs of the Indians . . . sufficiently large to take care of every water use currently planned for the Indians," adding that Indian uses are to be charged to the state in which they occur.[447]

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440. *Id.*

441. EDWARD H. WATSON, REPORT AND SUBMISSION BY THE STATE ENGINEER OF THE STATE OF UTAH AND COMMISSIONER FOR UTAH OF THE UPPER COLORADO RIVER BASIN COMPACT 15 (1948). Commissioner Watson's report is not included in the hearing record but can be found at Utah Division of Archives and Records Service.

442. Upper Basin Compact hearings, *supra* note 434, at 112–13 (1949). Commissioner Wilson's report is included in the hearing record. *See also* STONE, *supra* note 78.

443. Upper Basin Compact hearings, *supra* note 434, at 126 (1949). State Engineer Bishop testified "I did not make a report the Governor and the legislature at the time the compact was introduced." He went on to explain that Wyoming had three Senators (State Legislature) that ". . . were members of our compact commission." Senator Norman W. Barlow, Member, Compact Commission, State of Wyoming, was then recognized and made a brief statement to the Subcommittee. He in turn was asked by Representative Engle if he submitted a formal report to the State Legislature, to which he responded: "I did not, Congressman, I was on the lands and irrigation committee in the senate. In explaining the compact to the senate I did not in any way preface the introduction by any statement that was introduced other than by an oral statement." Hearing Record of March 17, 1949, afternoon session.

444. For example, at the July 18th, 2023, River District Board meeting, Colorado's UCRC commissioner told the board that the 1922 Compact gave the Upper Basin and Lower Basin an equal amount of water to use. This may be a very effective political message, but it ignores the clear history of statements made by the representatives of Colorado that were in the room when the compacts were written. In defense of today's leaders, they are dealing with a thirteen to fourteen million acre-feet per year river, (as measured at the border with Mexico, not at Lee's Ferry); Carpenter, Stone, Breitenstein and their contemporaries thought they had an eighteen million acre-feet per year river. This is personal knowledge of Eric Kuhn from having attended the meeting.

445. STONE, *supra* note 78, at 17.

446. *Id.* A critical assumption for Stone's conclusion is the 7.5 million acre-feet per is available for use in the Upper Basin. It's a confusing statement. He makes the case for percentages because of uncertainties in the amount of water available, but then assumes 7.5 million acre-feet is available.

447. *Id.* at 18.

Article III has three subparagraphs: III(a) covers the apportionments to the states, III(b) covers what Stone referred to as "the principles upon which the apportionments were made," and III(c) states that no apportionment is made of any water the Upper Basin may be entitled to under Articles III(f) and III(g) of the Colorado River Compact.[448]

Article IV is the curtailment provision.[449] It defines the specific obligation of each Upper Division State in the event the flows at Lee Ferry are depleted below their joint and several compact obligations.[450] The article was drafted by the Legal Committee and, except for formatting, was not changed.[451] Stone pointed to the provision in IV(c) that requires the Commission to deduct uses from water under rights perfected prior to November 24, 1922, from the calculation of how much each state must curtail, adding "the value of this provision to Western Slope users must be recognized."[452] Stone did not address this in his report, but it's obvious from the Commission discussions that the UCRC only sets the quantity and timing of a curtailment.[453] How such a curtailment is administered within a state is up to the individual state.[454] It's also been pointed out that once the UCRC sets the quantity and timing of a curtailment, it has no power to compel or force a reluctant state to implement a curtailment.[455]

Article V deals with the charging of reservoir evaporation losses.[456] Stone called attention to the serious dispute in the Lower Basin over this issue and that the Upper Basin compact negotiators wanted to avoid any such dispute.[457] The concept is straightforward: evaporation from reservoirs used in whole or in part to assist the Upper Division States in meeting Lee Ferry flow obligations are charged to each state in proportion to their use.[458] All other reservoir evaporation is charged to the state in which the water is used.[459]

Article VI establishes the method for measuring the consumptive use of water.[460] Stone wrote, "there is no purpose in making an apportionment of

448. These are the Colorado River Compact provisions that provide for an apportionment of surplus water. At the time the compact was signed, it was anticipated there would be a surplus over the sixteen million acre-feet apportioned under Articles III(a) and III(b) of 4.5–5 million acre-feet per year. The water that remained after first deducting water provided to Mexico would be available for apportionment after October 1st, 1963. By 1948, few of the Upper Basin Compact negotiators believed there would be any such water available, but in case there was, it would have to be divided by a new or amended compact.

449. STONE, *supra* note 78, at 18–19.

450. *Id.* at 19.

451. OFFICIAL RECORD, *supra* note 1, vol. II, Eighth Meeting, at 132.

452. STONE, *supra* note 78, at 19.

453. *See generally* Charles Meyers, *The Colorado River*, 19 STAN. L. REV. 1, 35 (1966).

454. *See id.* at 32–33. The Wyoming negotiators suggested that all exports (transmountain diversions) be shut off before any in-basin uses are curtailed, but Colorado objected.

455. OFFICIAL RECORD, *supra* note 1, vol. II, Sixth Meeting, at 36–37. While this is a potential problem, in theory the decision to implement a curtailment could be made by a 4-1 vote of the UCRC. In practice, however, such a decision would likely have to be a unanimous decision.

456. STONE, *supra* note 78, at 19–20.

457. *Id.* at 19.

458. *Id.*

459. *Id.* The concept was simple, but there are complications such as a reservoir built in one state but serves uses in two states, for example the Savory-Pothook Project.

460. *Id.* at 20–21.

consumptive use unless the procedure for measurement is defined."[461] He describes the two conflicting theories within the basin, "under one of these theories the use is measured by totaling diversions from the river and subtracting therefrom the return flows.[462] Under the second theory the quantity of consumptive use is determined by computing the extent to which man-made uses have depleted the stream flows at designated points."[463]

Stone concluded that the first theory is "utterly unworkable for Colorado" because of the burden of installing measuring devices on thousands of ditch diversions.[464] He added that the Upper Basin Compact negotiators also considered the intent of the Colorado River Compact negotiators and concluded that their intent was to use the stream depletion theory.[465] The inflow-outflow method is described as an engineering procedure to determine consumptive use using rim stations.[466]

Article VII makes it clear that consumptive uses by agencies, instrumentalities, and "wards" of the United States are charged against the state in which they occur.[467] Here Stone emphasizes that under these Article Indian uses are charged against the state in which the use is made.[468]

Stone describes Article VIII, which creates and describes the powers of the Upper Colorado River Commission (UCRC) as an important article, noting that "it was deemed essential to set up an agency authorized to administer the Compact."[469] The UCRC has five members, one from each Upper Division State and one representing the United States.[470] It is funded by the four states based on each's percentage apportionment.[471] Creating and then deciding to fully fund the UCRC to provide permanent staff were bold and progressive steps for the late 1940s. The UCRC has been most effective at keeping the Upper Division States unified, representing these states on issues related to the development of Upper Basin water, the operation of the major federal projects, and relations with the Lower Division States.[472]

Article IX is a lengthy provision that allows facilities in one state to "divert, store, convey and regulate water both for use in another state and for use in satisfying the Lee Ferry delivery obligations."[473] The article may have been challenging to

461. *Id.* at 20.

462. *Id.*

463. *Id.*

464. *Id.*

465. *Id.*

466. *Id.* Contrary to some views, the inflow-outflow method is NOT an alternative to Blaney-Criddle or Penman-Monteith or eeMETRIC; it's a statistical method of using those methodologies to quickly estimate annual consumptive use in a river basin based on the use of index stations.

467. *Id.* at 21.

468. *Id.*

469. *Id.*

470. *Id.*

471. *Id.*

472. OFFICIAL RECORD, *supra* note 1, vol. I., Foreword. One of the purposes for the UCRC was to "expedite the development of the Upper Basin."

473. STONE, *supra* note 78, at 22.

write but so far as the authors can determine, has not been controversial since the approval of the compact.[474]

Articles X-XIV dealt with tributary issues. Stone writes, "The Commission deemed it wise to settle the rights of the States on interstate tributaries of the Upper Colorado rather than have those tributaries the subject of interstate compacts."[475] Article X recognized the continuing validity of the 1922 La Plata River Compact and made it clear that uses under that compact would be charged to the state in which the use is made.[476]

Stone briefly describes the remaining provisions. Article XV provides language similar to Article IV of the Colorado River Compact.[477] Power generation is subservient to agriculture and domestic uses, and the Upper Basin Compact does not interfere with the ability of each state to regulate water use within its boundaries.[478]

Article XVI makes it clear that "use it or lose it" does not apply to Upper Basin Compact apportionments.[479] Article XVII specifies that imported water is not covered by the compact, and under Article XVIII, Arizona, New Mexico, and Utah preserve their rights as Lower Basin States under the Colorado River Compact.[480]

Article XIX recognizes the rights of the United States, including its obligations to Indians and its obligations to Mexico under the 1944 Treaty.[481]

Article XX requires unanimous approval to terminate the compact, and Article XXI requires ratification by the five signatory states and Congress before it becomes effective.[482]

THE COMPACT WAS RATIFIED WITH LITTLE RESISTANCE

Support of the Compact in the Upper Basin was broad and enthusiastic. "Signing of Upper Basin Compact Said to Mark New Epoch for the West," headlined the Times-Independent in Moab, Utah.[483] "With the signing of the Upper Colorado river basin states compact, Utah has reached the threshold of a vast industrial and agricultural development," Utah's Vernal Express told its readers.[484]

There were a few bumps in the road. The CWCB's member from the Colorado River sub-basin, Silmon Smith, quit in protest to the state's 51.75%

474. *Id.* As described in his report, one of Stone's concerns with this article is that in 1948 Colorado had a state statute making it illegal to divert water in Colorado for use in another state. Approval of the compact would override this law in the Colorado River Basin.

475. *Id.* at 23.

476. *Id.*

477. *Id.* at 24.

478. *Id.*

479. *Id.* at 25.

480. *Id.*

481. *Id.*

482. *Id.* at 26.

483. *Signing of Upper Basin Compact Said to Mark New Epoch for the West*, MOAB TIMES-INDEPENDENT, Oct. 14, 1948.

484. *Water Delegates Urge Okey* [sic] *of Colorado Pact*, VERNAL EXPRESS, Oct. 27, 1948, at 15.

apportionment, but his actions had no impact on its approval.[485] In October of 1948, Colorado Govenor Lee Knous charged that "private interests in California" were trying to undercut the agreement by fomenting opposition on Colorado's West Slope.[486] The California interests "would like to have this compact defeated, so that their development in the lower basin could go on while we bickered but did not build," Knous said.[487] California Govenor Earl Warren denied the charge.[488] Warren, then campaigning for vice president, went out of his way to stop off in Western Colorado while on a campaign trip to try to mend the rift to try to make clear that the agreement had the support of both California and the Republican party.[489] But despite the bumps, the Upper Basin Compact was quickly ratified by all five states.[490]

Congressional approval was not as smooth. The Senate decided no hearings were necessary, but in the House of Representatives, members of California's powerful delegation asked for hearings.[491] The members from Southern California had questions about Article VI, the method for measuring consumptive use.[492]

Despite early concerns about a showdown with California, Congress approved the Upper Basin Compact without incident. The Subcommittee on Irrigation and Reclamation of the Committee on Public Lands held hearings on approval of the Upper Basin Compact from March 14-18, 1949.[493] The subcommittee was chaired by Arizona's John Murdock.[494] Ten of the eleven members of the House from the Upper Basin States had introduced identical resolutions supporting approval.[495] The California committee members were led by Ranking member Richard Welch from Southern California and Claire Engle, a senior Democrat from the Central Valley.[496] Approval of the compact was never really in doubt, but subcommittee members wanted to avoid a potential floor fight where amendments might be introduced that could condition Congress's approval.[497]

In many ways, the hearings were a continuation of SJR-145 hearings from the year before, with the primary focus on how to define and measure Colorado River Compact apportionments.[498] California's primary concern was that Arizona might try to use Congressional approval of the compact as a Congressional endorsement of

485. *See generally* GEORGE SIBLEY, WATER WRANGLERS, THE 75-YEAR HISTORY OF THE COLORADO RIVER DISTRICT: A STORY ABOUT THE EMBATTLED COLORADO RIVER AND GROWTH OF THE WEST (2012).

486. *Knous Charges Californians Try to Defeat Colorado Pact*, BAKERSFIELD CALIFORNIAN, Oct. 18, 1948.

487. *Id.*

488. *Id.*

489. *Upper Basin Pact Okayed By Warren*, THE ARIZONA REPUBLIC, Oct. 23, 1948, at 4.

490. OFFICIAL RECORD, *supra* note 1, vol. II, Tenth Meeting, at 10–11. Arizona, January 20, 1949; Colorado, February 2, 1949; New Mexico, February 2, 1949; Utah, January 31, 1949; Wyoming, January 25, 1949.

491. OFFICIAL RECORD, *supra* note 1, vol. II, Tenth Meeting, at 5–6.

492. *Id.*

493. *See generally* Upper Basin Compact hearings, *supra* note 434.

494. *Id.* at II.

495. OFFICIAL RECORD, *supra* note 1, vol. II, Tenth Meeting, at 7.

496. *See* Upper Basin Compact hearings, *supra* note 434, at 11.

497. OFFICIAL RECORD, *supra* note 1, vol. II, Tenth Meeting, at 6.

498. *See* Upper Basin Compact hearings, *supra* note 434, at 133.

its stream depletion theory.[499] This statement is supported by statements made in Commissioner Carson's report. Under the analysis of Article VI, he writes, "This of course is in complete accord with Arizona's construction of the Colorado River compact and it is believed will be helpful to Arizona in opposing California's arguments on the Gila River."[500] California, to protect the water supply for its 962,000 acre-feet of Hoover Dam contract water over and above its basic 4.4 million acre-feet apportionment, was an advocate of the diversions minus return flows theory.[501]

Stone, Tipton, and Breitenstein were the primary presenters supporting the Upper Basin Compact. Representatives of the other four states provided support.[502] California's case was likely quarterbacked by Northcut Ely, special counsel for the Colorado River Board of California, but no one from California testified before the subcommittee.[503] The Colorado trio answered a list of specific questions prepared by Congressman Engle.[504] They also emphasized that the Upper Basin Compact was subject to and could not violate the Colorado River Compact and that there was no attempt to use the Upper Basin Compact to interpret or influence the disputed provisions of the Colorado River Compact.[505]

After representatives of the Upper Division States agreed with committee report language that approval of the Upper Basin Compact did not commit the United States to any interpretation of the Colorado River Compact, the subcommittee unanimously approved the compact. Congress then approved the compact, without objection, in March 1949.[506]

The Upper Colorado River Basin Compact became effective with the signature of President Harry Truman on April 6, 1949.[507] Pictures of the ceremonial bill signing show Truman surrounded by senators from the Upper Basin states.[508] But it was enough of a formality that members of Congress from the Upper Basin had already begun lining up the first round of spending bills to begin work on the water development projects enabled by the agreement.[509]

The Upper Basin Compact Commission adjourned sine die at its 11th meeting on August 5, 1949, at 11:40 AM. At 11:45 AM, Chairman Bashore called to order the first meeting of the UCRC.[510]

499. *Id.*

500. *Id.*

501. KUHN & FLECK, *supra* note 16, ch. 12.

502. *See* Upper Basin Compact hearings, *supra* note 434, at 18–110.

503. This is speculation based on the testimony by Ely in other related hearings.

504. *See* Upper Basin Compact hearings, *supra* note 434, at 56–64.

505. *Id.* at 26–27.

506. *Id.* at 165–66.

507. OFFICIAL RECORD, *supra* note 1, vol. I, Foreword.

508. *Truman Signing Bill for Upper Colorado River Basin Compact*, HARRY S. TRUMAN LIBR. MUSEUM, https://www.trumanlibrary.gov/photograph-records/73-3018 (last visited Aug. 9, 2024).

509. *Upper States Ready To Press for New Reclamation Work*, GRAND JUNCTION DAILY SENTINEL, Mar. 24, 1949, at 1.

510. OFFICIAL RECORD, *supra* note 1, vol. II, Eleventh Meeting, at 19.

CONCLUSION

Because of the impacts of anthropogenic climate change and changes in societal values, the river the Upper Basin Compact negotiators dealt with in 1948 no longer exists. The average natural flow of the Colorado River at Lee Ferry is likely far lower than the "conservative" 15.7 million acre-feet per year assumption made by the Engineering Committee in 1948.[511] The 21st Century average natural flow average is about 12.4 million acre-feet per year.[512] While there is considerable uncertainty, much of the published climate science is pointing to an even drier future. The biggest uncertainty facing river flows is the impact of climate change on future precipitation in the Upper Basin's higher elevation watersheds. There is little dispute that watershed temperatures will continue to rise and that for the same precipitation levels, rising temperatures will reduce stream flows. What is not clear, is if increasing precipitation will offset the loss of flow caused by rising temperatures. Based on the post-2000 hydrology, basin-wide uses have exceeded the available supply by about 1.5 million acre-feet per year.[513]

Additionally, tribal water rights that remained unaddressed in both the 1922 Compact and the Upper Basin Compact are now being adjudicated and settled en masse.[514] Currently, 22 Tribes in the basin have recognized rights to 3.2 MAF of Colorado River system water.[515] There are more unsettled tribal water rights claims in the process of being determined,[516] which will further allocate the already over-allocated Colorado River. Many Tribes still required infrastructure in order to make use of their determined water rights, which must be considered in future Colorado River water management policy.

A drier future has huge potential consequences for water use in the Upper Basin under the Upper Basin Compact and its parent Colorado River Compact. The Upper Basin Compact exists in a different sociopolitical space in 2025 than it did when it was ratified in 1949. A careful and nuanced understanding of the Upper Basin Compact is necessary for interpreting the Law of the River in a way that is both faithful to the intentions of the Compact and cognizant of the constraints of subsequent legislation and current hydrology. Furthermore, in policymaking today, it is imperative to recognize why we lack a basin-wide definition of beneficial consumptive use. It is our hope that in creating this resource, current decisionmakers and future scholars can better understand the constraints and considerations present

511. *Id.* vol. III, at 3.

512. *See generally Colorado River Basin Natural Flow and Salt Data*, U.S. BUREAU OF RECLAMATION, https://www.usbr.gov/lc/region/g4000/NaturalFlow/provisional.html (last visited May 13, 2024).

513. The drawdown of the total storage in Lakes Mead and Powell from October 1, 1999, to October 1, 2023, was approximately 1.5 million acre-feet per year. This the authors' estimate based on the reduction in total storage in Lakes Mead and Powell (1999–2023) based on *Lake Powell Hydrodata*, U.S. BUREAU OF RECLAMATION, https://usbr.gov/uc/water/hydrodata/reservoir_data/919/dashboard.html (last visited May 15, 2024).

514. *Tribes*, WATER & TRIBES INITIATIVE, https://www.waterandtribes.org/tribes (last visited May 13, 2024).

515. *Id.*

516. *Id.*

in the development of the Upper Basin Compact, with the goal of adapting it to a 21st Century Colorado River reality.