

COLLABORATIVE SOLUTIONS TO COLORADO RIVER WATER SHORTAGES: THE BASIN STATES' PROPOSAL AND BEYOND

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The Colorado River supplies drinking water for over twenty-seven million people and irrigation water for over 3.5 million acres in seven western states.¹ This vital resource has been gripped since 2000 by the worst drought in over a century of recordkeeping.² The two main reservoirs on the river, Lake Powell and Lake Mead, began the drought ninety-five percent full.³ Five years later, they were only forty-six percent full.⁴ In 2005, the Secretary of the Interior (“Secretary”) responded to the alarming decline in storage by directing the Bureau of Reclamation (“Reclamation”) to develop guidelines for coordinating its operations of Lake Powell and Lake Mead under low reservoir conditions.⁵

Reclamation began its task by inviting input from the public, specifically including the seven river basin states.⁶ The seven states soon submitted a pre-

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¹ U.S. DEP’T OF THE INTERIOR, RECORD OF DECISION—COLORADO RIVER INTERIM GUIDELINES FOR LOWER BASIN SHORTAGES AND THE COORDINATED OPERATIONS FOR LAKE POWELL AND LAKE MEAD 1 (Dec. 13, 2007), *available at* <http://www.usbr.gov/lc/region/programs/strategies/RecordofDecision.pdf> [hereinafter ROD—COLORADO RIVER INTERIM GUIDELINES].

² NAT’L RESEARCH COUNCIL OF THE NAT’L ACADEMIES, COLORADO RIVER BASIN WATER MANAGEMENT: EVALUATING AND ADJUSTING TO HYDROCLIMATIC VARIABILITY 1 (2007) [hereinafter COLORADO RIVER BASIN WATER MANAGEMENT]; Colorado River Reservoir Operations: Development of Lower Basin Shortage Guidelines and Coordinated Management Strategies for Lake Powell and Lake Mead, Particularly Under Low Reservoir Conditions, 71 Fed. Reg. 16,341, 16,343 (Mar. 31, 2006).

³ Colorado River Reservoir Operations: Development of Lower Basin Shortage Guidelines and Coordinated Management Strategies for Lake Powell and Lake Mead, Particularly Under Low Reservoir Conditions, 71 Fed. Reg. at 16,343.

⁴ *Id.*

⁵ Colorado River Reservoir Operations: Development of Management Strategies for Lake Powell and Lake Mead Under Low Reservoir Conditions, 70 Fed. Reg. 34,794, 34,794 (June 15, 2005). The “Lower Basin” is a Colorado River Compact concept explained *infra* text accompanying notes 19-27.

⁶ Colorado River Reservoir Operations: Development of Management Strategies for Lake Powell and Lake Mead Under Low Reservoir Conditions, 70 Fed. Reg. at 34,795.

liminary proposal⁷ followed on April 30, 2007, by a revised proposal.⁸ The revised proposal consisted of an Agreement Concerning Colorado River Management and Operations signed by all seven states, Proposed Interim Guidelines for Colorado River Operations, and draft side agreements between certain basin states needed to implement the proposed interim guidelines.⁹

On December 13, 2007, after completing the environmental impact statement process,¹⁰ the Secretary issued interim guidelines, operative through 2026,¹¹ for Lower Basin¹² shortages and coordinated operation of Lake Powell and Lake Mead.¹³ The key operational elements of the Secretary's interim guidelines come from the basin states' April 30, 2007, proposed interim guidelines.¹⁴ The basin states' proposal clearly was the foundation of the Secretary's interim guidelines.

The basin states' collaboration in developing their proposal represents a remarkable achievement by parties that have not always gotten along regarding management of the Colorado River. In Part I, this Article examines why the collaboration succeeded. It describes the key elements of the Secretary's interim guidelines (which is to say, the key elements of the states' proposed interim guidelines), how the interim guidelines will change the operation of the river, and why the changes will make all seven states better off. The latter goes a long way, of course, toward explaining why the states were able to collaborate successfully. In Part II, the Article goes beyond the interim guidelines to consider water supply and demand conditions after the guidelines expire in 2026, and it advances strategies for promoting future state collaboration to

⁷ Letter to Sec'y of the Interior (Feb. 3, 2006), and accompanying documents, *in* 2 U.S. DEP'T OF THE INTERIOR, BUREAU OF RECLAMATION, FINAL ENVIRONMENTAL IMPACT STATEMENT: COLORADO RIVER INTERIM GUIDELINES FOR LOWER BASIN SHORTAGES AND COORDINATED OPERATIONS FOR LAKE POWELL AND LAKE MEAD app. J, § J.2 (2007), *available at* <http://www.usbr.gov/lc/region/programs/strategies/FEIS/index.html> [hereinafter FEIS—COLORADO RIVER INTERIM GUIDELINES].

⁸ The revised proposal includes the following: Letter to Sec'y of the Interior (Apr. 30, 2007) [hereinafter Letter to Sec'y]; Agreement Concerning Colorado River Management and Operations [hereinafter Agreement Concerning Colorado River]; Proposed Interim Guidelines for Colorado River Operations [hereinafter States' Proposed Interim Guidelines]; Lower Colorado River Basin Intentionally Created Surplus Forbearance Agreement [hereinafter Forbearance Agreement]; and Arizona-Nevada Shortage-Sharing Agreement [hereinafter Shortage-Sharing Agreement]. These documents are reproduced in 2 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, app. J, § J.1.

⁹ See 2 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, app. J, § J.1.

¹⁰ The final environment impact statement is dated October 2007. See 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at cover page.

¹¹ *Id.* at 1-1, 4-3. The reason for the interim status of the guidelines is “to gain valuable operating experience” that will “improve the basis for making additional future operation decisions.” *Id.* at 1-1.

¹² “Lower Basin” is a Colorado River Compact concept explained *infra* text accompanying notes 20-23.

¹³ ROD—COLORADO RIVER INTERIM GUIDELINES, *supra* note 1. Accompanying the interim guidelines are a Seven Basin States' Affirmation Statement, *available at* <http://www.usbr.gov/lc/region/programs/strategies/Affirmation.pdf>, and seven implementing agreements among Lower Basin states and major water contractors in them, *available at* <http://www.usbr.gov/lc/region/programs/strategies/documents.html>.

¹⁴ ROD—COLORADO RIVER INTERIM GUIDELINES, *supra* note 1, at 7; 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 2-17.

address looming water shortages for growing Lower Basin cities by reallocating water from agricultural to urban use.

I. THE NEW INTERIM GUIDELINES

The Secretary's new interim guidelines have four main components: (1) coordinated operation of Lake Powell and Lake Mead, (2) Lower Basin shortage guidelines, (3) modification and extension interim surplus guidelines adopted in 2001, and (4) creation and delivery of intentionally created surplus.¹⁵ The discussion below considers each of these components separately.

To facilitate the discussion, several preliminary points must be noted. First, the Colorado River basin has an international dimension. Although the basin lies mostly in the United States, about two percent of it extends into Mexico.¹⁶ A treaty between the United States and Mexico allots Mexico 1.5 million acre-feet ("maf")¹⁷ annually from the Colorado River.¹⁸

Second, the Colorado River Compact¹⁹ divides the basin in the United States into two parts called the Upper Basin and the Lower Basin²⁰ and apportions water between the two basins rather than among the individual states. The dividing line between the basins runs generally west-northwesterly and crosses the Colorado River at Lee Ferry in northern Arizona.²¹ The Upper Basin includes the parts of Wyoming, Colorado, Utah, New Mexico, and Arizona that drain into the Colorado River or its tributaries above Lee Ferry.²² The Lower Basin includes the parts of Utah, New Mexico, Arizona, Nevada, and California that drain into the Colorado River or its tributaries below Lee Ferry.²³ Article III(a) of the compact apportions to each basin in perpetuity the exclusive beneficial consumptive use of 7.5 maf,²⁴ and article III(b) allows the Lower Basin an additional 1.0 maf. So the apportionments for the two basins total sixteen maf.²⁵

¹⁵ ROD—COLORADO RIVER INTERIM GUIDELINES, *supra* note 1, at 4; 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 2-17 to -19.

¹⁶ DALE PONTIUS, REPORT TO THE WESTERN WATER POLICY REVIEW ADVISORY COMM'N, COLORADO RIVER BASIN STUDY 2-3 (1997).

¹⁷ One acre-foot of water will cover an acre of land to a depth of one foot. It is 325,851 gallons. 6 WATERS AND WATER RIGHTS 1220 (Robert E. Beck ed., repl. vol. 2005).

¹⁸ Treaty on the Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, U.S.-Mex., arts. 10(a), 11, Feb. 3, 1944, 59 Stat. 1219, 1237-38 [hereinafter Treaty]. The Mexican allotment increases to 1.7 maf if surplus is available above water uses in the United States. *Id.* art. 10(b). The Mexican allotment is also subject to pro rata reduction "[i]n the event of extraordinary drought or serious accident to the irrigation system in the United States . . . making it difficult for the United States to deliver the guaranteed quantity." *Id.*

¹⁹ Colorado River Compact of 1922, 70 CONG. REC. 324 (1928).

²⁰ *Id.* arts. II(f)-(g).

²¹ *Id.*; 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 1-10 to -11.

²² Colorado River Compact art. II(f).

²³ *Id.* art. II(g). The Upper and Lower Basins also include all parts of the seven states outside the drainage area of the river system "which are now or shall hereafter be beneficially served by waters diverted from the System." *Id.* arts. II(f)-(g).

²⁴ *Id.* art. III(a).

²⁵ *Id.* art. III(b).

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Third, the compact divides the seven states into two groups called the Upper Division and the Lower Division states.²⁶ The Lower Division states are the three with direct riparian access to the Colorado River below Lee Ferry, namely, California, Arizona, and Nevada.²⁷ The Upper Division states are the other four states, namely, Wyoming, Colorado, Utah, and New Mexico.²⁸ The compact imposes several obligations on the Upper Division states to deliver water at Lee Ferry. Article III(c) says the water for Mexico shall come first from surplus above the sixteen maf apportioned to the two basins, and absent sufficient surplus, the two basins shall bear the deficiency equally, with the Upper Division states obligated to deliver enough water at Lee Ferry to supply half the deficiency.²⁹ In addition to water for Mexico, article III(d) obligates the Upper Division states to deliver at Lee Ferry an aggregate of seventy-five maf every ten consecutive years for the Lower Division states.³⁰ Finally, article III(e) prohibits the Upper Division states from withholding water they cannot reasonably put to domestic or agricultural use if the Lower Division states can reasonably use it for those purposes.³¹

A. *Coordinated Operation of Lake Powell and Lake Mead*

1. *Reservoir Operations Prior to the New Guidelines*

The natural flow of the Colorado River, unaltered by human activities, would fluctuate widely from year to year.³² To avoid flooding and to even out the water supply for beneficial use, Reclamation operates a number of reservoirs on the Colorado River and its tributaries having a total storage capacity of approximately sixty maf.³³ Lake Powell, with a capacity of about twenty-four maf,³⁴ is located on the Colorado River approximately sixteen miles above Lee Ferry.³⁵ Lake Mead, with a capacity of about twenty-six maf, is located on the Colorado River approximately 275 miles below Lee Ferry.³⁶ Lake Powell is the lowest (southernmost) reservoir in the Upper Basin. Lake Mead is the highest (northernmost) reservoir in the Lower Basin.

The Colorado River Basin Project Act of 1968 (“CRBPA”)³⁷ requires the Secretary, in consultation with the basin states, to adopt long-range operating criteria for basin reservoirs. With more than ninety percent of the natural flow

²⁶ *Id.* arts. II(c)-(d).

²⁷ *Id.* art. II(d).

²⁸ *Id.* art. II(c).

²⁹ *Id.* art. III(c).

³⁰ *Id.* art. III(d).

³¹ *Id.* art. III(e). This provision is affected by section 602(a) of the Colorado River Basin Project Act of 1968, discussed *infra* text accompanying notes 37-39.

³² See 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 3-15 to -16 (the estimated annual natural flow at Lee Ferry has ranged from 5.4 to 25.4 maf over the last century).

³³ *Id.* at 1-19, 3-15 to -16.

³⁴ *Id.* at 1-19.

³⁵ *Id.* at 1-11.

³⁶ *Arizona v. California*, 373 U.S. 546, 590 (1963).

³⁷ Colorado River Basin Project Act of 1968, Pub. L. No. 90-537, § 602, 82 Stat. 885, 900 (codified at 43 U.S.C. § 1552 (2000)).

in the lower Colorado River originating in the Upper Division states,³⁸ the amount of water that Reclamation releases from Lake Powell largely determines the supply available from the river for the Lower Division states. Section 602(a) of the CRBPA requires the long-range operating criteria to observe the following order of priority for storing water in Upper Basin reservoirs and releasing water from Lake Powell:

- (1) releases of water to meet the Upper Division's duty under article III(c) of the Colorado River Compact to supply half the deficiency, if a deficiency exists, to meet the Mexican water delivery obligation,
- (2) releases of water to comply with the Upper Division's duty under article III(d) of the compact to deliver seventy-five maf at Lee Ferry every ten consecutive years, and
- (3) storage of water reasonably necessary to assure that the Upper Division's required deliveries to Mexico and Lee Ferry can be made without impairing Upper Basin consumptive use of up to 7.5 maf under article III(a) of the compact; and releases of water not needed in storage for that purpose to (i) supply additional Lower Division reasonable domestic and agricultural uses above 7.5 maf, as authorized by article III(e) of the compact, if the active storage in Lake Powell is not less than that in Lake Mead, (ii) equalize the active storage in Lake Powell and Lake Mead, and (iii) avoid anticipated flood spills from Lake Powell.³⁹

The amount of water needed in storage in Upper Basin reservoirs to assure that the required deliveries to Mexico and Lee Ferry will not impair Upper Basin consumptive use is called 602(a) storage.⁴⁰

Under priority (3) above, Reclamation can release water from Lake Powell to equalize storage with Lake Mead only if Upper Basin storage exceeds the 602(a) amount.⁴¹ To implement this statutory limitation, Reclamation issued an interim guideline that permits equalization releases only if the water level in Lake Powell equals or exceeds 3630 feet above sea level—which is equivalent to about 14.85 maf of storage.⁴²

In a year when no equalization releases can be made because Lake Powell is below 3630 feet, the long-range operating criteria state that the “objective shall be to maintain a minimum release of water from Lake Powell of 8.23 million acre-feet for that year.”⁴³ The release of 8.23 maf when combined with

³⁸ See 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 3-15.

³⁹ Colorado River Basin Project Act § 602(a), 43 U.S.C. § 1552(a).

⁴⁰ Notice of Adoption of an Interim 602(a) Storage Guideline for Management of the Colorado River, 69 Fed. Reg. 28,945, 28,946 (May 19, 2004) [hereinafter Storage Guideline].

⁴¹ Another limitation, implicit in the concept of storage equalization, is that the active storage in Lake Powell must exceed the active storage in Lake Mead for Reclamation to make an equalization release.

⁴² Storage Guideline, *supra* note 40, at 28,946; 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 1-22, 2-6.

⁴³ See Review of Existing Coordinated Long-Range Operating Criteria for Colorado River Reservoirs, 70 Fed. Reg. 15,873, 15,875, art. II(2) (Mar. 29, 2005) [hereinafter Long-Range Operating Criteria].

average annual tributary inflow between Lake Powell and Lee Ferry of 0.02 maf⁴⁴ will produce on average 8.25 maf at Lee Ferry.⁴⁵

The period from 1995 through 1999 was unusually wet, and the Colorado River flow entering the Lower Basin at Lee Ferry averaged about twelve maf per year.⁴⁶ Then came the multiyear drought that continues to date except for a respite in 2005. The drought lowered the water level in Lake Powell below 3630 feet,⁴⁷ triggering the provision in the long-range operating criteria regarding a minimum release of 8.23 maf. In mid-2005, the Secretary interpreted the provision not to mandate the release of 8.23 maf but only to establish a goal she could adjust downward to protect Upper Basin consumptive use and power generation at Lake Powell.⁴⁸ The Secretary went on to conclude, however, that no downward adjustment was then warranted because inflows to Lake Powell were forecasted to be above average for 2005.⁴⁹

2. *The New Interim Reservoir Coordination Guidelines*

The new interim reservoir coordination guidelines require a higher Lake Powell water level for equalization releases. The new level is 3636 feet in 2008 and increases annually thereafter to 3666 feet by 2026.⁵⁰ In years when Lake Powell is too low for equalization releases, the proposed guidelines link the amount to be released to the relative water levels in Lake Powell and Lake Mead. Depending on those levels, the releases authorized range from 7.0 to 9.5 maf.⁵¹ Based on natural flows in the river system from 1906 through 2005,⁵²

⁴⁴ 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 1-11, 3-19 (inflow from the Paria River).

⁴⁵ An Upper Basin delivery at Lee Ferry of 8.25 maf equates with 0.75 maf for Mexico and 7.5 maf for Lower Basin consumptive use from the mainstream—if one disregards evaporation losses. But because the two basins disagree about the circumstances under which the Upper Basin must share half of the Mexican delivery obligation, *see infra* text accompanying notes 155-62, the long-range operating criteria expressly disclaim any intent to interpret or implement the Colorado River Compact when they call for a release of 8.23 maf from Lake Powell. *See* Long-Range Operating Criteria, *supra* note 43, at 15,875, art. II(5).

⁴⁶ *See* Long-Range Operating Criteria, *supra* note 43, at 15,881, Response to Comment No. 40.

⁴⁷ *See id.* 15,880-81, Comment No. 39 and Response (8.8 maf of storage in Lake Powell).

⁴⁸ *Id.*, Responses to Comment Nos. 34, 40, 41; Letter from Gale A. Norton, Sec'y of the Interior, to Jon Huntsman, Jr., Governor of Utah, et al. (May 2, 2005), *available at* <http://www.usbr.gov/lc/region/programs/strategies/scopingreport/Appendices/AppA.pdf>. Arizona soon objected that the Secretary's 602(a) storage algorithm protected Lake Powell recreation and power generation at the potential expense of Lower Division domestic and agricultural uses contrary to article IV(b) of the Colorado River Compact, which gives a priority to domestic and agricultural uses. *See* W. Patrick Schiffer et al., *From a Colorado River Compact Challenge to the Next Era of Cooperation Among the Seven Basin States*, 49 ARIZ. L. REV. 217, 226-27 & n.53 (2007).

⁴⁹ Letter from Gale A. Norton, *supra* note 48; *see also* Schiffer et al., *supra* note 48, at 229-30.

⁵⁰ ROD—COLORADO RIVER INTERIM GUIDELINES, *supra* note 1, § 6.A, at 51 (mirroring States' Proposed Interim Guidelines, *supra* note 8, § 3.C, at J-29); *see* 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 2-9 to -10. **R**

⁵¹ ROD—COLORADO RIVER INTERIM GUIDELINES, *supra* note 1, §§ 6.B-D, at 52-53 (mirroring States' Proposed Interim Guidelines, *supra* note 8, § 3.C, at J-30); 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 2-10 to -11. **R**

⁵² 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 4-4. **R**

Reclamation estimates the probability under the new guidelines of an annual release from Lake Powell of less than 8.23 maf between 2008 and 2026 to be about ten percent.⁵³ By comparison, the probability of that happening under the nebulous previous policy was perhaps less than one-third of one percent⁵⁴

Although the detailed water level requirements for releases from Lake Powell in the new guidelines may benefit all the basin states by providing greater predictability of releases, the Upper Division states should be the main beneficiaries of the higher required water levels. Reduced equalization releases and minimum releases from Lake Powell will leave more water in storage there, and this in turn will decrease the risk that a future multiyear drought will require the Upper Division states to curtail their consumptive water uses to comply with their article III(d) compact duty to deliver seventy-five maf at Lee Ferry every ten consecutive years.⁵⁵

B. Lower Basin Shortage Guidelines

1. Shortage Rules Prior to the New Interim Guidelines

The Boulder Canyon Project Act of 1928 (“BCPA”)⁵⁶ authorized the Secretary to contract for the storage and delivery of Colorado River water for power generation and consumptive use in the Lower Basin.⁵⁷ The Secretary has contracted to deliver water for 8.462 maf of consumptive use annually. The breakdown by state is California 5.362 maf, Arizona 2.8 maf, and Nevada 0.3 maf.⁵⁸ The California contracts are subject, however, to the limitation that California can consume no more than 4.4 maf of the first 7.5 maf available plus not more than half of any surplus above 7.5 maf.⁵⁹

In 1963, the United States Supreme Court held in *Arizona v. California*⁶⁰ that the BCPA and the Secretary’s contracts apportioned the mainstream Colorado River (but not tributary waters) in the Lower Basin among the three Lower Division states.⁶¹ The Court’s decree provides that if the supply available for consumptive use in a given year is

- 7.5 maf,
California gets 4.4 maf
Arizona gets 2.8 maf
Nevada gets 0.3 maf
- more than 7.5 maf,
California gets 50% of the surplus

⁵³ See *id.* at 4-40 tbl.4.3-11.

⁵⁴ See *id.*

⁵⁵ William Hasencamp, *Colorado River Agreement & Southern California Water*, WATER REP., May 15, 2007, at 1, 6.

⁵⁶ Boulder Canyon Project Act of 1928, Pub. L. No. 642, 45 Stat. 1057 (codified at 43 U.S.C. §§ 617-617t (2000)).

⁵⁷ See Boulder Canyon Project Act § 5, 43 U.S.C. § 617d.

⁵⁸ *Arizona v. California*, 373 U.S. 546, 562 (1963).

⁵⁹ See Boulder Canyon Project Act § 4, 43 U.S.C. § 617c; California Limitation Act, 1929 Cal. Stat. 38-39.

⁶⁰ *Arizona*, 373 U.S. 546.

⁶¹ *Id.* at 564-65.

Arizona gets 46% of the surplus

Nevada gets 4% of the surplus

- less than 7.5 maf,

Water rights predating the BCPA must be supplied first regardless of state lines, and the Secretary can exercise reasonable discretion in distributing any remaining water, except that California cannot get more than 4.4 maf.⁶²

In 1968, the CRBPA limited the Secretary's discretion in distributing water when less than 7.5 maf is available for consumptive use. The CRBPA authorized construction of the Central Arizona Project ("CAP") to transport up to 1.7 maf of Arizona's 2.8 maf annual apportionment from the Colorado River to central Arizona for consumptive use.⁶³ But the CRBPA provides that when less than 7.5 maf is available, Arizona's right to CAP water shall be subordinate to California's right to consume 4.4 maf.⁶⁴ This means all CAP users must be shut off before California users suffer any supply reduction. The Act also states Nevada shall not have to bear a greater share of any shortage than it would without the special protection for California.⁶⁵

Reclamation calls the three annual water supply situations in the *Arizona v. California* decree (7.5 maf, more than that, and less than that) normal, surplus, and shortage conditions.⁶⁶ The long-range operating criteria require the Secretary to issue an annual operating plan that, among other things, declares which water supply condition will be operative for the year.⁶⁷ The criteria provide only vague guidance, however, about how the Secretary should make that determination.⁶⁸ To date the Secretary has never declared a shortage condition, so there is no operating experience regarding shortages.⁶⁹

2. *The New Interim Shortage Guidelines*

The new guidelines call for stepped Secretarial shortage determinations of 333,000, 417,000, and 500,000 acre-feet, triggered at three specified decreasing water levels in Lake Mead: 1075, 1050, and 1025 feet above sea level, respec-

⁶² *Arizona v. California*, 126 S. Ct. 1543, 1546 (2006) (Consolidated Decree art. II(B)). The Consolidated Decree merges the original decree, 376 U.S. 340 (1964), with various amended and supplemental decrees, 383 U.S. 268 (1966); 439 U.S. 419 (1979); 466 U.S. 144 (1984); 531 U.S. 1 (2000). The decree provision regarding Secretarial discretion if the supply is less than 7.5 maf refers to the Court's opinion, which states in pertinent part: "While the Secretary must follow the standards set out in the [BCPA], he nevertheless is free to choose among the recognized methods of apportionment or to devise reasonable methods of his own." 373 U.S. at 593.

⁶³ Colorado River Basin Project Act § 301(b), 43 U.S.C. § 1521(b) (2000); 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 3-39.

⁶⁴ Colorado River Basin Project Act § 301(b), 43 U.S.C. § 1521(b).

⁶⁵ *Id.*

⁶⁶ Long-Range Operating Criteria, *supra* note 43, at 15,875, art. III(3); 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 1-22 to -23.

⁶⁷ Long-Range Operating Criteria, *supra* note 43, at 15,874, art. I.

⁶⁸ *See id.* at 15,875, art. III(3) (listing factors to be weighed); 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 2-3 ("no specific guidance").

⁶⁹ 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 2-3.

tively.⁷⁰ If Lake Mead is projected to drop below 1000 feet, the guidelines call for the Secretary to consult with the seven basin states about possible further shortage measures consistent with the law of the river.⁷¹

The treaty allotting Mexico 1.5 maf annually from the Colorado River provides for pro rata reduction if “extraordinary drought or serious accident to the irrigation system in the United States . . . mak[es] it difficult . . . to deliver” that much water to Mexico.⁷² The basin states’ agreement urges the United States to invoke this proviso to reduce deliveries to Mexico during Secretarial shortage determinations, so that the corresponding Mexican reductions associated with the three stepped shortages in the Lower Basin would be 67,000, 83,000, and 100,000 acre-feet.⁷³ The United States contemplates conducting appropriate discussions with Mexico about this.⁷⁴

Consistent with the CRBPA, the new interim shortage guidelines also call for Arizona and Nevada to share the entire burden of the three stepped reductions, with none of the shortage borne by California.⁷⁵ A side agreement between Arizona and Nevada allocates nearly all of the three reductions to Arizona, e.g., if the shortage is 500,000 acre-feet, Arizona must bear 480,000 acre-feet of it.⁷⁶

If the United States implements the basin states’ proposal for Mexico to share in shortages, the main beneficiary will be Arizona because of its shortage vulnerability regarding CAP water. Nevada would benefit but to a lesser extent. California would benefit from Mexican shortage sharing only if a Lower Basin shortage were to exceed approximately 1.7 maf in a year and shortage sharing above that level were to apply to all three Lower Division states.⁷⁷

Arizona has been preparing for possible shortages since 1996 by storing CAP water not currently needed for consumptive use in groundwater basins in the state.⁷⁸ Generally, the banked water should enable Arizona to cope with the stepped shortages in the new interim shortage guidelines⁷⁹ (although Arizona has expressed concern about the additional costs agricultural users will incur to extract the banked water and about the risk that some productive agri-

⁷⁰ ROD—COLORADO RIVER INTERIM GUIDELINES, *supra* note 1, § 2.D.1, at 36-37 (substantively mirroring States’ Proposed Interim Guidelines, *supra* note 8, § 4.D.1, at J-33); 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 2-18.

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⁷¹ ROD—COLORADO RIVER INTERIM GUIDELINES, *supra* note 1, § 7.B.4, at 55 (substantively mirroring States’ Proposed Interim Guidelines, *supra* note 8, § 4.D.3, at J-33 to -34).

⁷² Treaty, *supra* note 18, art. 10(b).

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⁷³ See Agreement Concerning Colorado River, *supra* note 8, J-18 to -19; Letter to Sec’y, *supra* note 8, at J-3.

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⁷⁴ See ROD—COLORADO RIVER INTERIM GUIDELINES, *supra* note 1, § 7.B.3, at 54; 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 2-18 n.7.

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⁷⁵ See ROD—COLORADO RIVER INTERIM GUIDELINES, *supra* note 1, § 2.D.1, at 36-37.

⁷⁶ Shortage-Sharing Agreement, *supra* note 8, at J-76. The interim guidelines incorporate the shortage sharing specified in the side agreement between Arizona and Nevada. See States’ Proposed Interim Guidelines, *supra* note 8, § 4.D.4, at J-34.

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⁷⁷ See 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 4-147.

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⁷⁸ See Margaret Bushman LaBianca, Note, *The Arizona Water Bank and the Law of the River*, 40 ARIZ. L. REV. 659 (1998).

⁷⁹ Hasencamp, *supra* note 55, at 6; see also ARIZ. WATER BANKING AUTH., ANNUAL REPORT 2005, at 11 (2006) (accumulated groundwater storage of 2.3 maf).

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cultural lands without reasonable physical access to replacement will be permanently retired if shortages continue multiple consecutive years⁸⁰). Should a drought occur that is severe enough to require a larger shortage determination than 500,000 acre-feet in the Lower Basin, the new guidelines give Arizona the opportunity (with other basin states) to negotiate with the Secretary about how to address the larger shortage.

C. *Modification and Extension of the 2001 Interim Surplus Guidelines*

1. *The 2001 Interim Surplus Guidelines*

Although California began consuming more than 4.4 maf per year in the mid-1950s, total Lower Basin consumptive use remained under 7.5 maf for several decades because Arizona and Nevada were using a fraction of their apportionments, and California was able to draw on their unused portions.⁸¹ Starting in 1989, however, and continuing through 2002, the Secretary frequently released more than 7.5 maf annually from Lake Mead, and California received almost all of the surplus.⁸² California's consumptive use during that period was between 5.1 and 5.2 maf in three years and exceeded 5.2 maf in six years.⁸³

Secretarial surplus releases from Lake Mead not fully justified by inflow to the reservoir obviously could cause problems. The releases would reduce storage in Lake Mead and thereby increase the risk of future shortages in the Lower Basin. Furthermore, the releases could trigger equalization releases from Lake Powell and thus increase the risk that Upper Basin water users would need to cut back later so the Upper Division states could meet their water delivery obligations under the Colorado River Compact. Consequently, the Secretary came under mounting pressure from the other basin states to be

⁸⁰ Letter from Herbert R. Guenther, Ariz. Dep't of Water Res., to Dirk Kempthorne, Sec'y of the Interior (Apr. 30, 2007), *available at* <http://www.usbr.gov/lc/region/programs/strategies/DEIScomments/State/ADWR.pdf> (also stating Arizona's analysis of Reclamation's data indicates a twenty-nine percent probability of five or more years of consecutive shortage during the interim period).

⁸¹ *See* Lower Colorado River Region – Colorado River Water Uses Since 1906, <http://www.usbr.gov/lc/region/g4000/uses.html> (last visited May 28, 2008) [hereinafter Colorado River Water Uses]. Set forth below from this document are consumptive use figures, in maf, at ten-year intervals since 1950.

Year	Lower Basin Total	California	Arizona	Nevada
1950	4.64	4.04	0.59	0.01
1960	6.10	4.98	1.10	0.02
1970	6.25	5.02	1.20	0.04
1980	5.99	4.73	1.17	0.09
1990	7.66	5.22	2.26	0.18
2000	8.29	5.16	2.80	0.32

⁸² *See id.* Lower basin consumptive use exceeded 7.5 maf six times during the 1990s and all of the early years of the 2000s.

⁸³ *See id.*

judicious about declaring surpluses and to wean California from depending on the Colorado River for more than 4.4 maf of annual consumptive use.⁸⁴

In 2001, the Secretary adopted Interim Surplus Guidelines, to be operative from 2002 through 2016.⁸⁵ The intent of the guidelines was to regularize surplus determinations by linking them to water levels in Lake Mead and to afford California a soft landing by giving it fifteen years to adjust gradually to loss of surplus. The guidelines authorize four types of surplus determinations, namely, flood control surplus, quantified surplus, full domestic surplus, and partial domestic surplus.⁸⁶ The guidelines provide that as Lake Mead declines from the flood control level through the other levels, the surplus releases allowed reduce progressively until they are eliminated. The guidelines also condition the Secretary's determination of a surplus upon California meeting benchmarks toward reducing its consumptive use to 4.4 maf by 2016.⁸⁷

The surplus guidelines did not work as expected. The Secretary temporarily suspended them at the end of 2002 because California failed to make appropriate progress on a plan to reduce its reliance on surplus.⁸⁸ Then, with the drought that began in 2000 continuing, Lake Mead dropped and has remained below the water level allowing surplus determinations. The Secretary has not declared a surplus since 2002, so California has received Colorado River water for only about 4.4 maf of consumptive use each year since then.⁸⁹

2. *The New Interim Surplus Guidelines*

The new interim guidelines eliminate one type of surplus (partial domestic surplus) and will limit another one (full domestic surplus) starting in 2017.⁹⁰ This modification should leave more water stored in Lake Mead and thereby potentially reduce the frequency and severity of future Secretarial shortage determinations in the Lower Basin.⁹¹ This is especially important to Arizona given its shortage vulnerability. Also, more water in Lake Mead could reduce equalization releases from Lake Powell, which would benefit the Upper Divisions states.

In addition, the new surplus guidelines extend the period allowing Secretarial surplus determinations by ten years to 2026.⁹² The extension potentially benefits Lower Division states by allowing more time for the current drought

⁸⁴ PONTIUS, *supra* note 16, at 32; James S. Lochhead, *An Upper Basin Perspective on California's Claims to Water from the Colorado River Part II: The Development, Implementation and Collapse of California's Plan to Live Within Its Basic Apportionment*, 6 U. DENV. WATER L. REV. 318, 352-53 (2003). R

⁸⁵ Colorado River Interim Surplus Guidelines, 66 Fed. Reg. 7772, 7772-82 (Jan. 25, 2001).

⁸⁶ *Id.* at 7780-81.

⁸⁷ *Id.* at 7782.

⁸⁸ JAMES H. DAVENPORT, NEVADA WATER LAW 208-09 (2003).

⁸⁹ See Colorado River Water Uses, *supra* note 81. R

⁹⁰ See ROD—COLORADO RIVER INTERIM GUIDELINES, *supra* note 1, § 2.B, at 34-35 (substantively mirroring States' Proposed Interim Guidelines, *supra* note 8, § 4.B, at J-30 to -32); 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 2-11 to -12, 2-19. R

⁹¹ 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 2-12. R

⁹² See ROD—COLORADO RIVER INTERIM GUIDELINES, *supra* note 1, § 8.A, at 57 (substantively mirroring States' Proposed Interim Guidelines, *supra* note 8, § 9.A, at J-44). R

cycle to end and a wet cycle to emerge that will produce surplus water levels in Lake Mead.

D. Creation and Delivery of Intentionally Created Surplus

The most imaginative part of the basin states’ agreement proposes a new type of water called Intentionally Created Surplus (“ICS”).⁹³ This is water that a contractor (an entity with a Secretarial water delivery contract or other entitlement to mainstream water)⁹⁴ creates by conservation, supply augmentation, or similar measures. More specifically, the proposed guidelines recognize four categories of ICS:

- (1) Extraordinary Conservation ICS. This includes mainstream water that a contractor frees up by fallowing irrigated land, lining canals to stop seepage loss, and desalination of ocean or brackish water that is used in lieu of mainstream water.⁹⁵ The creation of this category of ICS is subject to annual and cumulative limits,⁹⁶ and the Secretary’s delivery of it for use by the contractor is also subject to annual limits.⁹⁷
- (2) Tributary Conservation ICS. This is water made available by a contractor’s purchase of long-exercised, pre-BCPA water rights on a tributary of the Colorado River within the contractor’s state.⁹⁸
- (3) System Efficiency ICS. This is mainstream water saved from loss by a Secretarial project the contractor financed or helped finance. The Secretary can make an equivalent amount of water available to the contractor but only on a temporary basis even though the useful life of the project will be far longer.⁹⁹
- (4) Imported ICS. This is water not naturally in the Colorado River system that the contractor introduces into the mainstream Colorado River.¹⁰⁰

A contractor that creates ICS can store it in Lake Mead for use later that year or in a future year.¹⁰¹ For example, a California contractor might take 25,000 acre-feet less from Lake Mead than it otherwise would because of land fallowing or canal lining and in return would receive an ICS storage credit in Lake Mead that it could draw on later.

⁹³ See *id.* § 3, at 38-43 (substantively mirroring States’ Proposed Interim Guidelines, *supra* note 8, § 1.A.11, at J-26).

⁹⁴ *Id.* at 30.

⁹⁵ *Id.* § 3.A.1, at 38 (substantively mirroring States’ Proposed Interim Guidelines, *supra* note 8, § 5.D.1, at J-35).

⁹⁶ See *id.* §§ 3.B.4-5, at 41 (substantively mirroring States’ Proposed Interim Guidelines, *supra* note 8, § 5.D.5.e, at J-38).

⁹⁷ *Id.* § 3.C.4, at 42 (substantively mirroring States’ Proposed Interim Guidelines, *supra* note 8, § 5.D.6.e, at J-40).

⁹⁸ *Id.* § 3.A.2, at 38-39 (generally tracking but eliminating a geographical limitation in States’ Proposed Interim Guidelines, *supra* note 8, § 5.D.2, at J-36).

⁹⁹ *Id.* § 3.A.3, at 39 (substantively mirroring States’ Proposed Interim Guidelines, *supra* note 8, § 5.D.3, at J-36).

¹⁰⁰ *Id.* § 3.A.4, at 39 (substantively mirroring States’ Proposed Interim Guidelines, *supra* note 8, § 5.D.4, at J-37).

¹⁰¹ See 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 2-2, 2-11, 2-19.

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1. ICS Prior to the New Interim Guidelines

Prior to the new interim guidelines, there was no authorization for a contractor to create ICS. If a contractor were somehow to create the equivalent of ICS in Lake Mead by, say, land fallowing or canal lining, the water would be fully subject to the *Arizona v. California* decree. That decree apportions among the three Lower Division states “the water in Lake Mead, Lake Mohave, Lake Havasu and all other water in the mainstream below Lee Ferry and within the United States.”¹⁰² Applied literally, “the water in Lake Mead” includes any water that is there due to a contractor’s ICS activities. With California limited by the decree to half of any surplus above 7.5 maf, the California contractor in the example above would not have a right to receive all 25,000 acre-feet in Lake Mead resulting from its land fallowing or canal lining. The contractor could only take half of it, and contractors in Arizona and Nevada could together claim the other half.

2. The New Interim ICS Guidelines

Generally, the interim ICS guidelines make only five percent of the ICS that a contractor creates subject to the *Arizona v. California* decree, so the contractor would be entitled to the other ninety-five percent,¹⁰³ minus evaporation loss in some instances if the water is stored in Lake Mead for more than a year.¹⁰⁴ To enable this result, the Lower Division states and certain contractors within them entered into a forbearance agreement whereby they agreed to waive their rights under the *Arizona v. California* decree to ICS that the Secretary releases for use in another state.¹⁰⁵

The interim ICS guidelines allow Reclamation to deliver ICS for use only during years when the Secretary has declared a surplus condition.¹⁰⁶ But the guidelines also recognize another new category of water called Developed Shortage Supply that is similar to two types of ICS, namely, Tributary Conservation ICS and Imported ICS.¹⁰⁷ Reclamation can deliver this water for use only during years when the Secretary has declared a shortage condition.¹⁰⁸

¹⁰² *Arizona v. California*, 126 S. Ct. 1543, 1545 (2006) (Consolidated Decree art. I(E)).

¹⁰³ See ROD—COLORADO RIVER INTERIM GUIDELINES, *supra* note 1, § 3.B.2, at 40 (substantively mirroring States’ Proposed Interim Guidelines, *supra* note 8, § 5.D.5.c, at J-37 to -38). An exception to the general rule exists for System Efficiency ICS; one hundred percent of it goes to the contractor that created it. *Id.* § 3.B.2.a, at 40 (substantively mirroring States’ Proposed Interim Guidelines, *supra* note 8, § 5.D.5.c.(1), at J-38). R

¹⁰⁴ See *id.* § 3.B.7, at 41 (substantively mirroring States’ Proposed Interim Guidelines, *supra* note 8, § 5.D.5.e(5), at J-38 to -39) (applies to Extraordinary Conservation ICS, but no evaporation losses can be assessed during shortage condition years). R

¹⁰⁵ See Lower Colorado River Basin Intentionally Created Surplus Forbearance Agreement, art. 3, available at <http://www.usbr.gov/lc/region/programs/strategies/agreements/Forbearance.PDF> [hereinafter Forbearance Agreement].

¹⁰⁶ See States’ Proposed Interim Guidelines, *supra* note 8, § 4.A, at J-30, § 4.B.5.a, at J-32. R

¹⁰⁷ ROD—COLORADO RIVER INTERIM GUIDELINES, *supra* note 1, § 4.A, at 44 (substantively mirroring States’ Proposed Interim Guidelines, *supra* note 8, § 6.A, at J-42). R

¹⁰⁸ *Id.* § 4.C.2, at 45 (substantively mirroring States’ Proposed Interim Guidelines, *supra* note 8, § 6.E, at J-42 to -43). Also, a contractor can create Developed Shortage Surplus only during shortage condition years. *Id.* § 4.B.3, at 45. R

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One purpose of the proposed ICS guidelines is to raise the water levels of Lake Mead and Lake Powell higher than they otherwise would be.¹⁰⁹ Of course, the Upper Division states stand to benefit from a higher Lake Powell water level. But the major beneficiaries of the ICS guidelines will be the three Lower Division states. All three will benefit by sharing the five percent of ICS created in any Lower Division state that becomes subject to the *Arizona v. California* decree. In addition, individual Lower Division states will benefit from the ninety-five percent made available from particular projects for use exclusively within their borders. California and Nevada are likely to see a number of ICS projects in the near future.

In California, the Metropolitan Water District of Southern California (“MWD”) has a junior priority relative to other contractors in the state and consequently must bear the full burden of reducing the state’s consumptive use of mainstream water from approximately 5.2 to 4.4 maf.¹¹⁰ MWD supplies water from the Colorado River and other sources to eighteen million people residing in six Southern California counties.¹¹¹ To replace its loss of surplus water since 2002, MWD has, among other things, purchased water from agricultural users in California made available by MWD-financed conservation and land fallowing programs.¹¹² The proposed ICS guidelines should facilitate more agricultural-to-urban transfers by enabling MWD to store purchased mainstream water in Lake Mead with only five percent of it subject to the *Arizona v. California* decree and MWD having sole claim to the other ninety-five percent.¹¹³

In Nevada, nearly all the state’s apportionment of Colorado River water goes to the Southern Nevada Water Authority (“SNWA”) for use in metropolitan Las Vegas.¹¹⁴ In past years, SNWA has banked mainstream water underground for future use,¹¹⁵ but with the metropolitan area growing rapidly in population and Nevada now regularly consuming all, or nearly all, of its “normal condition” apportionment of 0.3 maf, SNWA has moved on several fronts to develop additional water supplies.

SNWA has purchased pre-BCPA agricultural water rights on tributaries of the Colorado River in Nevada and will fallow the lands irrigated with this water.¹¹⁶ Rather than build a pipeline to transport the purchased water to the Las Vegas area, it would be more economical if SNWA could just let the purchased tributary water flow into Lake Mead and extract it from there through its existing intakes. The problem for SNWA with sending the water through

¹⁰⁹ *Id.* at 27 (substantively mirroring States’ Proposed Interim Guidelines, *supra* note 8, § 5.B.4, at J-34). R

¹¹⁰ Hasencamp, *supra* note 55, at 5. R

¹¹¹ *Id.* at 1.

¹¹² *See id.* at 4-5.

¹¹³ *Id.* at 6.

¹¹⁴ 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 3-42. R

¹¹⁵ SNWA’s several groundwater banking projects are described in S. NEV. WATER AUTH., WATER RESOURCE PLAN 08, at 28 (2008), available at http://www.snwa.com/assets/pdf/wr_plan_chapter2.pdf [hereinafter 2008 PLAN].

¹¹⁶ SNWA has also purchased tributary water rights that postdate the BCPA, *see id.* at 26-27, but the basin states’ agreement is limited to those rights that predate the BCPA. *See* Agreement Concerning Colorado River, *supra* note 8, ¶ 8, at J-17. R

Lake Mead is that the *Arizona v. California* decree, applied literally, would entitle SNWA to only a small fraction of this water. The new interim guidelines will solve this problem by enabling SNWA to treat the added water as Tributary Conservation ICS,¹¹⁷ so only five percent of it will be subject to the decree and SNWA will be entitled to the other ninety-five percent.

Another SNWA strategy is a new project to pump groundwater from nineteen basins in east-central Nevada¹¹⁸ and transport it through an extensive pipeline system estimated to cost \$2 to 3.5 billion to metropolitan Las Vegas.¹¹⁹ The imported groundwater will be only partly consumed by municipal use; the unconsumed part will go through the municipal wastewater system and be discharged into Lake Mead. The new interim guidelines will enable SNWA to get Imported ICS treatment for the once-used imported water that is discharged into Lake Mead.¹²⁰ SNWA will then have sole claim to reuse ninety-five percent of it.

SNWA's project to import groundwater will not be completed until 2014 or later.¹²¹ In the meantime, the Las Vegas area likely will run short of water for its growing population, so SNWA needs a supplemental water source on a temporary basis. For this purpose, SNWA will fund federal construction of a project in Southern California near the Mexican border known as the Drop 2 Reservoir.¹²² This reservoir will capture Colorado River water that otherwise would have flowed to Mexico due to operational inefficiencies, unrelated to and not counting toward the United States' treaty delivery obligation.¹²³ The Secretary will deliver the captured water to California water users, enabling them to take less water from Lake Mead; and in return, SNWA will be credited with System Efficiency ICS in Lake Mead.¹²⁴

The MWD and SNWA projects just described have been approved by the Secretary and are supported by implementing side agreements among the affected states and water contractors.¹²⁵ The interim guidelines establish a pro-

¹¹⁷ See ROD—COLORADO RIVER INTERIM GUIDELINES, *supra* note 1, § 3.A.2, at 38-39 (substantively mirroring States' Proposed Interim Guidelines, *supra* note 8, § 5.D.3, at J-36).

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¹¹⁸ 2008 PLAN, *supra* note 115, at 30-34; 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 5-7.

¹¹⁹ Henry Brean, *Battle with Utah Brewing*, LAS VEGAS REV.-J., Aug. 2, 2007, at 1A; Henry Brean, *Bigger Pipeline Plan Floated*, LAS VEGAS REV.-J., Nov. 6, 2007, at 1B.

¹²⁰ See ROD—COLORADO RIVER INTERIM GUIDELINES, *supra* note 1, § 3.A.4, at 39 (substantively mirroring States' Proposed Interim Guidelines, *supra* note 8, § 5.D.4, at J-37).

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¹²¹ 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 5-7; Henry Brean, *Deal Outlines How States Will Share Drought Burden*, LAS VEGAS REV.-J., Dec. 6, 2007, at 1A.

¹²² Agreement Concerning Colorado River, *supra* note 8, ¶ 8, at J-17.

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¹²³ U.S. DEP'T OF THE INTERIOR, BUREAU OF RECLAMATION, LOWER COLORADO RIVER DROP 2 STORAGE RESERVOIR PROJECT: FINAL ENVIRONMENTAL ASSESSMENT 1-4 to -7 (2007), available at http://www.usbr.gov/lc/yuma/environmental_docs/Drop_2/finalea/fea1.pdf. Reclamation estimates that the reservoir, which will have a storage capacity of 8000 acre-feet, will capture an average of 70,000 acre-feet per year. *Id.* at 2-1, 2-7.

¹²⁴ SNWA withdrawals of this System Efficiency ICS storage are limited to 40,000 acre-feet annually. Agreement Concerning Colorado River, *supra* note 8, ¶ 8, at J-17.

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¹²⁵ See, e.g., Forbearance Agreement, *supra* note 105, exhibit A (Southern Nevada Water Authority Virgin and Muddy Rivers Tributary Conservation, Intentionally Created Surplus (ICS) Project), exhibit C (Drop 2 Reservoir System Efficiency Project), exhibit D (IID Extraordinary Water Conservation Project – Following).

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cess for water contractors to obtain approval of additional ICS projects from the Secretary.¹²⁶

E. An Assessment of the Interim Guidelines (and Basin States' Proposal)

As noted earlier, the Secretary's interim guidelines, which are based on the basin states' proposal, will be operative through 2026.¹²⁷ The water supply outlook for the Lower Division states during this period is hardly unproblematic. For example, the probability of a shortage condition, i.e., water for less than 7.5 maf of consumptive use, in 2010 is seven percent.¹²⁸ The probability Lake Mead will drop below the water level needed for the upper of SNWA's two water intakes by 2016 is fifteen percent.¹²⁹ And the probability of shortage of at least 400,000 acre-feet annually that lasts for five consecutive years or more is twenty-two percent.¹³⁰

Still, the outlook for the Lower Division states is far from dire during the interim period. In every year, the probability of a shortage condition is much less than the combined probabilities of a surplus condition or a normal condition.¹³¹ In 2017, for example, the probability of a shortage condition is twenty-seven percent¹³² versus thirty-five percent for a surplus condition and thirty-eight percent for a normal condition.¹³³ For the entire interim period, the probability of a multiyear shortage exceeding 500,000 acre-feet per year is zero.¹³⁴

When the Secretary announced her intent in 2005 to develop interim guidelines for Lower Basin water shortages and coordinated reservoir operations and sought input from the seven basin states, this created an incentive for the states to reach agreement on a proposal. If they could agree, they had every reason to think their proposal would profoundly influence the Secretary's guidelines. If they could not agree, it was hard to predict the content of the Secretary's guidelines. This incentive to reach agreement, however, did not guarantee the states would succeed. The genius of their proposal is that it contains a mix of innovative elements that combine to make every state better off than before.

Perhaps most important, the ICS element of the basin states' proposal will increase the Lower Division's water supply or make it more productive, or both. The Secretary could not have implemented an ICS program by regulation

¹²⁶ See ROD—COLORADO RIVER INTERIM GUIDELINES, *supra* note 1, § 3.B.1, at 40 (generally tracking States' Proposed Interim Guidelines, *supra* note 8, § 5.D.5.a, at J-37, but eliminating a proposed requirement that the Secretary consult with the other basin states before approving a new ICS project).

¹²⁷ See *supra* text accompanying note 11.

¹²⁸ 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 4-100 tbl.4.4-1. This figure, like the ones that follow, is based on Reclamation's analysis of mainstream river flow data for the 100-year period from 1906 through 2005. *Id.* at 4-4 to -5.

¹²⁹ See *id.* at 4-59 to -60 tbl.4.3-23. SNWA has responded to the risk by planning to build a third, deeper intake. *Id.* at 5-7 to -8.

¹³⁰ *Id.* at 4-114 to -115 tbl.4.4-11.

¹³¹ See *id.* at 4-122 fig.4.4-19.

¹³² *Id.* at 4-100 tbl.4.4-2.

¹³³ See *id.* at 4-122 fig.4.4-19.

¹³⁴ See *id.* at 4-114.

alone. No water contractor would have much incentive to develop a conservation or augmentation project that uses Lake Mead for storage without a forbearance agreement in place to avoid literal application of the *Arizona v. California* decree. The Secretary could not have imposed forbearance on the Lower Division states and contractors by regulation, so their collaboration was essential to the ICS program.

II. BEYOND THE INTERIM GUIDELINES

A. Long-Term Water Supply and Demand

The mainstream water supply outlook for the Lower Division states during the interim period is not worse than just described because the Upper Basin will be using much less than its 7.5 maf compact apportionment during that period. The Upper Basin forecasts that its consumptive use, including reservoir evaporation, will be 5.1 maf in 2008 and will rise gradually thereafter to 5.5 maf by 2026.¹³⁵

The Upper Basin expects its consumptive use to continue rising steadily after the interim period and reach 6.0 maf by 2060.¹³⁶ Reclamation has calculated the impact of this expected steady rise on the Lower Basin. For example, Reclamation finds that the probability of a Lower Basin shortage condition in 2040 is forty-nine percent and in 2060 is sixty-seven percent.¹³⁷ Also, Reclamation finds that the probability of a shortage condition exceeding 500,000 acre-feet between 2027 and 2060 is eleven and two-tenths percent.¹³⁸

Reclamation's findings may be too bleak for two reasons. First, Reclamation used the Upper Basin's expectations in making its calculations, and one might question whether Upper Basin consumptive use in 2008, the start of the interim period and the basis for projections thereafter, will actually be 5.1 maf. Upper Basin consumptive use averaged only 4.4 maf from 1996 through 2000 and 4.2 maf from 2001 through 2005.¹³⁹ Second, Reclamation assumed that once the interim guidelines expire in 2026, it will revert back to operating the river as it did prior to adoption of the interim guidelines.¹⁴⁰ While at least one Upper Basin state opposes extending the guidelines on coordinated reservoir

¹³⁵ See *id.* at 3-32; 2 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at C-1 tbl.C-1 (reservoir evaporation of 0.6 maf per year; consumptive use excluding evaporation loss of 4.5 maf in 2008 rising to 4.9 maf by 2026).

¹³⁶ See 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 3-32; 2 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at C-1 tbl.C-1 (5.4 maf not including evaporation loss, plus annual reservoir evaporation of 0.6 maf).

¹³⁷ 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 4-102 tbl.4.4-4.

¹³⁸ See *id.* at 4-142 tbl.4.4-13.

¹³⁹ See U.S. DEP'T OF THE INTERIOR, BUREAU OF RECLAMATION, COLORADO RIVER SYSTEM CONSUMPTIVE USES AND LOSSES REPORT 1996-2000, at iv, 14, 23 (2004) [hereinafter CONSUMPTIVE USES AND LOSSES], available at <http://www.usbr.gov/uc/library/envdocs/reports/crs/pdfs/crs962000.pdf>; U.S. DEP'T OF THE INTERIOR, BUREAU OF RECLAMATION, PROVISIONAL UPPER COLORADO RIVER BASIN CONSUMPTIVE USES AND LOSSES REPORT 2001-2005, at iv, 9, 11 (2007), available at <http://www.usbr.gov/uc/library/envdocs/reports/crs/pdfs/cul2001-05.pdf>.

¹⁴⁰ See 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 4-3, 4-16. As a limited exception to reversion back after 2026, Reclamation can continue to deliver previously created ICS that remains in storage. See ROD—COLORADO RIVER INTERIM GUIDE-

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operations beyond the interim period,¹⁴¹ significant parts of the interim guidelines likely will be continued in some form to ameliorate Lower Basin shortages.¹⁴²

As an alternative to Reclamation’s long-term estimates, it is interesting to consider the mainstream water supply for the Lower Division states on an average basis once Upper Basin consumptive use reaches 6.0 maf, whether that happens in 2060 or sooner or later. For the 100-year period from 1906 through 2005, the average annual natural flow in the mainstream at Lee Ferry was fifteen maf.¹⁴³ If that historical pattern continues, the future average mainstream supply for the Lower Division states would be as follows:

Flow entering the Lower Basin at Lee Ferry (15.0–6.0 maf)	9.0 maf
Plus tributary inflows below Lee Ferry	+1.0 maf ¹⁴⁴
Minus the Mexican delivery obligation	– 1.5 maf
Minus Lower Basin mainstream reservoir evaporation	– 1.3 maf ¹⁴⁵
Amount in the mainstream for Lower Division consumptive use	7.2 maf

The so-called “normal condition” under the *Arizona v. California* decree of enough water for 7.5 maf of consumptive use in the Lower Division states would not be a normal occurrence. The norm, or average, would be about 300,000 acre-feet less than that.

The average shortfall would worsen, of course, should future average annual natural flows at Lee Ferry be less than during the period from 1906 through 2005. That could happen for two reasons. First, the 100 years from 1906 through 2005 may have been wetter than usual. Tree-ring analysis, which relies on correlation between precipitation and tree growth, has enabled reconstruction of annual natural flows at Lee Ferry going back five centuries.¹⁴⁶ Although the tree-ring studies vary somewhat in methodology and result, all of

LINES, *supra* note 1, § 8.B, at 58 (substantively similar to States’ Proposed Interim Guidelines, *supra* note 8, § 9.A, at J-44).

¹⁴¹ Letter from Rod Kuharich, Dir., Colo. Water Conservation Bd., to Dirk Kempthorne, Sec’y of the Interior (Apr. 30, 2007), *available at* <http://www.usbr.gov/lc/region/programs/strategies/DEIScomments/State/CWCB.pdf>.

¹⁴² *Cf.* 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 1-1 (The interim guidelines “will provide the opportunity to gain valuable operating experience for the management of Lake Powell and Lake Mead under modified operations and improve the basis for making additional future operational decisions, whether during the interim period or thereafter.”).

¹⁴³ *Id.* at 3-15 (15.072 maf). *But cf. id.* at 1-11 (approximately 15.1 maf). The natural flow is reconstructed by adjusting the actual gauged flow for human alteration by upstream storage, alteration, and depletion. *Id.* at 3-15.

¹⁴⁴ Reclamation estimates that the average natural inflow of the Little Colorado, Bill Williams, Virgin, and Muddy Rivers to the Colorado River below Lee Ferry is 1.4 maf. *Id.* at 1-11. From the natural inflow must be deducted consumptive uses from these tributaries averaging 0.4 maf. *See* CONSUMPTIVE USES AND LOSSES, *supra* note 139, at 34-38. The Gila River is also a tributary to the Colorado River below Lee Ferry and does not regularly contribute inflow because of the magnitude of consumptive uses directly from it. *See* Charles J. Meyers, *The Colorado River*, 19 STAN. L. REV. 1, 7 (1966).

¹⁴⁵ CONSUMPTIVE USES AND LOSSES, *supra* note 139, at 31. This figure includes mainstream channel losses in the Lower Basin. *See id.* at 18-22 tbls.C-2 to C-6 & n.4.

¹⁴⁶ COLORADO RIVER BASIN WATER MANAGEMENT, *supra* note 2, at 100-04.

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them report an average annual natural flow at Lee Ferry below fifteen maf, with the numbers ranging from thirteen maf to 14.7 maf.¹⁴⁷ Second, there is the possibility that climate change might reduce future annual natural flows at Lee Ferry below those of the last half-millennium.¹⁴⁸

Moreover, as increasing Upper Basin consumptive use reduces the main-stream water supply for the Lower Division states over the long term, the water needs of the Lower Division states will hardly remain static. MWD expects the population of its service area to increase by 220,000 annually.¹⁴⁹ Southern Nevada and central Arizona have also experienced very rapid population growth in recent decades,¹⁵⁰ and there is little reason to expect that to cease.

In sum, the possibility of lower average natural river flows and the seeming inexorability of increasing water demands combine to suggest that shortages on the Colorado River system will not be limited in the future to drought cycles. Coping with shortages will be a constant concern.

B. Legal Issues Affecting Long-Term Water Supply Between the Two Basins

The water supply available within each of the two basins, as distinguished from the total supply for the basins combined, depends on more than precipitation, runoff, and reservoir storage. It also depends on how the law of the river—a body of more than four dozen statutes, administrative rules and decisions, court decrees, water contracts, interstate compacts, and international documents¹⁵¹—allocates the total supply between the two basins. The seven basin states disagree about how to interpret various elements of the law of the river that bear on interbasin allocation.¹⁵² The seven states put aside these disagreements when negotiating their recent landmark proposal on coordinated reservoir management and Lower Basin shortages. At the same time, however, they included a provision in the proposal preserving the right to assert their differing

¹⁴⁷ See *id.* at 104.

¹⁴⁸ See *id.* at 108-10.

¹⁴⁹ Hasencamp, *supra* note 55, at 1.

¹⁵⁰ The U.S. Census Bureau estimates that from 2000 through 2006, the population of Maricopa County, Arizona, home of the metropolitan Phoenix area, grew from 3,072,149 to 3,768,123 or 22.6%, Maricopa County QuickFacts from the U.S. Census Bureau, <http://quickfacts.census.gov/qfd/states/04/04013.html> (last visited May 28, 2008), and the population of Clark County, Nevada, home of the metropolitan Las Vegas area, grew from 1,375,765 to 1,777,539 or 29.2%. Clark County QuickFacts from the U.S. Census Bureau, <http://quickfacts.census.gov/qfd/states/32/32003.html> (last visited May 28, 2008).

¹⁵¹ See 1 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, at 1-4 n.2, 1-11 to -14.

¹⁵² See, e.g., John U. Carlson & Alan E. Boles, Jr., *Contrary Views of the Law of the Colorado River: An Examination of Rivalries Between the Upper and Lower Basins*, 32 ROCKY MTN. MIN. L. INST. 21-1, 21-27 to -28 (1986); David H. Getches, *Competing Demands for the Colorado River*, 56 U. COLO. L. REV. 413, 421-25 (1985); David E. Lindgren, *The Colorado River: Are New Approaches Possible Now that the Reality of Overallocation Is Here?*, 38 ROCKY MTN. MIN. L. INST. 25-1, 25-13 to -19 (1992); James S. Lochhead, *An Upper Basin Perspective on California's Claims to Water from the Colorado River Part I: The Law of the River*, 4 U. DENV. WATER L. REV. 290, 320-26 (2001); Meyers, *supra* note 144, at 14-17.

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views later.¹⁵³ The future resolution of these disagreements could significantly affect the water supply within each basin.

To illustrate this point, it will suffice to consider just one of several disagreements regarding the cornerstone of the law of the river, the Colorado River Compact.¹⁵⁴ As noted earlier, the compact provides that if there is not sufficient surplus water to fill the 1.5 maf treaty delivery obligation to Mexico, the two basins shall bear the deficiency equally, and the Upper Division states must deliver enough water at Lee Ferry to supply half the deficiency.¹⁵⁵ The basin states disagree about how to calculate whether a deficiency exists.

The Upper Division states note that the compact apportions 8.5 maf of consumptive use to the Lower Basin “from the Colorado River System”¹⁵⁶ and also defines the system as “the Colorado River and its tributaries.”¹⁵⁷ Lower Basin tributary consumptive use averages 2.5 maf,¹⁵⁸ so in a “normal condition” year when Lower Basin consumptive use from the mainstream is 7.5 maf, Lower Basin consumptive use from the river system will total ten maf. The total is even higher if “consumptive use” for compact purposes includes Lower Basin reservoir evaporation of 1.3 maf.¹⁵⁹ The Upper Division states argue that if the Lower Basin were not exceeding its compact apportionment of 8.5 maf from the system, i.e., the Colorado River *and* its tributaries, there would be enough surplus water to satisfy the Mexican delivery, and therefore no deficiency exists triggering their duty to contribute to the Mexican delivery.¹⁶⁰

Arizona argues in response that Lower Basin consumptive use is irrelevant to whether a deficiency exists. Arizona notes that the compact says the Mexican delivery shall “be supplied first from the waters which are surplus over and above” the sixteen maf that the compact apportions to the Upper and Lower Basins.¹⁶¹ Arizona argues this means the existence of a surplus, and correlatively a deficiency, depends solely on the water supply.¹⁶² Under Arizona’s view, a deficiency exists unless the system supply is 17.5 maf, i.e., the sixteen

¹⁵³ See Agreement Concerning Colorado River, *supra* note 8, ¶ 15, at J-20:

Nothing in this Agreement or the Parties’ Recommendation is intended to, nor shall this Agreement be construed so as to, diminish or modify the right of any Party under existing law, including without limitation the Colorado River Compact, the Upper Colorado River Basin Compact, the Consolidated Decree in *Arizona v. California*, or the Mexican Water Treaty of 1944. The Parties hereby affirm the entitlement and right of each State under such existing law to use and develop the water of the Colorado River System.

¹⁵⁴ Another contentious compact issue is discussed *infra* in text accompanying notes 185-93. For discussion of still more unresolved compact issues, see Getches, *supra* note 152, at 421-27; Meyers, *supra* note 144, at 14-18.

¹⁵⁵ See *supra* text accompanying note 29.

¹⁵⁶ Colorado River Compact of 1922 arts. III(a)-(b), 70 CONG. REC. 324 (1928).

¹⁵⁷ *Id.* art. II(a).

¹⁵⁸ See CONSUMPTIVE USES AND LOSSES, *supra* note 139, at iv.

¹⁵⁹ *Id.* at 31. The *Arizona v. California* decree defines “consumptive use” to exclude reservoir evaporation. See *Arizona v. California*, 126 S. Ct. 1543 (2006) (Consolidated Decree art. I(A)). But the decree applies only to the apportionment of mainstream water among the three Lower Division states. In contrast, the compact does not define “consumptive use” for purposes of water allocation between the Upper Basin and Lower Basin.

¹⁶⁰ See Lochhead, *supra* note 152, at 320.

¹⁶¹ Colorado River Compact art. III(c).

¹⁶² See Schiffer et al., *supra* note 48, at 221-22.

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maf that the compact apportions to the two basins plus the 1.5 maf that the treaty allocates to Mexico.¹⁶³

If the Upper Division states prevail on the deficiency issue, the adverse impact on the Lower Division states could be significant. Suppose, for example, that Upper Basin water deliveries to Lee Ferry average only 7.5 maf annually during a decade-long drought and that Lake Mead began the decade with no accumulated storage to supplement the Lee Ferry deliveries. The amount of mainstream water available for the Lower Division states on average would be the 7.5 maf delivered at Lee Ferry plus tributary inflows to the mainstream below Lee Ferry of 1.0 maf, minus Lower Basin reservoir evaporation of 1.3 maf, and minus the delivery to Mexico of 1.5 maf—which leaves 5.7 maf for consumptive use by the Lower Division states. In contrast, if the Lower Division states prevail on the deficiency issue, the Upper Basin's contribution of half the Mexican delivery, i.e., 0.75 maf or 750,000 acre-feet, would increase the mainstream supply for the Lower Division states by the same amount. While not a cure-all, this would be a significant gain for the Lower Division states.

C. Meeting Water Needs in the Lower Division States Through Supply Reallocation

The imaginative approaches in the basin states' proposal that are now incorporated in the Secretary's interim guidelines have the potential to avoid a Lower Division water crisis for some indeterminate period, maybe even for a considerable time after 2026. Before a crisis can develop, maybe new conservation measures and technological advances in desalination, or even cloud seeding,¹⁶⁴ will become a panacea. The National Research Council is not sanguine about that, however: "Technological and conservation options for augmenting or extending water supplies—although useful and necessary—in the long run will not constitute a panacea for coping with the reality that water supplies in the Colorado River basin are limited and that demand is inexorably rising."¹⁶⁵

Technology to augment existing supplies and conservation to extend them are only two methods for coping with future water shortages. A third method is reallocation of water from less productive to more productive use. With agriculture consuming roughly eighty percent of the water used in the Colorado River basin¹⁶⁶ and with growing municipalities able to afford agricultural water

¹⁶³ Actually, Arizona claims the supply needed to avoid a deficiency is 17.8 maf. Arizona bases this claim on its view of another unresolved compact issue. If the Upper Basin must contribute 0.75 maf to the 1.5 maf Mexican delivery, a related issue is whether the Upper Basin must also contribute half the reservoir and in-transit channel losses associated with delivering the 1.5 maf from Lee Ferry to Mexico. See Getches, *supra* note 152, at 422-23; Meyers, *supra* note 144, at 17. Arizona estimates the reservoir and channel losses to be almost 0.3 maf, and it thus contends there is a deficiency for Mexico unless the system supply exceeds 16.0 + 1.5 + 0.3. See Schiffer et al., *supra* note 48, at 225-26.

¹⁶⁴ See Agreement Concerning Colorado River, *supra* note 8, ¶ 8, at J-17 (mentioning cloud seeding).

¹⁶⁵ COLORADO RIVER BASIN WATER MANAGEMENT, *supra* note 2, at 132.

¹⁶⁶ *Id.* at 71.

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or water rights,¹⁶⁷ reallocation generally can be expected to take the form of transfers from agricultural to urban use. The National Research Council has observed that reallocating only a modest percentage of agricultural water could “do much” to meet growing urban water needs.¹⁶⁸ As noted earlier, the Extraordinary Conservation ICS guidelines should facilitate agricultural-to-urban water reallocation in California. Of course, this will be intrabasin-intra-state reallocation. A variation of the third method, explored below, would be intrabasin-interstate reallocation. A fourth method, also explored below, would be interbasin-interstate reallocation from the Upper Basin to the Lower Basin of water that is being used for agriculture or perhaps water that is part of a state’s unused apportionment under the Colorado River Compact.

1. Intrabasin-Interstate Reallocation

The interim guidelines take a mixed approach at best toward ICS projects reallocating water from one Lower Basin state to another. They allow interstate System Efficiency ICS projects, such as the Drop 2 storage reservoir in California that will benefit SNWA in Nevada, but they limit the incentive for contractors to create such ICS by permitting them to receive credit for the conserved water only temporarily, not permanently.¹⁶⁹ They limit Imported ICS and Tributary Conservation ICS to intrastate projects.¹⁷⁰ Finally, they are not as explicit about interstate Extraordinary Conservation ICS projects but apparently do not to allow them.

Rather than provide a general definition of Extraordinary Conservation ICS, the guidelines list specific activities that qualify—including land fallowing, canal lining, and desalination¹⁷¹—followed by a catch-all provision: “Other extraordinary conservation measures, including but not limited to, development and acquisition of a non-Colorado River System water supply used in lieu of Mainstream water *within the same state*, in consultation with the Basin States.”¹⁷² Unlike the catch-all, the specifically listed activities are not expressly limited by “within the same state.” That does not mean, however, that the specifically listed activities can create interstate ICS because the guidelines later condition the creation of all Extraordinary Conservation ICS as follows:

Extraordinary Conservation ICS from a project *within a state* may only be credited to the ICS Account of a Contractor *within that state* that has funded or implemented the project creating ICS, or to the ICS Account of a Contractor *within the same state* as the funding entity and project and with written agreement of the funding entity.¹⁷³

¹⁶⁷ See *id.*

¹⁶⁸ *Id.* at 57.

¹⁶⁹ ROD—COLORADO RIVER INTERIM GUIDELINES, *supra* note 1, § 3.A.3, at 39 (substantively mirroring States’ Proposed Interim Guidelines, *supra* note 8, § 5.D.3, at J-36).

¹⁷⁰ See *id.* §§ 3.A.2, 3.A.4, at 38-39 (substantively mirroring States’ Proposed Interim Guidelines, *supra* note 8, §§ 5.D.2, 5.D.4, at J-36 to -37).

¹⁷¹ *Id.* §§ 3.A.1.a-c, at 38 (substantively mirroring States’ Proposed Interim Guidelines, *supra* note 8, § 5.D.1.a-c, at J-35).

¹⁷² *Id.* § 3.A.1.h, at 38 (emphasis added) (substantively mirroring States’ Proposed Interim Guidelines, *supra* note 8, § 5.D.1.h, at J-36).

¹⁷³ *Id.* § 3.B.8, at 41 (emphasis added) (substantively mirroring States’ Proposed Interim Guidelines, *supra* note 8, § 5.D.5.e(6), at J-39).

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The guidelines lack any provision for crediting the ICS account of a contractor from one state that has funded or implemented an Extraordinary Conservation ICS project in another state. By negative implication, the guidelines do not authorize interstate Extraordinary Conservation ICS projects.¹⁷⁴

The apparent hostility of the guidelines to interstate Extraordinary Conservation ICS is especially unfortunate for Nevada. Unlike Arizona and California,¹⁷⁵ Nevada has little or no present agricultural use of mainstream water.¹⁷⁶ For SNWA to fallow land or line canals to free up agricultural water for urban use, the land fallowing or canal lining would have to be in Arizona or in California. Similarly, for SNWA to engage in desalination to create Extraordinary Conservation ICS, the desalination would likely have to occur outside of Nevada.

The guidelines' limitation of Extraordinary Conservation ICS to intrastate projects is interesting from a constitutional law perspective. The Dormant Commerce Clause bars states from unreasonably prohibiting the interstate export of water.¹⁷⁷ If a state were to enact a statute authorizing a person who fallows land or lines a canal to use the conserved water elsewhere within the state but not outside of it, there is little doubt the statute would violate the Dormant Commerce Clause for explicitly discriminating against interstate commerce in water.¹⁷⁸ The Dormant Commerce Clause applies, however, only to state-imposed limits on interstate commerce, not federally-imposed limits.¹⁷⁹ The Secretary's adoption of the basin states' proposed ICS guidelines, including the limitation of Extraordinary Conservation ICS to intrastate projects, cir-

¹⁷⁴ One might ask whether the functional equivalent of interstate Extraordinary Conservation ICS could be accomplished through an extra step. Suppose a contractor entitled to ICS sells or leases the entitlement to a contractor in another state. Even in the unlikely event that the guidelines were interpreted to allow this extra step and even if Reclamation were willing to approve the transfer, it seems unlikely to happen. The use of Lake Mead to store the water or the Colorado River to transport it to the transferee would make it subject to the *Arizona v. California* decree unless the transfer is included in a forbearance agreement, which would require the consent of all affected parties, including the water source state and contractors within it; and the source state and affected parties in it are unlikely to consent.

¹⁷⁵ See 2 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, app. G, tbls.Att.A-3 to -4 (tables listing water subcontractors in Arizona and California by type of use, including agricultural use); U.S. DEP'T OF THE INTERIOR, BUREAU OF RECLAMATION, COLORADO RIVER ACCOUNTING AND WATER USE REPORT: ARIZONA, CALIFORNIA, AND NEVADA 40 (2007) (consumptive use of mainstream water in 2006 by California agricultural entities of more than 3.4 maf).

¹⁷⁶ See 2 FEIS—COLORADO RIVER INTERIM GUIDELINES, *supra* note 7, app. G, tbl.Att.A-2 (table listing water subcontractors in Nevada by type of use).

¹⁷⁷ See *Sporhase v. Nebraska ex rel. Douglas*, 458 U.S. 941, 953-54 (1982).

¹⁷⁸ See *id.* at 957-58. An explicitly discriminatory regulation that serves economic purposes is virtually per se invalid and can be sustained only by showing it advances a legitimate state objective, such as public health, that cannot be accomplished in another less discriminatory way. See *Wyoming v. Oklahoma*, 502 U.S. 437, 454-55 (1992); *Nw. Cent. Pipeline Corp. v. State Corp. Comm'n of Kan.*, 489 U.S. 493, 523 (1989); *City of El Paso v. Reynolds*, 563 F. Supp. 379, 389 (D.N.M. 1983).

¹⁷⁹ *Lewis v. BT Inv. Managers, Inc.*, 447 U.S. 27, 44 (1980); see also *Intake Water Co. v. Yellowstone River Compact Comm'n*, 769 F.2d 568, 570 (9th Cir. 1985) (congressional consent to a water compact between states immunizes it from the Dormant Commerce Clause).

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cumvents the Dormant Commerce Clause and its policy against economic Balkanization of the nation.¹⁸⁰

The Secretary could not have modified the basin states' proposed ICS guidelines to authorize interstate Extraordinary Conservation ICS. Implementation of the ICS program depends on agreement by the affected states and contractors to forbear their rights to surplus water under the *Arizona v. California* decree, and the forbearance agreement is expressly conditioned on the Secretary adopting "an ICS program that is in substantial conformance with this Forbearance Agreement."¹⁸¹

The reason the basin states' proposed guidelines did not embrace interstate Extraordinary Conservation ICS is not publicly known. Perhaps the states thought water supply-and-demand conditions from 2008 through 2026 would not be serious enough for them to have to grapple with that issue. Perhaps some states feared interstate Extraordinary Conservation ICS might be an opening wedge that later would lead to pressure for interbasin-interstate leases or sales that they strongly oppose.

Whatever the reason, if the Secretary ever decides Lower Basin water conditions require interstate Extraordinary Conservation ICS projects, he might try to persuade the basin states to agree to them.¹⁸² If the Secretary encounters state intransigence toward desalination, canal lining, or land fallowing that would reallocate Colorado River water between Lower Division states, he might consider exercising the potential for "friendly persuasion" inherent in his power as watermaster of the Lower Basin and operator of federal reservoirs in the Upper Basin to interpret unresolved ambiguities in the law of the river. The interim guidelines explicitly bar the Secretary from resolving ambiguities in the law of the river,¹⁸³ but as the years pass and expiration of the interim guidelines draws ever closer, basin states might legitimately become concerned about adverse Secretarial resolution of contentious law-of-the-river issues, whether or

¹⁸⁰ *Granholt v. Heald*, 544 U.S. 460, 472 (2005) ("[A] central concern of the Framers . . . was . . . the conviction that in order to succeed, the new Union would have to avoid the tendencies toward economic Balkanization that had plagued relations among the Colonies and later among the States under the Articles of Confederation." (quoting *Hughes v. Oklahoma*, 441 U.S. 322, 325-26 (1979))).

¹⁸¹ Forbearance Agreement, *supra* note 8, art. 3.4.C, at J-63. The copy of the Forbearance Agreement after its execution by the parties appears as an exhibit to water delivery agreements available at <http://www.usbr.gov/lc/region/programs/strategies/agreements/IIDICS.pdf> (agreement between the United States and the Imperial Irrigation District); <http://www.usbr.gov/lc/region/programs/strategies/agreements/MWDICS.pdf> (agreement between the United States and the Metropolitan Water District of Southern California); <http://www.usbr.gov/lc/region/programs/strategies/agreements/SNWAICS.PDF> (agreement between the United States and the Southern Nevada Water Authority and Colorado River Commission of Nevada).

¹⁸² The cover letter from the states transmitting their agreement to the Secretary suggests they might someday be amenable to some interstate Extraordinary Conservation ICS projects, namely, those that do not reallocate Colorado River water but rather augment the water supply. The letter contemplates future authorization for "water users in Arizona, California, or Nevada to secure additional water supplies by funding the development of a non-Colorado River System water supply in one Lower Division State for use in another Lower Division State by exchange." Letter to Sec'y, *supra* note 8, at J-4. This would allow intrabasin-interstate desalination.

¹⁸³ ROD—COLORADO RIVER INTERIM GUIDELINES, *supra* note 1, § 8.A, at 57.

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not related to intrabasin-interstate reallocation. Concerned states might come to see the wisdom of agreeing to authorize some intrabasin-interstate Extraordinary Conservation ICS projects in return for a deal that would protect them from the feared adverse resolution.¹⁸⁴

2. *Interbasin-Interstate Reallocation*

Sometimes the most economical and environmentally acceptable way for rapidly growing Lower Division municipalities to obtain needed water supplies might be to lease or purchase water or water rights from Upper Basin appropriators, tribes with exercised or unexercised reserved water rights, or states with unused apportionments. The states disagree about whether the Colorado River Compact prohibits all interbasin transfers.¹⁸⁵

The Upper Division states point out that article III(a) of the compact apportions to each basin “in perpetuity . . . the exclusive beneficial consumptive use” of 7.5 maf annually.¹⁸⁶ They argue this means the Upper Basin’s 7.5 maf of beneficial consumptive use must forever occur exclusively in that basin, and none of the water needed for such use can be sold or leased for use in the Lower Basin.¹⁸⁷ They contend article VIII reinforces this result¹⁸⁸ by providing “[a]ll . . . rights to beneficial use of waters of the Colorado River System shall be satisfied solely from the water apportioned to that basin in which they are situate.”¹⁸⁹ Finally, they note article III(e) prohibits the Upper Division states from withholding water that they cannot put to domestic or agricultural use but the Lower Division states can.¹⁹⁰ They argue this means the unused part of an Upper Division state’s apportionment cannot be sold or leased because the state has nothing to transfer, and the same is true of tribes with unexercised reserved water rights.¹⁹¹

The Lower Division states have not always opposed these arguments because they liked the idea of being able to get extra water free under article

¹⁸⁴ Implementation of interstate Extraordinary Conservation ICS projects may require separate state regulatory approval. *Cf. id.* § 3.B.1.e, at 40 (contractor proposal to create ICS must submit to Secretary documentation regarding any state permits obtained or that need to be obtained). Water transfers can have adverse effects on third parties, *see* COLORADO RIVER BASIN WATER MANAGEMENT, *supra* note 2, at 59, that state laws regulate. It may be advisable, therefore, to consider adjusting state laws on water transfers or exchanges to facilitate them while still taking account of third-party effects. *Cf.* Robert Glennon & Michael J. Pearce, *Transferring Mainstem Colorado River Water Rights: The Arizona Experience*, 49 ARIZ. L. REV. 235, 242-48, 256 (2007) (discussing the applicability of both federal and state rules to the intrastate transfer of Colorado River water rights in Arizona and recommending that Reclamation and the Arizona Department of Water Resources work together to “remove unnecessary or outdated impediments to these transfers and, especially, . . . to smooth the way for the reallocation of water where such reallocation enhances state and federal water management goals”).

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¹⁸⁵ Compare Lochhead, *supra* note 152, at 324-26 (prohibited), with Lindgren, *supra* note 152, at 25-34 to -36 (allowed).

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¹⁸⁶ Colorado River Compact of 1922 art. III(a), 70 CONG. REC. 324 (1928).

¹⁸⁷ Lochhead, *supra* note 152, at 324-26.

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¹⁸⁸ *Id.*

¹⁸⁹ Colorado River Compact art. VIII (subject to an exception not relevant here).

¹⁹⁰ *Id.* art. III(e). This provision is affected by section 602(a) of the Colorado River Basin Project Act of 1968. *See supra* text accompanying notes 37-39.

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¹⁹¹ Lochhead, *supra* note 152, at 326.

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III(e) rather than having to purchase or lease it. But Lower Division advocates have sometimes offered counterarguments. They say article III(a) does not impose a geographical restriction on water use. Rather, it apportions 7.5 maf to the Upper Basin states for them to administer under their respective legal regimes, and state water laws generally allow sale or lease for out-of-state use as freely as for in-state use, as required by the Dormant Commerce Clause.¹⁹² Also, they argue that even if the word “rights” in article VIII were to prevent the interbasin sale of a water right, it does not prevent the leasing of water under an Upper Basin water right for Lower Basin use.¹⁹³

Litigation might someday be required to resolve the uncertain status of interbasin transfers under the compact. In the spirit of avoiding litigation of that compact issue, as well as other contentious law-of-the-river issues, the discussion below outlines a daring litigation strategy. The premise underlying the strategy is that the prospect of litigating such issues should be daunting enough to motivate the states to collaborate on a resolution less unpredictable and less flexible than judicial resolution.

The litigation strategy is daring because it rejects the conventional understanding that a state cannot withdraw from a water compact unless the compact authorizes withdrawal.¹⁹⁴ The Supreme Court has taken notice of the conventional understanding but has not directly passed on its validity.¹⁹⁵ The problem with the conventional understanding is that it overlooks the reserved powers doctrine.

The reserved powers doctrine prohibits a state from contractually surrendering any of its essential sovereign powers.¹⁹⁶ The rationale is that states were organized for the purpose of exercising essential sovereign powers, and the subjects of those powers inherently require continuing state supervision.¹⁹⁷ Because a state lacks capacity to contract away the future exercise of any essential sovereign power, it can later reject or withdraw from a contract purporting to surrender the power without liability or penalty.

The classic example of the reserved powers doctrine is *Stone v. Mississippi*.¹⁹⁸ The Mississippi Legislature issued a corporate charter, which has the status of a contract between the state and the corporation,¹⁹⁹ authorizing the corporation to operate a lottery in the state for a specified period.²⁰⁰ Later, but before the period expired, the Legislature banned lotteries in the interests of promoting public health and public morals.²⁰¹ The corporation challenged the

¹⁹² Lindgren, *supra* note 152, at 25-34 to -36.

¹⁹³ David J. Guy, *When the Law Dulls the Edge of Chance: Transferring Upper Basin Water to the Lower Colorado River Basin*, 1991 UTAH L. REV. 25, 35.

¹⁹⁴ See FREDERICK L. ZIMMERMANN & MITCHELL WENDELL, *THE LAW AND USE OF INTER-STATE COMPACTS* 40 (1961).

¹⁹⁵ *Texas v. New Mexico*, 462 U.S. 554, 569-70 (1983).

¹⁹⁶ *United States v. Winstar Corp.*, 518 U.S. 839, 888 (1996); *U.S. Trust Co. v. New Jersey*, 431 U.S. 1, 23 (1977); *Home Bldg. & Loan Ass'n v. Blaisdell*, 290 U.S. 398, 435 (1934).

¹⁹⁷ *Stone v. Mississippi*, 101 U.S. 814, 819 (1879).

¹⁹⁸ *Id.*

¹⁹⁹ *Planters' Bank of Miss. v. Sharp*, 47 U.S. 301, 309 (1848); *Trs. of Dartmouth Coll. v. Woodward*, 17 U.S. 518, 590 (1819).

²⁰⁰ *Stone*, 101 U.S. at 817.

²⁰¹ *Id.* at 819.

ban on the ground that it impaired the lottery contract in violation of the Contract Clause of the United States Constitution.²⁰² The Supreme Court upheld the ban because “[n]o legislature can bargain away the public health or the public morals.”²⁰³ In other cases, the Court has applied the reserved powers doctrine to enable a legislature to promote the public welfare in the form of citizen economic well-being.²⁰⁴

If the reserved powers doctrine applies to a state legislature’s ratification of an interstate water apportionment compact, a later legislature would be free to withdraw from the compact in order to seek a more favorable water allocation for its citizens by another means. The Court has never specifically addressed the applicability of the reserved powers doctrine to an interstate compact. An interstate compact differs from a contract between a state and a private party. All the parties to the compact are states, and the Compact Clause of the Constitution requires the consent of Congress for the agreement to become operative.²⁰⁵ But the author has argued at length elsewhere that the reserved powers doctrine should apply to water compacts and allow withdrawal by a signatory state.²⁰⁶ This would include the Colorado River Compact and would allow a basin state to withdraw despite the lack of any provision in the compact authorizing that.

If a state withdraws from a water compact, the alternatives open to it for seeking a more favorable allocation are an act of Congress or a Supreme Court decree. Congress has been extremely reluctant to exercise its power to allocate rivers between states,²⁰⁷ so Supreme Court allocation seems the more viable alternative. The Court applies federal interstate common law²⁰⁸ that calls for an “equitable apportionment of benefits between the . . . States resulting from the flow of the river.”²⁰⁹ Under this principle, the Court considers “all the factors which create equities in favor of one State or the other.”²¹⁰ While the relevant factors vary from case to case and are potentially numerous,²¹¹ three factors have played recurring and prominent roles.

First, the Court is inclined to protect existing economies dependent on water use,²¹² especially over proposed uses.²¹³ The Court has said, “[T]he equities supporting the protection of existing economies will usually be compelling. The harm that may result from disrupting established uses is typically

²⁰² *Id.* at 816.

²⁰³ *Id.* at 819.

²⁰⁴ *E.g.*, *City of El Paso v. Simmons*, 379 U.S. 497, 508 (1965); *Chicago & Alton R.R. Co. v. Tranbarger*, 238 U.S. 67, 76-77 (1915); *Atl. Coast Line R.R. Co. v. City of Goldsboro*, 232 U.S. 548, 558-61 (1914).

²⁰⁵ *Texas v. New Mexico*, 462 U.S. 554, 559 (1983) (dictum); *Hinderlider v. La Plata River & Cherry Creek Ditch Co.*, 304 U.S. 92, 105 (1938) (dictum).

²⁰⁶ Douglas L. Grant, *Interstate Water Allocation Compacts: When the Virtue of Permanence Becomes the Vice of Inflexibility*, 74 U. COLO. L. REV. 105 (2003).

²⁰⁷ *Id.* at 173-75.

²⁰⁸ *See Arizona v. California*, 373 U.S. 546, 565-66 (1963).

²⁰⁹ *Kansas v. Colorado*, 206 U.S. 46, 118 (1907).

²¹⁰ *Colorado v. Kansas*, 320 U.S. 383, 394 (1943), *quoted in Nebraska v. Wyoming*, 325 U.S. 589, 618 (1945).

²¹¹ *See Nebraska*, 325 U.S. at 618 (listing eight factors but adding the list was “merely an illustrative, not an exhaustive catalogue”).

²¹² *See id.* at 618-21; *Washington v. Oregon*, 297 U.S. 517, 523 (1936).

certain and immediate, whereas the potential benefits from a proposed diversion may be speculative and remote.”²¹⁴

Second, the Court compares the harms and benefits in the competing states if one gets the water at issue and the other does not.²¹⁵ Notwithstanding the Court’s inclination to protect existing economies, this second factor is powerful enough to justify reallocating water from existing use in one state to new use in another state if the benefits will substantially outweigh the harm.²¹⁶

Third, the Court expects every state to use financially and physically feasible measures to conserve and augment its water supply, and a state’s failure to do so will count against it in equitable apportionment.²¹⁷ This concern dovetails with a harm-benefit comparison. The state that does not get the water at issue will suffer less harm to the extent it can offset the loss by conservation or augmentation measures.²¹⁸ Similarly, the state that gets the water will benefit less to the extent it could have freed up other water through conservation or augmentation.²¹⁹

These three recurring and prominent equitable apportionment factors generally favor the Lower Division states. The Upper Division states, which are presently using less than two-thirds of their compact apportionment, project increasing new uses of water. During shortage conditions, these new uses often will come at the expense of earlier Lower Division uses. The Court’s inclination to protect existing uses favors the Lower Division. Furthermore, to the extent the new Upper Basin water uses will be for low-value irrigation, harm-benefit comparison is unlikely to help Upper Basin states overcome the preference for protecting existing uses. Finally, Lower Division ICS projects developed under the Secretary’s guidelines should help the Lower Division states with the apportionment factor requiring feasible water conservation and supply augmentation.

This is not to suggest the Upper Basin states would lack equities to urge upon the Court or that any Lower Division state could be totally confident of gaining more water from equitable apportionment litigation. Equitable apportionment requires the weighing of multiple factors that are incommensurable, and there is a dearth of precedent on how to weigh competing factors. For these reasons, unpredictability is the hallmark of equitable apportionment litigation. Two Upper Basin advocates graphically called the unpredictability the “terror” of equitable apportionment litigation.²²⁰ Interestingly, however, they acknowledged that if the Court were to apportion equitably the Colorado River, “the northern states would be up the proverbial creek without a paddle.”²²¹

²¹³ Wyoming v. Colorado, 259 U.S. 419, 469 (1922) (desirable to protect “a recognized and profitable industry . . . carried on [in Wyoming] for many years . . . of general economic value” against proposed water use in Colorado).

²¹⁴ Colorado v. New Mexico, 459 U.S. 176, 187 (1982).

²¹⁵ See *id.* at 186-87.

²¹⁶ *Id.* at 187.

²¹⁷ *Id.* at 185.

²¹⁸ *Id.* at 187-88.

²¹⁹ *Id.* at 188.

²²⁰ Carlson & Boles, *supra* note 152, at 21-32.

²²¹ *Id.* at 21-45.

If any of several ambiguities in the Colorado River Compact and other elements of the law of the river were to be litigated rather than resolved collaboratively, a win for the Upper Division states might leave the Lower Division states feeling so frustrated and disadvantaged by the outcome that one or more of them would respond by filing suit in the Supreme Court to withdraw from the compact and obtain an equitable apportionment decree. For example, suppose the Upper Division states get a judgment interpreting the compact to prohibit the interbasin sale or lease of water or water rights, and a Lower Division state then brings suit to withdraw from the compact and obtain an equitable apportionment. Conceivably, if not probably, the Supreme Court would enter an apportionment decree giving the Upper Division states less water than the compact did. If so, the Upper Division states would have been better off agreeing to sell or lease water to the Lower Division state rather than litigating and winning the compact interpretation issue but later losing the water under the equitable apportionment doctrine without getting any *quid pro quo*.

The litigation strategy just outlined is daring for another reason besides its challenge to conventional wisdom about compact withdrawal. Equitable apportionment litigation provides no assurance of victory for a state that feels disadvantaged by the Colorado River Compact. The Court will dismiss the suit before reaching the merits if the United States is an indispensable party, as it likely would be,²²² and it refuses to waive its sovereign immunity and join the suit. If the suit does go forward on the merits, the litigation would be expensive and would likely take a decade or more. The greatest drawback of equitable apportionment litigation, however, is its previously noted unpredictability of outcome.

While these difficulties should make a dissatisfied state think twice about seeking to withdraw from the Colorado River Compact and obtain an equitable apportionment, the “terror” of unpredictability in such litigation, if it occurs, ought to weigh on the other basin states as well. This ought to make these states consider seriously the risk that a refusal to negotiate and compromise on contentious compact issues, or other law-of-the-river issues, will trigger the “nuclear option” of compact withdrawal and equitable apportionment. If the United States wishes to encourage collaboration regarding contentious issues, it could signal its possible willingness to waive sovereign immunity should a state file suit for compact withdrawal and equitable apportionment.

The Secretary’s 2005 announcement of her intent to develop guidelines on coordinated reservoir operations and Lower Basin shortages stimulated the seven basin states to develop their innovative recent agreement with potential benefits for every state. Perhaps the prospect of litigation for compact withdrawal and equitable apportionment will someday become likely and daunting enough to be a catalyst for the states to overcome intransigence regarding contentious law-of-the-river issues and discover innovative ways to resolve them collaboratively.

²²² *Arizona v. California*, 373 U.S. 546, 601 (1963) (dismissal of Arizona’s suit for equitable apportionment of unappropriated water because the United States was an unjoined but indispensable party).

III. CONCLUSION

When the seven basin states submitted their proposal on Lower Basin shortages and coordinated reservoir operations to the Secretary, Colorado's Governor Bill Ritter called the agreement "the first step in a new era of Western state cooperation."²²³ It is unclear whether he was referring only to cooperation regarding approval of new ICS projects under the interim guidelines as they now stand or to some broader kind of cooperation. He surely was not referring to interbasin reallocation given Colorado's longstanding opposition to that.²²⁴ But one can hope the seven states' agreement becomes the first step in a new era of broader collaboration that someday will enable intrabasin-interstate and interbasin-interstate reallocation to cope with an ever-growing imbalance between water supply and demand in the Lower Basin.

²²³ 7 *Colorado River States Submit Water Sharing Plan*, CBS DENVER, May 1, 2007, <http://cbs4denver.com/local/Colorado.News.Denver.2.558549.html>.

²²⁴ See Lochhead, *supra* note 152, at 322-29.