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## EQUITABLE APPORTIONMENT OF TRANSBOUNDARY WATERS: PROBLEMS OF PROOF AND CLIMATE CHANGE

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## § 9.01 Introduction\*

In 1859, Lord Kingsdown of the House of Lords<sup>1</sup> declared a question as to water rights to be “one of the most important questions that ever came under the consideration of a court of justice.”<sup>2</sup> Seventy-two years later, the oft-quoted Justice Oliver Wendell Holmes Jr., wrote on behalf of a unanimous U.S. Supreme Court that: “[a] river is . . . a treasure. It offers a necessity of life that must be rationed among those who have power over it.”<sup>3</sup> These are striking words, and rightly so, for freshwater is essential to human survival.

In the United States, states’ rights to transboundary (interstate) water may be settled by an interstate compact,<sup>4</sup> by Congress,<sup>5</sup> or by the U.S. Supreme Court. This chapter explores the latter. More specifically, it investigates the state of the law regarding equitable apportionment of interstate waters by the U.S. Supreme Court, compares and contrasts the similar test

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<sup>1</sup>The House of Lords of the United Kingdom as it was; now, the Supreme Court of the United Kingdom.

<sup>2</sup>*Chesmore v. Richards*, [1859] 7 UKHL 349, 390.

<sup>3</sup>*New Jersey v. New York*, 283 U.S. 336, 342–43 (1931).

<sup>4</sup>U.S. Const. art. I, § 10, cl. 3 (Compact Clause). Until around 50 years ago, the majority of interstate water disputes were resolved by interstate agreement (compact). Compacts must be approved by Congress, and are considered statutory federal law. *See, e.g., Arizona v. California*, 373 U.S. 546 (1963).

<sup>5</sup>Congress can apportion navigable interstate waters under the commerce clause of the U.S. Constitution. U.S. Const. art. I, § 8, cl. 3 (Commerce Clause). An example of this that was acknowledged by the U.S. Supreme Court in *Arizona v. California*, 373 U.S. 546 (1963), is the Boulder Canyon Project Act of 1928, which apportions the lower Colorado River. In *Arizona v. California*, the Special Master found, and the Court agreed, that the Boulder Canyon Project Act apportioned the waters among the various states through contracts entered into by the Secretary of the Interior.

applied under international law, and considers whether climate change will further complicate problems of proof.

To succeed in an equitable apportionment action before the U.S. Supreme Court, a complaining state must show that it receives a “benefit” from the flow of interstate water, and it must show to the clear and convincing standard that (1) the opposing state is materially and substantially injuring that benefit, or is threatening to do so; and (2) the benefit it would receive from an apportionment will “substantially outweigh” any harm that might be caused to the opposing state. This is no mean feat that requires extensive evidence, typically including testimony from expert hydrogeologists, hydrologists, hydrologic modeling experts, water resource engineers, evapotranspiration and water consumption experts, agricultural scientists, soil salinity scientists, economists, historians, and water users.

The upshot is that it is not easy to prove what is “equitable” (fair), and it is not easy to prove injury. The Court has also expressed reluctance to rule against the status quo, especially where interstate waters have been utilized to facilitate a thriving established economy. Compounding this, we are now entering a new era: one in which problems of proof are likely to be exacerbated by the effects of climate change. It is increasingly likely that states will seek to break the chain of causation by arguing that it is climate change that has injured or will injure opposing states. It would be prudent, therefore, for a state seeking an equitable apportionment to get its house and case in order. States must be prepared to show the Court what an equitable apportionment is, that they are themselves reasonably conserving interstate waters and minimizing waste, and that they are able to distinguish injuries caused by the opposing state separate from any complication presented by the effects of climate change.

As climate change intensifies and its effects are felt acutely beyond the American West, states (both downstream and upstream) that are not monitoring water flow and consumption, that are not gathering evidence of the impacts of climate change, and that do not act promptly in asserting their rights may find themselves in “hot water” should they need to call upon the Court for assistance.<sup>6</sup> And call upon the Court they may well need to, in years to come, if interstate water supplies become more scarce or unpredictable, or if demand increases for any number of reasons, including for municipal water supply or energy production.

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<sup>6</sup>For example, see the U.S. Supreme Court’s dicta in *Colorado v. Kansas*, 320 U.S. 383, 394 (1943), to the effect that Kansas’s inaction for 21 years “might well preclude” relief, or at least is a factor that “must be weighed in estimating the equities.”

## § 9.02 Unique Nature of Water and Water Rights

*Everyone thinks chiefly of his own, hardly at all of the common interest, and . . . everybody is more inclined to neglect the duty which he expects another to fulfill.*

Aristotle<sup>7</sup>

Determining who should get how much water, and when, is an unenviable task. Water is vulnerable to the “tragedy of the commons”: those who get their hands on it first may not be incentivized to leave sufficient for others. Water is also unevenly distributed across the United States and the globe, and its availability is becoming increasingly variable and unpredictable.

Water supplies have been protected by public law since at least circa 1750 BCE when control over the use of water for irrigation is recorded in the Babylonian legal text, the Code of Hammurabi.<sup>8</sup> Later, in the Roman Republic, perennial rivers were considered *res publici* (things owned by the public), and water was *res commune* (a collective, common good available for the enjoyment of all) subject to legal restraints imposed by a centralized administration.<sup>9</sup> The *universitatis* (state) owned the bed of the river, and the right to divert water was available to the public subject to state regulations.<sup>10</sup> Provided these *usucapio* rights (rights acquired by length of possession) did not change the flow of the river from that of the previous summer, they could not be prevented by the state.<sup>11</sup>

From Roman law we get the “good neighbor” principle: the principle that water must be used reasonably so as to not injure your neighbor.<sup>12</sup> Roman law also provided a system of general damages law to compensate those who suffered damage at the hands of others.<sup>13</sup> Many centuries on, the regulation of water is mentioned in the Magna Carta (the medieval charter of rights), which states that “all [fish-]weirs from henceforth shall be utterly put down through Thames and Medway, and through all England, except by the sea coasts”—prohibiting the damming of rivers.<sup>14</sup>

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<sup>7</sup>Joshua Getzler, *A History of Water Rights at Common Law* 347 (2004) (citing Aristotle, *Politics and Poetics* bk. II, ch. 3, § 1261b (B. Jowett trans., Oxford, 1885, New York, 1957)).

<sup>8</sup>*Id.* at 10.

<sup>9</sup>Anthony Scott & Georgina Coustalin, “The Evolution of Water Rights,” 35 *Nat. Resources J.* 821, 835 (1995).

<sup>10</sup>*Id.* at 835–36.

<sup>11</sup>*Id.* at 836.

<sup>12</sup>*Id.*

<sup>13</sup>*Id.* at 836–37.

<sup>14</sup>Getzler, *supra* note 7, at 21 (quoting 9 Hen. 3 (Magna Carta, 1224–25), c. 22).

At least two natural characteristics of water make it difficult to determine rights in water that flows interstate (transboundary). First, its fluidity: individual molecules of water in streams or aquifers are not “owned” per se. Rather, rights in the flow of water are usufructuary: they are rights to the use and benefit of water from or at a particular location. This makes such rights uniquely vulnerable in that they are easily impacted by the actions of others. Second, water flows without regard to any particular political or jurisdictional boundaries. At the same time, we have diverted rivers from their natural courses, interfered with natural flows, and pumped increasing volumes of water from underground aquifers.

### § 9.03 Bedrock Principle of Equality of Sovereign States

From international law, the United States has inherited the bedrock principle of equality of sovereign states.<sup>15</sup> In the U.S. federal system, the principle of “equal footing” is “essential to ensure that the nation remains ‘a union of States [alike] in power, dignity and authority . . .’”<sup>16</sup> In part for this reason, the U.S. Supreme Court has repeatedly admonished states to seek to resolve interstate disputes through mutual accommodation and agreement, rather than to seek adjudication by the Court.<sup>17</sup> Similarly, the federal government has encouraged or required states to enter into interstate compacts before agreeing to build large water reclamation projects or agreeing to provide water to states from federal projects.<sup>18</sup> Absent such pressures, there are limited incentives, particularly for upstream states, to voluntarily enter into compacts constraining water consumption. It is, therefore, not surprising that the vast majority of such agreements were

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<sup>15</sup>See, e.g., United Nations, *Charter of the United Nations*, 24 October 1945, 1 UNTS XVI, art. 2(1) (“The Organization is based on the principle of the sovereign equality of all its Members.”).

<sup>16</sup>*Puerto Rico v. Sánchez Valle*, 136 S. Ct. 1863, 1871 n.4 (2016) (alteration in original) (quoting *Coyle v. Smith*, 221 U.S. 559, 567 (1911)).

<sup>17</sup>See *Arizona v. California*, 373 U.S. 546, 564 (1963); see also, e.g., *Florida v. Georgia*, 138 S. Ct. 2502, 2509 (2018) (*Florida I*); *Oklahoma v. New Mexico*, 501 U.S. 221, 241 (1991); *Colorado v. Kansas*, 320 U.S. 383, 392 (1943) (interstate water disputes “may appropriately be composed by negotiation and agreement, pursuant to the compact clause of the Federal constitution. . . . [M]utual accommodation and agreement should, if possible, be the medium of settlement, instead of invocation of our adjudicatory power.”).

<sup>18</sup>See, e.g., *Colorado River Compact* (1922); *Animas-La Plata Project Compact* (1968); *Rio Grande Compact* (1939).

entered into more than 50 years ago, and most concern water-sparse western U.S. states.<sup>19</sup>

### § 9.04 Equitable Apportionment of Transboundary Waters by the U.S. Supreme Court

The power of the U.S. Supreme Court to “equitably apportion” waters that cross U.S. state lines is extraordinary.<sup>20</sup> The Court’s original jurisdiction in such cases is exceptional: it is “concerned with disputes so serious that they would be grounds for war if the States were truly sovereign.”<sup>21</sup>

Since the early twentieth century, the Court has issued decisions in at least nine interstate water equitable apportionment cases not involving interstate compacts.<sup>22</sup> The Court has heard “disputes over interstate river basins,” cases “where the pumping of groundwater has affected the flow of

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<sup>19</sup>See Draper & Draper LLC, “U.S. Transboundary Water Map,” <https://www.draperllc.com/us-transboundary-water-map>. Colorado River Compact (1928); La Plata River Compact (1925); South Platte River Compact (1926); Rio Grande Compact (1939); Republican River Compact (1943); Belle Fourche River Compact (1944); Costilla Creek Compact (1946, 1963); Upper Colorado River Basin Compact (1949); Arkansas River Compacts (1949, 1966); Pecos River Compact (1949); Snake River Compact (1950); Yellowstone River Compact (1950); Canadian River Compact (1952); Sabine River Compact (1953); Red River Compact (1955, 1980); Klamath River Compact (1957); Bear River Compact (1958); Delaware River Basin Compact (1961); Susquehanna River Basin Compact (1968); Upper Niobrara River Compact (1969); Big Blue River Compact (1971).

<sup>20</sup>See *Colorado v. New Mexico*, 459 U.S. 176, 183 (1982) (*Colorado I*) (“Equitable apportionment is the doctrine of federal common law that governs disputes between states concerning their rights to use the water of an interstate stream.”).

<sup>21</sup>*South Carolina v. North Carolina*, 558 U.S. 256, 289 (2010) (Roberts, C.J., dissenting in part); see also, e.g., *Rhode Island v. Massachusetts*, 37 U.S. (12 Pet.) 657, 725 (1838); *Kansas v. Colorado*, 185 U.S. 125, 140 (1902); *North Dakota v. Minnesota*, 263 U.S. 365, 372–73 (1923).

<sup>22</sup>*Kansas v. Colorado*, 206 U.S. 46 (1907); *Wyoming v. Colorado*, 259 U.S. 419 (1922) (*Laramie River*); *Connecticut v. Massachusetts*, 282 U.S. 660 (1931) (*Connecticut River*); *New Jersey v. New York*, 283 U.S. 336 (1931) (*Delaware River*); *Washington v. Oregon*, 297 U.S. 517 (1936) (*Walla Walla River*); *Colorado v. Kansas*, 320 U.S. 383 (1943) (*Arkansas River*); *Nebraska v. Wyoming*, 325 U.S. 589 (1945) (*North Platte River*); *Colorado I*, 459 U.S. 176, and *Colorado v. New Mexico*, 467 U.S. 310 (1984) (*Colorado II*) (*Vermejo River*); *Florida I*, 138 S. Ct. 2502, and *Florida v. Georgia*, 141 S. Ct. 1175 (2021) (*Florida II*) (*Apalachicola-Chattahoochee-Flint River (Basin)*).

interstate *surface* waters,”<sup>23</sup> and most recently, a case concerning an interstate groundwater aquifer.<sup>24</sup> “[N]ot infrequently” the question presented is one of “exceeding difficulty,”<sup>25</sup> and a common thread running through each of these cases is the difficulty of proof.

The power of the U.S. Supreme Court to hear “all Cases, in Law and Equity . . . between two or more States” is enshrined in the U.S. Constitution.<sup>26</sup> The empowerment to hear cases in equity, and to award equitable relief, was a stroke of genius, but it is also double-edged. It enables the Court to look beyond the rigidity of legislation, and the common law, with the aim to achieve fairness between the states based on the specific facts and the specific evidence presented in any given case. But this comes with a lack of certainty, and places greater emphasis on the need for states to come to the Court well prepared, with robust evidence supporting their claims.

### [1] The Double-Edged Beauty of Equity

As Justice Story perfectly encapsulated: “The beautiful character, or pervading excellence, if one may so say, of Equity Jurisprudence is, that it varies its adjustments and proportions so as to meet the very form and pressure of each particular case in all its complex habitudes.”<sup>27</sup>

Equity is flexible. It can provide an immediate response to new, evolving conditions. It is, in essence, an open-ended system that responds to an open-ended set of problems. It is these characteristics that make the exercise of equity uniquely suited to the resolution of transboundary (interstate) water disputes, particularly when facing evolving challenges such as those that are, and will be presented by climate change.

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<sup>23</sup>Mississippi v. Tennessee, 595 U.S. 15, 24 (2021); see First Report of the Special Master (Subject: Nebraska’s Motion to Dismiss) at 44–45, Kansas v. Nebraska & Colorado, No. 126, Orig. (Jan. 28, 2000) (recommending that Nebraska’s motion to dismiss Kansas’s complaint be denied because groundwater pumping that impacts streamflow in the Republican River Basin must be included in the pumping state’s compact apportionment); Kansas v. Nebraska, 530 U.S. 1272 (2000) (denying Nebraska’s motion to dismiss); Kansas v. Colorado, 514 U.S. 673, 693–94 (1995) (“The Special Master concluded that . . . he had ‘no difficulty in concluding that [post-Compact] pumping in Colorado had caused material depletions of the usable Stateline flows of the Arkansas River, in violation of the Arkansas River Compact.’ We agree with this determination, and thus overrule Colorado’s exception.”).

<sup>24</sup>Mississippi v. Tennessee, 595 U.S. 15 (2021).

<sup>25</sup>Kansas v. Colorado, 206 U.S. at 61.

<sup>26</sup>Article III, § 2, Clause 2 of the U.S. Constitution grants the U.S. Supreme Court original jurisdiction in “all cases . . . in which a state shall be a party.” Exclusive jurisdiction was first afforded by The Judiciary Act of 1789, and is currently codified at 28 U.S.C. § 1251(a).

<sup>27</sup>Joseph Story, *Commentaries on Equity Jurisprudence: As Administered in England and America* 420 (1836).



[2] *Kansas v. Colorado* (1902, 1907)

The Court first affirmed its constitutional power to adjudicate an interstate river in a case between downstream Kansas and Colorado.<sup>28</sup> The question presented was “whether Kansas has a right to the continuous flow of the waters of the Arkansas river, as that flow existed before any human interference therewith, or [whether] Colorado [has] the right to appropriate the waters of that stream so as to prevent that continuous flow . . . .”<sup>29</sup>

Rejecting Colorado’s position that it had no duty to share the waters of interstate streams with Kansas, the Court ultimately found in favor of Colorado, noting that “the result of [Colorado’s] appropriation has been the . . . transformat[ion of] thousands of acres [of Colorado] into fertile fields . . . rendering possible their occupation and cultivation”; and while this appropriation “has diminished the flow of water into the state of Kansas,” it “has worked little, if any, detriment” to that state.<sup>30</sup>

There were at least four key principles articulated in this case that set the stage for the resolution of future U.S. interstate water disputes. First is the acknowledgment by the Court of the state’s equality of right:

One cardinal rule, underlying all the relations of the states to each other, is that of *equality of right*. Each state stands on the same level with all the rest. . . . Yet, whenever . . . the action of one state reaches, through the agency of natural laws, into the territory of another state, the question of the extent and the limitations of the rights of the two states becomes a matter of justiciable dispute between them, and this court is called upon to settle that dispute in such a way as will recognize the equal rights of both and at the same time establish justice between them.<sup>31</sup>

Second is the acknowledgment that the states are “sovereign” and

the relations between them depend . . . upon principles of international law. . . . International law is part of our law [and] . . . [s]itting, as it were, as an international, as well as a domestic tribunal, we apply Federal law, state law, and international law, as the exigencies of the particular case may demand.<sup>32</sup>

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<sup>28</sup>*Kansas v. Colorado*, 206 U.S. 46 (1907). This dispute was first before the Court five years earlier, in 1902, when the Court overruled a plea for demurrer, finding that the “intricate questions” raised required further evidence. *Kansas v. Colorado*, 185 U.S. 125, 147 (1902).

<sup>29</sup>*Kansas v. Colorado*, 206 U.S. at 85.

<sup>30</sup>*Id.* at 117.

<sup>31</sup>*Id.* at 97–98 (emphasis added).

<sup>32</sup>*Id.* at 97 (internal quotation marks omitted); *see also, e.g.*, *Connecticut v. Massachusetts*, 282 U.S. 660, 670 (1931) (“For the decision of suits between States, federal, state and international law are considered and applied by this Court as the exigencies of the particular case may require. The determination of the relative rights of contending States in respect of the use of streams flowing through them does not depend upon the same considerations and is not governed by the same rules of law that are applied in such States for the solution of similar questions of private right.”).



Third is that a state seeking an equitable apportionment of interstate waters must show that its “substantial interests . . . are being injured” such that “the equitable apportionment of benefits” it receives from the “flow” of the interstate water source are (or will be) “destroy[ed].”<sup>33</sup>

Fourth, the jurisdiction of the Court is not a one-time deal: the Court explicitly left the door open to Kansas to come back at a later date “if the depletion of the waters of the river by Colorado continues to increase” to a “material” extent, such that the substantial interests of that state are being injured so that the equitable apportionment of benefits between the two states resulting from the flow of the river is being destroyed.<sup>34</sup>

More recently, the Court has reiterated that what constitutes an equitable apportionment may “change over time,”<sup>35</sup> and has made it clear that even if the Court enters a decree based on an adjudication as to “conditions as they obtain today,” if those conditions “substantially change,” a state may have to come back to the Court so “the decree can be adjusted to meet the new conditions.”<sup>36</sup> This may be particularly relevant in the face of climate change.

### [3] *Wyoming v. Colorado* (1922)

Four years after the decision in *Kansas v. Colorado*, downstream Wyoming sued Colorado with the aim of preventing that state from making a proposed diversion from the interstate Laramie River.<sup>37</sup> The Court made a number of significant findings, including that “[b]oth states were territories long before they were admitted into the Union as states” and “[a]t first the United States owned all the lands in both.”<sup>38</sup> Also, both states are prior appropriation states, and the principles of that doctrine are “the same on both sides of the line”<sup>39</sup>—in these circumstances, “why should not appropriations . . . be respected, as between the two states, according to their several priorities, as would be done if the stream lay wholly within either state? By what principle of right or equity may either state proceed

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<sup>33</sup>*Kansas v. Colorado*, 206 U.S. at 118.

<sup>34</sup>*Id.* at 117–18; *see also, e.g., Nebraska v. Wyoming*, 325 U.S. 589, 622–23 (1945) (“If conditions of supply substantially change, any party can apply for modification of the decree. The decree will not necessarily be for all time.”).

<sup>35</sup>*Florida I*, 138 S. Ct. at 2527.

<sup>36</sup>*Nebraska v. Wyoming*, 325 U.S. at 620.

<sup>37</sup>*Wyoming v. Colorado*, 259 U.S. 419 (1922).

<sup>38</sup>*Id.* at 458.

<sup>39</sup>*Id.* at 468; *see, e.g., id.* at 458–59 (“The common-law rule respecting riparian rights in flowing water never obtained in either state.”).

in disregard of prior appropriations in the other?”<sup>40</sup> Also, Wyoming was “not seeking to interfere with a diversion which has long been practiced and under which much reclamation has been effected” (contrary to the facts in *Kansas v. Colorado*), but rather was seeking “to prevent a proposed diversion for the benefit of lands as yet unreclaimed.”<sup>41</sup>

On the evidence presented, the Court found that “the entire supply available for the proposed Colorado appropriation and the Wyoming appropriations . . . is 288,000 acrefeet”;<sup>42</sup> “the amount covered by senior appropriations in Wyoming is 272,500 acre-feet”;<sup>43</sup> and that this leaves 15,500 acre-feet available for the “junior appropriation in Colorado.”<sup>44</sup> The Court thus entered a decree “enjoining [Colorado] from diverting or taking more than 15,500 acre-feet per year from the Laramie river” for the purpose of the proposed diversion.<sup>45</sup>

#### [4] *Connecticut v. Massachusetts* (1931)

A decade later, downstream Connecticut sued Massachusetts with the aim of preventing a diversion from the interstate Connecticut River to provide water for the city of Boston.<sup>46</sup> Here, both states followed the riparian system of water rights.<sup>47</sup> The Court denied Connecticut’s request to limit Massachusetts’s diversions, finding that “Boston and the surrounding metropolitan area are faced with a serious water shortage in the near future and there is need for a large quantity of additional water”<sup>48</sup>: “[d]rinking and other domestic purposes are the highest uses of water.”<sup>49</sup> The Court also found that Connecticut had failed to show “any real or substantial injury or damage” resulting from the proposed diversion.<sup>50</sup>

Prior to the litigation, the U.S. Secretary of War had raised concerns that the Connecticut River below Hartford remain navigable for naval ships.

<sup>40</sup>*Id.* at 468.

<sup>41</sup>*Id.* at 465.

<sup>42</sup>*Id.* at 488.

<sup>43</sup>*Id.* at 496.

<sup>44</sup>*Id.*

<sup>45</sup>*Id.*

<sup>46</sup>*Connecticut v. Massachusetts*, 282 U.S. 660 (1931).

<sup>47</sup>*See, e.g., id.* at 662.

<sup>48</sup>*Id.* at 664.

<sup>49</sup>*Id.* at 673; *see also id.* at 674 (“Massachusetts declares that she intends to and must obey these findings of the War Department.”).

<sup>50</sup>*Id.* at 672; *see also, e.g., id.* at 667 (“Connecticut failed to establish that the taking of flood waters will be materially injurious to the shard run or that the diversion will perceptibly increase the pollution of the river.”).

Massachusetts had agreed to certain minimum flows to achieve this. The Court noted Massachusetts had “applied to the Secretary of War for authority to make the proposed diversions,” that permission had been granted, and that “Massachusetts declares that she intends to divert no more water than the Secretary of War permits and that she will in every way follow the conditions he imposes.”<sup>51</sup> The involvement of a federal agency, prior to this case, may have been significant, especially where Connecticut had failed to prove harm.

#### [5] *New Jersey v. New York* (1931)

Within months of the decision in *Connecticut v. Massachusetts*, the Court issued a judgment in *New Jersey v. New York*.<sup>52</sup> There, New York similarly sought to divert “a large amount of water” from the Delaware River “in order to increase the water supply of the City of New York.”<sup>53</sup> Downstream New Jersey brought suit to enjoin New York, alleging an array of harms including injuring “the sanitary conditions of the River”; increased salinity which will injure the oyster industry, the shad fisheries and “the municipal water supply of the New Jersey towns and cities on the River”; and injury to recreational use of the river.<sup>54</sup>

The Court found that New Jersey had presented insufficient evidence to support its claim, with the exception of that relating to “use for recreation” and “the effect of increased salinity of the River upon the oyster fisheries.”<sup>55</sup> The Court then found that these harms would be negated if (1) New York was limited to diverting only 440 million gallons daily (rather than the sought 600 million gallons), and (2) New York constructed a new sewage treatment plant at a particular location.<sup>56</sup> The Court further required New York to release water from storage when the flow of the river fell below a certain rate.<sup>57</sup>

#### [6] *Washington v. Oregon* (1936)

Five years later, the Court issued judgment in *Washington v. Oregon*.<sup>58</sup> Downstream Washington sued Oregon alleging wrongful diversion of the

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<sup>51</sup>*Id.* at 665, 669 (citation omitted).

<sup>52</sup>283 U.S. 336 (1931).

<sup>53</sup>*Id.* at 342.

<sup>54</sup>*Id.* at 343–44.

<sup>55</sup>*Id.* at 345.

<sup>56</sup>*Id.* The Court affirming the special master’s recommendations.

<sup>57</sup>*Id.* at 346–47.

<sup>58</sup>297 U.S. 517 (1936).

waters of the Walla Walla River.<sup>59</sup> Both states were prior appropriation states.<sup>60</sup> The Court found, among other things, that “[a] fair division of the water [was] thus vital to the prosperity of th[e] agricultural community” in both states; that in times of shortage, Oregon irrigators had been diverting water from the river “without interruption and without protest for more than fifty years”; and that limiting these “long established” uses “would materially injure Oregon users without a compensating benefit to Washington users.”<sup>61</sup> The Court also found that “[t]he use of water by the irrigators within the State of Oregon [was] not unduly wasteful,” rather it was “a reasonable, beneficial and necessary use.”<sup>62</sup>

Washington thus failed to satisfy the burden of proof. The record showed that “a substantial part of the water applied to irrigation in Oregon . . . goes into the underground water supply, and returns to the river.”<sup>63</sup> And as to Washington’s additional complaint relating to wells that had been sunk on Oregon land, again, Washington failed to present sufficient evidence: “[t]here is no satisfactory proof that the use of the water from these wells materially lessens the quantity of water available for use within the State of Washington.”<sup>64</sup>

Despite this, Washington alleged that “the Oregon irrigators as a result of all their acts are taking to themselves more than their equitable proportion of the waters of the river; priority of appropriation being the basis of division.”<sup>65</sup> The Court disagreed, finding that “the Oregon irrigators have not exceeded their equitable quota . . . in any measure so substantial as to call for an injunction in a contest between states.”<sup>66</sup>

### [7] *Colorado v. Kansas Revisited (1943)*

The century-long Arkansas River dispute between Kansas and Colorado reached the Court again in 1943. Kansas alleged that Colorado was continuing to take more than its equitable share from the river, but again, Kansas’s evidence failed to satisfy the burden of proof. The Court concluded that “Kansas has not sustained her allegations that Colorado’s use has materially increased, and that the increase has worked a serious detriment to the

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<sup>59</sup>*Id.* at 518.

<sup>60</sup>*Id.* at 521.

<sup>61</sup>*Id.* at 520, 522–23.

<sup>62</sup>*Id.* at 524.

<sup>63</sup>*Id.* (internal quotation marks omitted).

<sup>64</sup>*Id.* at 526.

<sup>65</sup>*Id.*

<sup>66</sup>*Id.* at 526–27.

substantial interests of Kansas.”<sup>67</sup> In so holding, the Court made a number of noteworthy findings, both on the specific facts of the case, and generally.

As a general matter, the Court found that “[t]he lower state is not entitled to have the stream flow as it would in nature regardless of need or use.”<sup>68</sup> As to the specific facts, the Court found that there had been “no material change in Colorado diversions since 1905.”<sup>69</sup> Rather, “since 1904, an increased quantity of usable water has passed the state line,”<sup>70</sup> and “river gains due to return flow have increased, the consumptive use of water has declined, and relatively the stream flows have improved.”<sup>71</sup> Also, the storage of water in reservoirs in Colorado “and the release of stored water to supplement the natural flow of the stream in times of need” has stabilized and has improved “the flow at the state line,” which “benefits irrigation in Kansas.”<sup>72</sup> At the same time, “the acreage under irrigation in western Kansas . . . has steadily increased, over the period 1895-1939, from approximately 15,000 acres to approximately 56,000 acres”; “arid lands in western Kansas are underlaid at shallow depths with great quantities of ground water available for irrigation by pumping at low initial and maintenance cost”; and “[g]enerally speaking, the population has steadily increased [in western Kansas] and . . . agricultural production has also risen . . .”<sup>73</sup> Interestingly, the Court also found that

improvements based upon irrigation went forward in Colorado for twenty-one years, [but] Kansas took no action . . . .

These facts might well preclude the award of the relief Kansas asks. . . . [I]n any event, they gravely add to [Kansas’s] burden . . . , and [this] must be weighed in estimating the equities of the case.<sup>74</sup>

### [8] *Nebraska v. Wyoming* (1945)

Two years later, the Court rendered its decision in a case between Nebraska and Wyoming. Downstream Nebraska sued Wyoming seeking equitable apportionment of the interstate North Platte River; a river whose

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<sup>67</sup>Colorado v. Kansas, 320 U.S. 383, 400 (1943).

<sup>68</sup>*Id.* at 393.

<sup>69</sup>*Id.* at 396.

<sup>70</sup>*Id.* at 398.

<sup>71</sup>*Id.* at 396; *see also id.* at 397–98 (“Since the decision in the earlier case, studies of return flows have been made which indicate a steady reduction in the quantity of water consumed per acre of irrigated land.”).

<sup>72</sup>*Id.* at 397.

<sup>73</sup>*Id.* at 399–400.

<sup>74</sup>*Id.* at 394.

flow was acknowledged to be “long . . . over-appropriated.”<sup>75</sup> Nebraska, Wyoming, and Colorado are, and were, all surface water prior appropriation states.<sup>76</sup> The Court found that

[equitable] [a]pportionment calls for the exercise of an informed judgment on a consideration of many factors. Priority of appropriation is the guiding principle. But physical and climatic conditions, the consumptive use of water in the several sections of the river, the character and rate of return flows, the extent of established uses, the availability of storage water, the practical effect of wasteful uses on downstream areas, the damage to upstream areas as compared to the benefits to downstream areas if a limitation is imposed on the former—these are all relevant factors. They are merely an illustrative, not an exhaustive catalogue. They indicate the nature of the problem of apportionment and the delicate adjustment of interests which must be made.<sup>77</sup>

After 11 years of litigation, and extensive evidence, the Court imposed restrictions on Wyoming’s diversions and water storage, and apportioned the flows of the “pivotal” reach of the river 75% to Nebraska and 25% to Wyoming.<sup>78</sup> The Court reasoned that a “mass allocation”—an allocation of *all* waters of the North Platte River—was not necessary: “[t]he standard of an equitable apportionment requires an adaptation of the formula to the necessities of the particular situation.”<sup>79</sup>

The Court also found that “[t]he established economy in Colorado’s section of the river basin based on existing use of the water should be protected”;<sup>80</sup> and that while Nebraska had failed to show “the existence or extent of actual damage,” the Court was prepared to accept “that deprivation of water in arid or semi-arid regions cannot help but be injurious.”<sup>81</sup>

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<sup>75</sup>*Nebraska v. Wyoming*, 325 U.S. 589, 608 (1945); *see also id.* at 610 (“What we have . . . is a situation where three States assert against a river, whose dependable natural flow during the irrigation season has long been over-appropriated.”), 621 (“On the basis of the conditions which have obtained since 1930, it is plain that the natural flow of the river during the irrigation season has been over-appropriated.”).

<sup>76</sup>*Id.* at 599 (“Colorado and Wyoming have the rule of priority of appropriation as distinguished from the rule of riparian rights. . . . Nebraska on the other hand was originally a riparian doctrine State. But when the more arid sections of the State were settled and the need for irrigation increased, legislation was enacted adopting the appropriation principle.” (citation omitted)); *see also id.* at 600 (“More important, the rights asserted by Nebraska in this suit are based wholly on appropriations which have been obtained and recognized under Nebraska law. The appropriation system is dominant in the regions of Nebraska which are involved in the present litigation. Hence we, like the Special Master, treat the case as one involving appropriation rights not only in Colorado and Wyoming but in Nebraska as well.”).

<sup>77</sup>*Id.* at 618.

<sup>78</sup>*Id.* at 638; *Nebraska v. Wyoming*, 507 U.S. 584, 588 (1993).

<sup>79</sup>*Nebraska v. Wyoming*, 325 U.S. at 627.

<sup>80</sup>*Id.* at 621.

<sup>81</sup>*Id.* at 610.

The Court also ordered Wyoming to keep “complete and accurate” records of irrigated acreages and of storage amounts, “[o]therwise, neither the States nor the other interested parties can know if the acreage and storage limitations are being met.”<sup>82</sup> *Nebraska v. Wyoming* illustrates the flexibility afforded to the Court in equitable apportionment cases when assessing relative harms and benefits, and also shows that the Court will not hesitate to insist on proof and record keeping.

**[9] *Colorado v. New Mexico (1982, 1984)***

Fast forward three decades, and Colorado, who was seeking “to divert water for future uses,” filed suit against downstream New Mexico seeking an equitable apportionment of the Vermejo River.<sup>83</sup> Again, the two states are prior appropriation states.<sup>84</sup>

The Court found that any apportionment “should turn on the benefits, harms, and efficiencies of competing uses.”<sup>85</sup> New Mexico “met its initial burden of showing ‘real or substantial injury’ because ‘any diversion by Colorado, unless offset by New Mexico at its own expense, [would] necessarily reduce the amount of water available to New Mexico users.’”<sup>86</sup> Colorado then argued that any injury to New Mexico would be outweighed by “reasonable conservation measures” available to that state.<sup>87</sup> For example, “Colorado alleged that New Mexico could improve its administration of stockponds, fishponds, and water detention structures . . .”<sup>88</sup> “Similarly, . . . Colorado asserted that more rigorous water administration could eliminate blocked diversion works and ensure more careful development of water supplies . . .”<sup>89</sup>

In these circumstances—“once a State successfully proves that a diversion will cause it injury,” and where the diverter argues mitigation in the form of “reasonable conservation measures,” the Court held that the diverter bears that evidentiary burden.<sup>90</sup> Colorado failed to do so in this case: it failed to “point to specific measures New Mexico could take to conserve

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<sup>82</sup>*Id.* at 656.

<sup>83</sup>*Colorado I*, 459 U.S. 176; *Colorado II*, 467 U.S. 310.

<sup>84</sup>*Colorado I*, 459 U.S. at 179.

<sup>85</sup>*Colorado II*, 467 U.S. at 323.

<sup>86</sup>*Id.* at 317 (alteration in original) (quoting *Colorado I*, 459 U.S. at 187 n.13).

<sup>87</sup>*Id.*; see also *id.* at 318–19.

<sup>88</sup>*Id.* at 319.

<sup>89</sup>*Id.*

<sup>90</sup>*Id.* at 321.



water”;<sup>91</sup> and it “did not show how [more rigorous water administration] would actually preserve existing supplies.”<sup>92</sup> The Court held that specific, clear evidence on these issues was required, and that “[m]ere assertions about the relative efficiencies of competing projects will not do.”<sup>93</sup> “Under the clear-and-convincing-evidence standard,” the state seeking the diversion “must bear the risk of error from the inadequacy of the information available,” and in the absence of that evidence “the equities compel the continued protection of the existing users of the Vermejo River’s waters.”<sup>94</sup>

### [10] *Florida v. Georgia* (2018, 2021)

The equitable apportionment case most recently before the Court was *Florida v. Georgia*. The dispute concerned the Apalachicola-Chattahoochee-Flint River Basin, which comprises “three rivers” and spans “more than 20,000 square miles in Georgia, Florida, and Alabama.”<sup>95</sup> More than a century after *Kansas v. Colorado* (1907), the Court took the opportunity to clarify the applicable law, and detailed the hurdles a complaining state must overcome to be afforded relief.

#### [a] A Complainant State Must Show a Wrong Susceptible of Judicial Enforcement

First, the complaining state must demonstrate that it “has suffered a wrong through the action of the other State . . . which is susceptible of judicial enforcement.”<sup>96</sup> A mere “technical right” will not be sufficient—the court has made it clear that it will not “bring distress and even ruin to a long-established [water use] for no other or better purpose than to vindicate a barren right”<sup>97</sup>—rather the complainant state must show “as a precondition to any equitable apportionment” that it has a legally cognizable right with a corresponding benefit.<sup>98</sup> This is sometimes referred to as the “appreciable-benefit” requirement.

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<sup>91</sup>*Id.* at 319.

<sup>92</sup>*Id.*

<sup>93</sup>*Id.* at 320.

<sup>94</sup>*Id.* at 323–24.

<sup>95</sup>*Florida II*, 141 S. Ct. at 1178.

<sup>96</sup>*Florida I*, 138 S. Ct. at 2514 (quoting *Massachusetts v. Missouri*, 308 U.S. 1, 15 (1939)).

<sup>97</sup>*Id.* at 2536 (Thomas, J., dissenting) (alteration in original) (quoting *Washington v. Oregon*, 297 U.S. 517, 523 (1936)); *see also id.* (“[B]efore, at the instance of a sister state, [a State’s water use] is destroyed or materially interfered with, it should be clear that such sister state has not merely some technical right, but also a right with a corresponding benefit” (alterations in original) (quoting *Kansas v. Colorado*, 206 U.S. 46, 109 (1907))).

<sup>98</sup>*Id.* at 2514 (majority op.).

### [b] The Threatened Invasion of Rights Must Be of Serious Magnitude

Second, a complaining state must “show by clear and convincing evidence” that there is “a threatened invasion” of these rights “of serious magnitude.”<sup>99</sup> This is a “heavy burden”: the Court has affirmed that the clear and convincing standard requires that the complaining state “place in the ultimate factfinder an abiding conviction that the truth of its factual contentions are *highly probable*.”<sup>100</sup> This is done where the evidence offered by the complaining state “instantly tilt[s] the evidentiary scales in the affirmative when weighed against the evidence . . . offered” by the other state.<sup>101</sup>

The Court explained that “in light of the sovereign status and ‘equal dignity’ of States, a complaining State must bear a burden that is ‘much greater’ than the burden ordinarily shouldered by a private party seeking an injunction.”<sup>102</sup> This is in stark contrast to the lower standard of proof—the preponderance of the evidence—that is generally required at the state level in water appropriation cases.<sup>103</sup> Satisfying this higher standard requires robust evidence, not least as to the chain of causation between the “wrong” and the “injury,” and as to the extent of the alleged injury.<sup>104</sup>

The Court has also made it clear that it is not sufficient to argue that an infringement of right is “feared . . . to occur at some indefinite time in the future.”<sup>105</sup> Rather, the invasion of rights must cause “real or substantial injury.”<sup>106</sup> This is an “exacting standard” that the Court has said is “necessary to warrant the exercise of [the] Court’s extraordinary authority to

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<sup>99</sup>*Id.*; see also *id.* at 2517; *Florida II*, 141 S. Ct. at 1180; *Missouri v. Illinois*, 200 U.S. 496, 521 (1906) (“Before this court ought to intervene, the case should be of serious magnitude, clearly and fully proved . . .”).

<sup>100</sup>*Florida II*, 141 S. Ct. at 1180 (internal quotation marks omitted) (emphasis added) (quoting *Colorado v. New Mexico*, 467 U.S. 310, 316 (1984)).

<sup>101</sup>*Colorado II*, 467 U.S. at 316.

<sup>102</sup>*Florida I*, 138 S. Ct. at 2514 (quoting *Connecticut v. Massachusetts*, 282 U.S. 660, 669 (1931)); see also, e.g., *Florida II*, 141 S. Ct. at 1180.

<sup>103</sup>See, e.g., N.M. Code R. § 19.25.2.25 (in New Mexico State Engineer water permit proceedings, the “standard of proof . . . shall be based on a preponderance of the evidence”); see also *State ex rel. State Eng’r v. Faykus*, No. A-1-CA-36848, 2020 WL 2097585 (N.M. Ct. App. Apr. 13, 2020).

<sup>104</sup>See, e.g., *Colorado v. Kansas*, 320 U.S. 383, 393 (1943) (the state seeking an apportionment must show that the opposing state is causing it injury by depriving it of a beneficial use that is at least as valuable as the benefit gained by the opposing state from the interstate waters).

<sup>105</sup>*Florida I*, 138 S. Ct. at 2514 (quoting *Connecticut v. Massachusetts*, 282 U.S. at 674).

<sup>106</sup>*Id.* at 2515 (quoting *Colorado II*, 467 U.S. at 317).

control the conduct of a coequal sovereign”<sup>107</sup>—clarifying that this burden “accommodates society’s competing interests in increasing the stability of property rights and in putting resources to their most efficient uses.”<sup>108</sup>

### [c] Balance-of-Harms Test

Assuming the aforesaid hurdles are overcome, focus then shifts to “the basic merits inquiry,” which is often referred to as the “balance-of-harms test.”<sup>109</sup> Here, the burden of proof remains the clear and convincing standard. The Court found in *Colorado v. New Mexico* (1982) that a complaining state seeking an equitable apportionment that interferes with established uses must demonstrate “by clear and convincing evidence that the benefits of the [sought apportionment] substantially outweigh the harm that might result.”<sup>110</sup>

The aim of the balancing exercise is to arrive at “a fair allocation”<sup>111</sup>: “a just and equitable apportionment of an interstate stream” by weighing “*all relevant factors*”<sup>112</sup> that “create equities in favor of one State or the other.”<sup>113</sup> “[E]xtensive and ‘*specific*’ factual findings are essential . . .”<sup>114</sup> However, “answers need not be ‘mathematically precise or based on definite present and future conditions’” and it is possible that “[a]pproximation and reasonable estimates may prove ‘necessary to protect the equitable rights of a State.’”<sup>115</sup>

Over the years, the Court has identified a number of “factors” that may be considered, leaving the door open to additional factors should they be presented in any given case. In *Florida v. Georgia*, the Court identified (affirming the factors identified in *Nebraska v. Wyoming*):

- “physical and climatic conditions”;
- “the consumptive use of water in the several sections of the river”;
- “the character and rate of return flows”;
- “the extent of established uses”;

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<sup>107</sup>*Florida II*, 141 S. Ct. at 1183.

<sup>108</sup>*Colorado II*, 467 U.S. at 316.

<sup>109</sup>*See, e.g., Florida II*, 141 S. Ct. at 1180.

<sup>110</sup>*Colorado I*, 459 U.S. at 187.

<sup>111</sup>*Mississippi v. Tennessee*, 595 U.S. 15, 23–24 (2021).

<sup>112</sup>*Florida I*, 138 S. Ct. at 2515 (internal quotation marks omitted) (quoting *South Carolina v. North Carolina*, 558 U.S. 256, 271 (2010)).

<sup>113</sup>*Id.* (quoting *Colorado v. Kansas*, 320 U.S. at 394).

<sup>114</sup>*Id.* (quoting *Colorado I*, 459 U.S. at 190).

<sup>115</sup>*Id.* at 2527 (quoting *Idaho ex rel. Evans v. Oregon*, 462 U.S. 1017, 1026 (1983)).

- “the availability of storage water”;
- “the practical effect of wasteful uses on downstream areas”;
- “the damage to upstream areas as compared to the benefits to downstream areas if a limitation is imposed on the former”—the so-called “harm-benefit” comparison.<sup>116</sup>

In earlier cases, the Court identified the “nature and scope of likely harm caused by the absence of water and the amount of additional water necessary to ameliorate that harm significantly”;<sup>117</sup> and the “affirmative duty” of states “to take reasonable steps to conserve and even to augment the natural resources within their borders for the benefit of other States.”<sup>118</sup>

As seen in *Colorado v. New Mexico*, in the context of proposed new diversions, the Court has also considered whether the downstream state can take “reasonable conservation measures” to offset any injuries caused by an upstream diversion,<sup>119</sup> and has clarified that this “require[s] only conservation measures that are ‘financially and physically feasible’ and ‘within practicable limits.’”<sup>120</sup>

As is clear from the cases outlined above, the outcome of this balancing exercise may also be impacted by whether the states share the riparian or prior appropriation water right systems. In *Colorado v. New Mexico*, the Court found that:

When, as in this case, both states recognize the doctrine of prior appropriation, priority becomes the “guiding principle” in an allocation between competing states. But state law is not controlling. Rather, the just apportionment of interstate waters is a question of federal law that depends “upon a consideration of the pertinent laws of the contending States and *all other relevant facts*.”<sup>121</sup>

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<sup>116</sup>*Id.* at 2515 (quoting *Nebraska v. Wyoming*, 325 U.S. 589, 618 (1945)); *see also id.* at 2513 (“[E]quitable apportionment will only protect those rights to water that are reasonably required and applied. . . . [W]asteful or inefficient uses will not be protected.” (internal quotation marks omitted) (second alteration in original) (quoting *Colorado I*, 459 U.S. at 184)).

<sup>117</sup>*Id.* at 2516.

<sup>118</sup>*Id.* at 2513 (quoting *Idaho ex rel. Evans v. Oregon*, 462 U.S. at 1025); *see also Florida II*, 141 S. Ct. at 1183 (an upstream state “has an obligation to make reasonable use of [shared] waters in order to help conserve [this] increasingly scarce resource”); *Colorado I*, 459 U.S. at 186 (“We think that doctrine lays on each of the[] states a duty to exercise her right reasonably and in a manner calculated to conserve the common supply.” (quoting *Wyoming v. Colorado*, 259 U.S. 419, 484 (1922))).

<sup>119</sup>*Colorado II*, 467 U.S. at 313, 317; *see also Colorado I*, 459 U.S. at 188 (“an important consideration is whether the existing users could offset the diversion by reasonable conservation measures to prevent waste”).

<sup>120</sup>*Colorado II*, 467 U.S. at 319.

<sup>121</sup>*Colorado I*, 459 U.S. at 183–84 (citations omitted) (quoting *Nebraska v. Wyoming*, 325 U.S. at 618; *Connecticut v. Massachusetts*, 282 U.S. 660, 670–71 (1931)).

Acknowledging the earlier case of *Nebraska v. Wyoming* where “water rights . . . , which under state law were senior, had to yield to the ‘countervailing equities’ of an established economy in [the downstream state] even though it was based on junior appropriations,”<sup>122</sup> the Court in *Colorado v. New Mexico* added that “the rule of priority should not be strictly applied where it ‘would work more hardship’ on the junior user ‘than it would bestow benefits’ on the senior user.”<sup>123</sup> Chief Justice Burger and Justice Stevens, concurring, went further, opining that

[n]either [the upstream nor the downstream state] is entitled to any special priority over the other with respect to the use of the water. . . . Each state through which rivers pass has a right to the benefit of the water but it is for the Court, as a matter of discretion, to measure their relative rights and obligations and to apportion the available water equitably.<sup>124</sup>

The Court also found that

equitable apportionment will protect only those rights to water that are “reasonably required and applied.” Especially in those Western states where water is scarce, “[t]here must be no waste . . . of the ‘treasure’ of a river. . . . Only diligence and good faith will keep the privilege alive.” Thus, wasteful or inefficient uses will not be protected.<sup>125</sup>

Florida and Georgia are riparian states.<sup>126</sup> The Court there found that “the ‘guiding principle’ of [the] analysis is that both States have ‘an equal right to make a reasonable use’ of the Basin waters.”<sup>127</sup>

Economic considerations are also far from overlooked. Indeed, there may be a tension in the Court’s case law between the common law preference for “economic efficiency” and the equitable balancing exercise.<sup>128</sup> Economic considerations won the day back in *Kansas v. Colorado*. There the Court found that

the diminution of the flow of water in the river by the irrigation of Colorado has worked some detriment to the southwestern part of Kansas, and yet, when we compare the amount of this detriment with the great benefit which has obviously

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<sup>122</sup>*Id.* at 186 (quoting *Nebraska v. Wyoming*, 325 U.S. at 622).

<sup>123</sup>*Id.* (quoting *Nebraska v. Wyoming*, 325 U.S. at 619).

<sup>124</sup>*Id.* at 191 (Burger, C.J., concurring).

<sup>125</sup>*Id.* at 184 (majority op.) (alteration in original) (citations omitted) (quoting *Wyoming v. Colorado*, 259 U.S. at 484; *Washington v. Oregon*, 297 U.S. 517, 527 (1936)).

<sup>126</sup>*Florida II*, 141 S. Ct. at 1180.

<sup>127</sup>*Id.* (quoting *Florida I*, 138 S. Ct. at 2513).

<sup>128</sup>Justice O’Connor, for example, opined for the majority in *Colorado II* that “the equitable apportionment of appropriated rights should turn on the benefits, harms, and efficiencies of competing uses.” 467 U.S. at 323 (emphasis added). Although it is not clear that economic efficiencies were meant here rather than, for example, efficiencies afforded by effective conservation measures or minimizing waste.

resulted to the counties in Colorado, it would seem that equality of right and equity between the two states forbids any interference with the present withdrawal of water in Colorado for purposes of irrigation.<sup>129</sup>

It may have been significant in that case that Colorado was successfully using the water for irrigation of farmland, which goes to basic human needs—the Court noting that “the result of [Colorado’s] appropriation has been the reclamation of large areas in Colorado, transforming thousands of acres into fertile fields and rendering possible their occupation and cultivation when otherwise they would have continued barren and unoccupied . . . .”<sup>130</sup>

The Court’s reluctance to disturb the status quo may also be problematic. The Court found in *Colorado v. New Mexico* that “the equities supporting the protection of existing economies will usually be compelling,” the reasoning being that the harm that may result from disrupting established uses is “typically certain and immediate,” whereas the potential “benefits” from a proposed diversion may be “speculative and remote.”<sup>131</sup> Justices O’Connor and Powell argued in their concurrence in *Colorado I* that “the Court should be moved to exercise its original jurisdiction to alter the status quo between States only where there is *clear and convincing evidence* that one State’s use is unreasonably wasteful.”<sup>132</sup>

This potential bias toward preserving the status quo when making a final determination on the merits—in contrast to when the goal is to preserve the status quo through grant of a preliminary injunction—could in practice undermine the goal to achieve “equity.” It emphasizes the high bar for the state seeking an equitable apportionment, and potentially operates to the detriment of treating the states as co-equal sovereigns.

### **[d] Problems of Proof: Meeting the Clear and Convincing Standard**

Ultimately, considerations of equity, combined with the high burden of proof, create somewhat of a double-edged sword. On one hand, the flexibility of equity and its ability to embrace potentially limitless categories of evidence is extraordinary. On the other hand, satisfying the high standard of proof (clear and convincing) is a difficult task, especially when the Court has made it clear that it is reluctant to disturb flourishing economies,<sup>133</sup>

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<sup>129</sup>*Kansas v. Colorado*, 206 U.S. 46, 113–14 (1907).

<sup>130</sup>*Id.* at 117.

<sup>131</sup>*Colorado I*, 459 U.S. at 187.

<sup>132</sup>*Id.* at 195 (O’Connor, J., concurring) (citation omitted).

<sup>133</sup>*See, e.g., Kansas v. Colorado*, 206 U.S. at 116.

and that it is generally easier to prove harm that will be caused by disrupting existing uses than it is to prove “potential benefits.”<sup>134</sup>

Environmental and ecological factors also deserve particular consideration. The Court expressly acknowledged these factors for the first time in *Florida v. Georgia*. To succeed in an equitable apportionment action, the complaining state must show that the benefit it will receive from a sought apportionment “substantially outweigh[s]” any harm to that might be caused to the defendant state.<sup>135</sup> This showing may be particularly difficult when the benefit, or at least part of it, is environmental or ecological.

By their nature, environmental and ecological injuries (and benefits) present a particular challenge. There is generally a need to establish a baseline against which alleged injuries (or benefits) should be assessed. This requires robust data over a sufficient time period, which states may not have. There might also be problems of scientific proof; such injuries (or benefits) may have multiple causes; and these causes may be complex, even synergistic. Environmental and ecological factors may also be acutely impacted by climate change: it may be increasingly difficult to establish causation, and to separate out injuries (or benefits) to these factors inclusive and exclusive of the effects of climate change. The impacts of climate change might even require a rebalancing of the equities.

In *Florida v. Georgia*, the Court found that “[t]he Apalachicola River supports a wide range of river wildlife and plant life in the Florida Panhandle, and its steady supply of fresh water makes the Bay a suitable habitat for oysters,” which were, for many years “a cornerstone of the regional economy” in Florida.<sup>136</sup> The Court also found that “[i]n 2012, in the midst of a severe drought, the oyster population in the Apalachicola Bay collapsed, causing commercial oyster sales to plummet.”<sup>137</sup>

Florida, the downstream state, brought suit against Georgia, seeking “an order requiring Georgia to reduce its consumption of Basin waters.”<sup>138</sup> Florida alleged that “Georgia’s overconsumption of Basin waters causes sustained low flows in the Apalachicola River, which in turn harm its oyster fisheries and river ecosystem.”<sup>139</sup> Florida asserted “that Georgia’s overconsumption of Basin waters caused it two distinct injuries: the collapse of its

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<sup>134</sup>*Florida I*, 138 S. Ct. at 2537 (Thomas, J., dissenting).

<sup>135</sup>*Florida II*, 141 S. Ct. at 1180 (quoting *Colorado I*, 459 U.S. at 187).

<sup>136</sup>*Id.* at 1179.

<sup>137</sup>*Id.* at 1180.

<sup>138</sup>*Id.* at 1179.

<sup>139</sup>*Id.*



oyster fisheries and harm to its river ecosystem.”<sup>140</sup> In so doing, Florida relied on “a multistep causal chain”: it argued “that Georgia’s unreasonable agricultural water consumption caused sustained low flows in the Apalachicola River; that these low flows increased the Bay’s salinity; and that higher salinity in the Bay attracted droves of saltwater oyster predators and disease, ultimately decimating the oyster population.”<sup>141</sup> Florida also argued “that Georgia’s overconsumption has harmed river wildlife and plant life by disconnecting tributaries, swamps, and sloughs from the Apalachicola River, thereby drying out important habitats for river species.”<sup>142</sup>

Georgia, in response, “point[ed] to a more direct cause” of the first alleged injury: “Florida’s mismanagement of its oyster fisheries.”<sup>143</sup> Georgia added that “even if low flows contributed at all, . . . they were driven by climatic changes and other factors, not its upstream consumption.”<sup>144</sup>

In the first hearing before the Court (following the First Report of the Special Master),<sup>145</sup> the Court remanded the case, directing the Special Master to “make definitive findings and recommendations on several . . . issues”<sup>146</sup>:

1. “has Florida suffered harm as a result of decreased water flow”?
2. “has Florida shown that Georgia, contrary to equitable principles, has taken too much water”?
3. “if so, has Georgia’s inequitable use of Basin waters injured Florida”?
4. “if so, would an equity-based cap on Georgia’s use . . . lead to a significant increase in streamflow”? and
5. “if so, would the amount of extra water that reaches the Apalachicola River significantly redress the economic and ecological harm that Florida has suffered”?<sup>147</sup>

When the case returned to the Court, following the issuance of the Second Report of the Special Master,<sup>148</sup> the Court found, based on the

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<sup>140</sup>*Id.* at 1180.

<sup>141</sup>*Id.*

<sup>142</sup>*Id.* at 1182–83.

<sup>143</sup>*Id.* at 1180.

<sup>144</sup>*Id.* at 1180–81.

<sup>145</sup>*Florida v. Georgia*, 2017 WL 656655 (2017) (Report of Sp. Master Ralph I. Lancaster, Jr.).

<sup>146</sup>*Florida II*, 141 S. Ct. at 1179.

<sup>147</sup>*Florida I*, 138 S. Ct. at 2518.

<sup>148</sup>*Florida v. Georgia*, 2019 U.S. LEXIS 7621 (2019) (Report of Sp. Master Paul J. Kelly, Jr.).

evidence presented, that Florida had failed to carry its burden.<sup>149</sup> Among other things, the Court found that:

- “the precise causes of the Bay’s oyster collapse remain a subject of ongoing scientific debate”;<sup>150</sup>
- “Florida’s own documents and witnesses reveal that Florida allowed unprecedented levels of oyster harvesting in the years before the collapse.” The record also showed “that Florida failed to adequately reshell its oyster bars” (“a century-old oyster-management practice that involves replacing harvested oyster shells with clean shells, which can serve as habitat for young oysters”);<sup>151</sup> and
- Florida had also failed to rebut Georgia’s expert evidence of “negligible differences in salinity,”<sup>152</sup> and failed to satisfactorily rebut Georgia’s evidence that the differences in oyster biomass modeled assuming increased water flow would have been “minor.”<sup>153</sup>

In short, the Court found that testimony from “Florida’s own witnesses” suggested that “Georgia’s overconsumption” was not “the *sole* cause of the collapse” or even “a substantial factor contributing to it.”<sup>154</sup> “[A]t most” Florida’s evidence established “that increased salinity and predation contributed to the collapse, not that *Georgia’s overconsumption* caused the increased salinity and predation.”<sup>155</sup> The Court also found that Florida had presented “‘a complete lack of evidence’ that any river species suffered [or would suffer] serious injury from Georgia’s alleged overconsumption.”<sup>156</sup>

Florida thus failed to show “that it is ‘highly probable’ that Georgia’s alleged overconsumption played more than a trivial role in the collapse of Florida’s oyster fisheries,” and “failed to carry its burden of proving causation by clear and convincing evidence.”<sup>157</sup> The Court concluded that “Florida has not met the exacting standard necessary to warrant the exercise of

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<sup>149</sup>*Florida II*, 141 S. Ct. at 1181.

<sup>150</sup>*Id.*

<sup>151</sup>*Id.*

<sup>152</sup>*Id.*

<sup>153</sup>*Id.* at 1181–82.

<sup>154</sup>*Id.* at 1181.

<sup>155</sup>*Id.* at 1182.

<sup>156</sup>*Id.* at 1183; *see also id.* (“Without stronger evidence of *actual* past or threatened harm to species in the Apalachicola River, we cannot find it ‘highly probable’ that these species have suffered serious injury, let alone as a result of any overconsumption by Georgia.”).

<sup>157</sup>*Id.* at 1182.

this Court's extraordinary authority to control the conduct of a coequal sovereign."<sup>158</sup>

Significantly, the Court also found that various intervening factors "influence Apalachicola River flows, including precipitation . . . [and] air temperature."<sup>159</sup> The Court also noted that the record indicated an "unprecedented series of multiyear droughts," and "changes in seasonal rainfall patterns," both of which "may have played a significant role" in reduced river flows.<sup>160</sup> The Court also acknowledged the intervening involvement of the U.S. Army Corps of Engineers (Corps), which "regulates Apalachicola flows by storing water in, and releasing water from, its network of reservoirs in the Basin."<sup>161</sup> The Court also noted that the National Oceanic and Atmospheric Administration "primarily blamed 'prolonged drought conditions' and the Corps' reservoirs operations—not Georgia's consumption during drought conditions—for the elevated levels of salinity and predation in the Bay."<sup>162</sup>

This is not to say that claims for environmental and ecological injuries (or benefits) are doomed. Rather, that if states intend to rely on these injuries (or benefits), they must get their house, and case, in order. States must establish a clear record of such injuries (or benefits) inclusive versus exclusive of the sought apportionment *and* the effects of climate change. This will likely require extensive, potentially highly technical, data and scientific study, and detailed expert reports and expert testimony.

### § 9.05 International Standard of "Equitable Utilization"

So, how does the U.S. principle of "equitable apportionment" compare with its international counterpart? The equitable allocation of freshwater is a fundamental principle of international water law. The term used internationally is "equitable utilization" rather than "equitable apportionment." In practice, this may be a distinction without a difference. Equitable utilization requires countries (states) to use and develop international watercourses "with a view to attaining optimal and sustainable utilization thereof and benefits therefrom, taking into account the interests of the watercourse States concerned."<sup>163</sup> In practice, the two phrases are employed to similar effect, but etymologically, "equitable apportionment" is focused on dividing

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<sup>158</sup>*Id.* at 1183.

<sup>159</sup>*Id.* at 1179.

<sup>160</sup>*Id.* at 1182.

<sup>161</sup>*Id.* at 1179.

<sup>162</sup>*Id.* at 1182.

<sup>163</sup>UN Watercourses Convention, art. 5(1).

shared waters, whereas “equitable utilization” is focused on states’ fair use of available water.

There are three main sources of codified international law concerning “equitable utilization”: (1) the 1992 United Nations Economic Commission for Europe’s Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Helsinki Convention);<sup>164</sup> (2) 1997 United Nations Convention on the Law of Non-Navigational Uses of International Watercourses (UN Watercourses Convention);<sup>165</sup> and (3) the “Berlin Rules” on water resources, which were drafted as part of the 2004 International Law Association Berlin Conference on Water Resources Law.<sup>166</sup> Adherence to each of these is voluntary, and currently the United States is not a signatory to (and thus, nor has it ratified) either convention.

### [1] Helsinki Convention

The first in time of these codifications, the Helsinki Convention provides, among other things, that “transboundary waters” must be “used in a reasonable and equitable way, taking into particular account . . . activities which cause or are likely to cause transboundary impact.”<sup>167</sup> Signatory states sharing a transboundary water resource must also “ensure that transboundary waters are used with the aim of ecologically sound and rational water management, conservation of water resources and environmental protection”;<sup>168</sup> and must “take all appropriate measures to prevent, control and reduce any transboundary impact.”<sup>169</sup> As to dispute resolution, the convention provides that this should be “by negotiation or by any other means of” acceptable dispute settlement, including “[s]ubmission of the dispute to the International Court of Justice” or resolution by arbitration.<sup>170</sup>

### [2] UN Watercourses Convention

The UN Watercourses Convention tracks the Helsinki Convention, supplementing various obligations. It provides that signatory states sharing a transboundary water resource must “utilize” this watercourse “in an

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<sup>164</sup>The Helsinki Convention has been ratified, acceded to, accepted, or approved by 51 countries, not including the United States. See [https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg\\_no=XXVII-5&chapter=27&clang=\\_en](https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg_no=XXVII-5&chapter=27&clang=_en).

<sup>165</sup>See [https://treaties.un.org/doc/Treaties/1998/09/19980925%2006-30%20PM/Ch\\_XXVII\\_12p.pdf](https://treaties.un.org/doc/Treaties/1998/09/19980925%2006-30%20PM/Ch_XXVII_12p.pdf).

<sup>166</sup>See [https://unece.org/fileadmin/DAM/env/water/meetings/legal\\_board/2010/annexes\\_groundwater\\_paper/Annex\\_IV\\_Berlin\\_Rules\\_on\\_Water\\_Resources\\_ILA.pdf](https://unece.org/fileadmin/DAM/env/water/meetings/legal_board/2010/annexes_groundwater_paper/Annex_IV_Berlin_Rules_on_Water_Resources_ILA.pdf).

<sup>167</sup>Helsinki Convention, art. 2(2)(c).

<sup>168</sup>*Id.* art. 2(2)(b).

<sup>169</sup>*Id.* art. 2(1).

<sup>170</sup>*Id.* art. 22; see also *id.* at Annex IV (Arbitration).

equitable and reasonable manner,”<sup>171</sup> further elaborating that such utilization, and the benefits it affords, must be “optimal and sustainable,” and “consistent with adequate protection of the watercourse.”<sup>172</sup> As to factors to be considered when determining whether a state is using “an international watercourse in an equitable and reasonable manner,” the Convention provides that this

requires taking into account all relevant factors and circumstances, including:

- (a) Geographic, hydrographic, hydrological, climatic, ecological and other factors of a natural character;
- (b) The social and economic needs of the watercourse States concerned;
- (c) The population dependent on the watercourse in each watercourse State;
- (d) The effects of the use or uses of the watercourses in one watercourse State on other watercourse States;
- (e) Existing and potential uses of the watercourse;
- (f) Conservation, protection, development and economy of use of the water resources of the watercourse and the costs of measures taken to that effect; [and]
- (g) The availability of alternatives, of comparable value, to a particular planned or existing use.<sup>173</sup>

“The weight to be given to each factor is to be determined by its importance in comparison with that of other relevant factors” and “[i]n determining what is a reasonable and equitable use, all relevant factors are to be considered together and a conclusion reached on the basis of the whole.”<sup>174</sup>

The UN Watercourses Convention also imposes two key duties on signatory states: (1) a duty to cooperate with other states sharing a transboundary water resource,<sup>175</sup> and (2) a duty to cause no significant harm.<sup>176</sup> As to the latter, the Convention clarifies that when “utilizing an international watercourse,” signatory states must “take all appropriate measures to prevent the causing of significant harm to other” states sharing that same resource;<sup>177</sup> and when “significant harm . . . is caused” the offending state must, “in

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<sup>171</sup>UN Watercourses Convention, art. 5(1).

<sup>172</sup>*Id.*

<sup>173</sup>*Id.* art. 6(1).

<sup>174</sup>*Id.* art. 6(3).

<sup>175</sup>*See, e.g., id.* arts. 5(2), 8.

<sup>176</sup>*Id.* art. 7.

<sup>177</sup>*Id.* art. 7(1).

consultation with the affected State, . . . eliminate or mitigate such harm and, where appropriate, . . . discuss the question of compensation.”<sup>178</sup>

Elaborating on requirements established in the Helsinki Convention, the UN Watercourses Convention also obliges signatory states, among other things, to

- “cooperate on the basis of sovereign equality, territorial integrity, mutual benefit and good faith in order to attain optimal utilization and adequate protection of an international watercourse”;<sup>179</sup>
- “protect and preserve the ecosystems of international watercourses”;<sup>180</sup>
- “on a regular basis exchange readily available data and information on the condition of the watercourse, in particular that of a hydrological, meteorological, hydrogeological and ecological nature and related to the water quality as well as related forecasts”;<sup>181</sup> and
- “exchange information and consult each other and, if necessary, negotiate on the possible effects of planned measures on the condition of an international watercourse,”<sup>182</sup> including giving timely advance notice to other signatory states of any “planned measures which may have a significant adverse effect upon” a shared watercourse, including “available technical data and information, including the results of any environmental impact assessment.”<sup>183</sup>

As to dispute resolution, the UN Watercourses Convention again provides that disputes between signatory states should be resolved by, among other mechanisms, negotiation, mediation or conciliation by a third party, arbitration, or submission of the dispute to the International Court of Justice.<sup>184</sup>

### [3] Berlin Rules

The Berlin Rules were adopted by the International Law Association in 2004, with the aim to summarize international law applicable to freshwater resources. These Rules again embrace the concepts of usage of transboundary water resources “in an equitable and reasonable manner,” and the

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<sup>178</sup>*Id.* art. 7(2).

<sup>179</sup>*Id.* art. 8(1).

<sup>180</sup>*Id.* art. 20.

<sup>181</sup>*Id.* art. 9(1).

<sup>182</sup>*Id.* art. 11.

<sup>183</sup>*Id.* art. 12.

<sup>184</sup>*Id.* art. 33; *see also id.* at Annex (Arbitration).

“obligation not to cause significant harm to other basin States.”<sup>185</sup> They also embrace “consideration of all relevant factors in each particular case” when determining what constitutes “[e]quitable and reasonable use.”<sup>186</sup> Reciting the same exemplar list of considerations as the UN Watercourses Convention, the Rules add consideration of (1) “[t]he sustainability of proposed or existing uses” and (2) “[t]he minimization of environmental harm,”<sup>187</sup> and the requirement that when “determining an equitable and reasonable use, States shall first allocate waters to satisfy vital human needs.”<sup>188</sup>

Among other things, the Berlin Rules oblige signatory states sharing transboundary waters to

- “cooperate in good faith in the management of waters of an international drainage basin for the mutual benefit of the participating States”;<sup>189</sup>
- “use their best efforts to manage surface waters, groundwater, and other pertinent waters in a unified and comprehensive manner”;<sup>190</sup>
- “take all appropriate measures to manage waters sustainably”;<sup>191</sup>
- “cooperate in the management of waters to prevent, control, or mitigate [the effects of] droughts”;<sup>192</sup>
- “take all appropriate measures to prevent or minimize environmental harm”;<sup>193</sup>
- “take all appropriate measures to protect the ecological integrity necessary to sustain ecosystems dependent on particular waters”;<sup>194</sup> and
- “take all appropriate measures to prevent, eliminate, reduce, or control harm to the aquatic environment when there is a serious risk of significant adverse effect on or to the sustainable use of waters even without conclusive proof of a causal relation between an act or omission and its expected effects.”<sup>195</sup>

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<sup>185</sup>Berlin Rules, art. 12(1).

<sup>186</sup>*Id.* art. 13(1).

<sup>187</sup>*Id.* art. 13(2).

<sup>188</sup>*Id.* art. 14(1).

<sup>189</sup>*Id.* art. 11.

<sup>190</sup>*Id.* art. 5.

<sup>191</sup>*Id.* art. 7.

<sup>192</sup>*Id.* art. 35(1).

<sup>193</sup>*Id.* art. 8.

<sup>194</sup>*Id.* art. 22.

<sup>195</sup>*Id.* art. 23.



The Berlin Rules also contain specific obligations as to data gathering and sharing that elaborate upon those provided in the UN Watercourses Convention, obliging signatory states sharing a transboundary water resource to

- “regularly provide to other basin States all relevant and available information [(including ‘all relevant technical information’ and ‘the results of any relevant impact assessment’)] on the quantity and quality of the waters of a basin or aquifer and on the state of the aquatic environment and the causes for any changes in waters, in an aquifer, or in the aquatic environment, including, but not limited to, a list of all known water withdrawals and sources of pollution”;<sup>196</sup> and
- “employ their best efforts to collect and, where appropriate, to process data and information in a manner that facilitates its use by other basin States . . . .”<sup>197</sup>

Similar to the Conventions, the Berlin Rules also provide that international water disputes should be resolved by consultation, arbitration, or litigation.<sup>198</sup>

#### **[4] Equitable Apportionment (United States) Versus Equitable Utilization (International)**

Unsurprisingly, given that international law has been heavily influenced by U.S. law on issues of transboundary waters, there are remarkable similarities between the two systems. Despite this, there are at least three elements of contrast that are noteworthy.

##### **[a] Under International Law Vital Human Needs Are Paramount**

First is the requirement under international law that water must first be allocated “to satisfy vital human needs.”<sup>199</sup> While this arguably occurred in *Connecticut v. Massachusetts* and in *New Jersey v. New York*, the U.S. Supreme Court has not expressly considered this point, or made it a requirement in the equitable apportionment analysis. As climate change worsens, this may be an argument states make, especially with the aim to tip the balance to show that the benefits of the sought apportionment “substantially outweigh the harm that might result” to the opposing state.<sup>200</sup>

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<sup>196</sup>*Id.* art. 56(1); *see also id.* art. 56(3).

<sup>197</sup>*Id.* art. 56(2).

<sup>198</sup>*Id.* arts. 72–73.

<sup>199</sup>*Id.* art. 14.

<sup>200</sup>*Florida I*, 138 S. Ct. at 2535 (Thomas, J., dissenting) (quoting *Colorado I*, 459 U.S. at 187).

### **[b] International Duty to Cause No Significant Harm**

Second is the international obligation on states sharing transboundary waters to

- use and manage these waters in a sustainable, ecologically sound manner;
- ensure that the environment (in the broadest sense) and ecosystem of such watercourses are protected; and
- take all appropriate measures (best efforts) to prevent, control, and reduce any transboundary impact—also articulated as a “duty to cause no significant harm.”<sup>201</sup>

There are no equivalent duties or obligations in the United States, but the Court has found that states have an “affirmative duty . . . to take reasonable steps to conserve” water for the benefit of other states.<sup>202</sup>

### **[c] Transboundary Cooperation and Data Gathering**

Third is the international obligation on states sharing transboundary waters to

- cooperate with other states accessing the same resource;
- gather, maintain, and regularly exchange data (including technical data) and information with such states relevant to the watercourse; and
- give timely advance notice to such states of any planned measures that may have a significant adverse impact on the watercourse, including providing any environmental impact analysis.<sup>203</sup>

Now, perhaps more than ever before, there is a pressing need for collaboration, cooperation, data transparency, and sharing in the context of transboundary (interstate) surface and ground waters. This is crucial to avoid conflict, for sustainable development, and to ensure that shared water resources are maximally utilized with the minimum detriment to any particular peoples or environment regardless of boundary or state lines. All countries (states) benefit from monitoring and evaluating water flow, demand, consumption, waste, costs, and benefits on an ongoing basis,

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<sup>201</sup> See, e.g., Helsinki Convention, arts. 2–3; UN Watercourses Convention, arts. 5, 7, 20; Berlin Rules, arts. 7–8, 12, 22–24.

<sup>202</sup> Idaho *ex rel.* Evans v. Oregon, 462 U.S. 1017, 1025 (1983).

<sup>203</sup> See, e.g., Helsinki Convention, arts. 2, 5, 9; UN Watercourses Convention, arts. 5, 8–9, 11–12, 23, 25, 28, 31; Berlin Rules, arts. 11, 34–35, 42, 56.

both to assist in investment decisions and in preparedness to protect rights. As the Court has also repeatedly admonished, states and stakeholders are much better positioned to resolve disputes “by ‘mutual accommodation and agreement,’” than to risk an adjudication by a court.<sup>204</sup>

More than 90 years ago, the economist Herbert Anthony Smith stated that

every river system is naturally an indivisible unit, and that as such it should be so developed as to render the greatest possible service to the whole human community which it serves, whether or not that community is divided into two or more political jurisdictions. It is the positive duty of every government concerned to cooperate to the extent of its power in promoting this development.<sup>205</sup>

These are wise words. As climate change takes hold, the need for water systems to be considered as a whole, and developed mindful of all who benefit from them, regardless of what side of a boundary or state line they fall, will become increasingly important. There must also be a universal recognition that the water cycle is interconnected and that actions in one state impact neighboring states, including in ways that may not be immediately apparent.

### § 9.06 Climate Change and Its Potential to Exacerbate Problems of Proof

As is already clear from the arguments made and the findings of the Court in *Florida v. Georgia*, climate change has the potential to be a key and potentially case-destroying intervening factor. In addition to preparing a well-supported case that the actions (or inactions) of an opposing state have caused or will cause injury (or a proposed diversion will *not* cause injury), it would now be prudent of complainant states seeking an equitable apportionment to also prepare a well-supported case that evaluates whether climate change is a significant (or material) intervening factor to the apportionment they seek.

Within the United States, western states have been a test bed for the majority of interstate water disputes. The U.S. Supreme Court has recently recognized that climate change is hitting these states particularly hard:

Water has long been scarce, and the problem is getting worse. From 2000 through 2022, the region faced the driest 23-year period in more than a century and one

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<sup>204</sup>*Arizona v. California*, 373 U.S. 546, 564 (1963) (quoting *Colorado v. Kansas*, 320 U.S. 383, 392 (1943); *Nebraska v. Wyoming*, 325 U.S. 589, 616 (1945)); *see also, e.g., Florida I*, 138 S. Ct. at 2509; *Oklahoma v. New Mexico*, 501 U.S. 221, 241 (1991).

<sup>205</sup>Herbert A. Smith, *The Economic Uses of International Rivers* 150 (1931).

of the driest periods in the last 1,200 years. And the situation is expected to grow more severe in future years.<sup>206</sup>

Current predictions suggest that the western United States will become hotter and dryer, and will experience increased soil-moisture deficits in spring and summer, reduced spring snowpack and accelerated spring snow melt, and more frequent droughts.<sup>207</sup> This, in turn, will drive more users to tap groundwater resources, where they are available, which is likely to exacerbate an already unsustainable cycle.

However, western U.S. states are not alone. Climate change is impacting the global water cycle, changing the timing and patterns of precipitation, the intensity of flooding and droughts, river flow, and the availability and quality of water supplies.<sup>208</sup> Population growth, urbanization, and unsustainable economic development are also negatively impacting rivers, lakes, and groundwater.

## § 9.07 Conclusion

*No man is an island, entire of itself;  
every man is a piece of the continent, a part of the main;*

John Donne<sup>209</sup>

Ultimately, success in a transboundary (interstate) water dispute requires robust evidence. A failure to actively manage transboundary (interstate) and connected water resources in a sustainable manner, and to collect sufficient data over time,<sup>210</sup> renders a state vulnerable should it need to substantiate claims that a neighboring state is taking more from a transboundary (interstate) water resource than is equitable (and reasonable). Another key vulnerability is a failure to identify and present testimony from necessary experts, and to provide sufficient proof of each step in a chain of causation.

As a general matter, transparency, coordination, and cooperation must also be universal goals. Only then can we rise above Aristotle's

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<sup>206</sup>Arizona v. Navajo Nation, 599 U.S. 555, 561 (2023).

<sup>207</sup>See, e.g., Johnny Wood, "What the Western US Megadrought Tells Us About Climate Change," *World Econ. F.* (Mar. 9, 2022); Brian Palmer, "Climate Change Is Drying Out the American West," *nrdc.org* (June 4, 2020).

<sup>208</sup>See, e.g., Intergovernmental Panel on Climate Change, "Climate Change 2023: Synthesis Report" (2023); United Nations, "Climate Action: Water – At the Center of the Climate Crisis," <https://www.un.org/en/climatechange/science/climate-issues/water>.

<sup>209</sup>John Donne, from *Devotions Upon Emergent Occasions*, Meditation XVII.

<sup>210</sup>Including, for example, with the assistance of remote sensing technologies, which have already revolutionized the ability to conduct water accounting over large areas.

admonishment, and ensure that transboundary (interstate) waters are rationed fairly. Prudent states should be taking active steps now to participate in these efforts. Should a dispute arise, states that have not actively monitored their water resources and distribution, that have not actively conserved their supply and minimized waste, who do not act promptly, and have failed to attempt to coordinate or cooperate with neighboring states may face an uphill battle in convincing the U.S. Supreme Court (or appropriate international court or tribunal) that they satisfy the burden of proof and that equity is on their side.