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1. Should the principle of priority of appropriation be varied in an equitable apportionment of the Vermejo River to provide for future developments in pltf at the expense of an existing economy in deft?

2. Does the eleventh amendment preclude pltf from obtaining a decree in this action solely for the benefit of one of its citizens?
Background

A. Cases. A review of the four cases involving the application of equitable apportionment to Western, priority-of-appropriation states is helpful:

1. In Wyoming v. Colorado, 259 U.S. 419 (1922), there were valid, established interests on both sides of the state line, additional proposed developments in Colorado, but only a finite supply of water in the river. See id., at 489-490. The Court first determined the dependable supply available; subtracted the quantity needed for the desired Wyoming uses; and enjoined Colorado from diverting more than this balance for the use of the junior Colorado appropriator. See id., at 496. The Court did not, however, protect the senior appropriator in time of shortage, as would be the case if strict priority were applied.

2. Washington v. Oregon, 297 U.S. 517 (1936), is probably the case closest on the facts to the present one: Oregon's diversions took the entire surface flow in times of shortage. See id., at 522. Washington did not show any interest in the water for over 30 years before filing suit against Oregon, charging it with wrongfully diverting waters. See id., at 521-522. The Court resolved the conflict on the basis of priority of appropriation applied interstate, see id., at 526-528, and found that "[a] priority once acquired or put in course of acquisition...may be lost to the claimant by...laches," see id., at 527.

3. In Nebraska v. Wyoming, 325 U.S. 589 (1945), Nebraska alleged that Wyoming and Colorado were violating the rule of priority of appropriation adopted by the three states. See id., at
3. Because of the complexity of diversions in three states along six reaches of a river, protection to the existing uses could not be afforded through the strict application of the priority doctrine. See id., at 618. The Court conceded that "[p]riority of apportionment is the guiding principle," but noted that "[a]pportionment calls for the exercise of an informed judgment on a consideration of many factors." Id. Indeed, junior appropriations were permitted in Colorado even though these appropriators limited the amount of water available to downstream senior rights. See id., at 621-622.

4. Arizona v. California, 373 U.S. 546 (1963), involved an original action brought by Arizona to determine the apportionment of water among the lower basin states under the Colorado River Compact. The Court distinguished the law applicable to the mainstream Colorado and that applicable to the tributaries: The former was controlled by the Project Act, but the tributary was controlled by the principles of equitable apportionment. See id., at 595. The special master noted in his recommendation that the Court in an equitable apportionment suit has never reduced junior upstream existing uses by rigid application of priority of appropriation.

2. Principles. The master in this case believed that priority was just another factor on a parity with other equitable considerations, such as the economy of the region or the efficiency of various projects. It is better understood, however, as the rule. See, e.g., Nebraska v. Wyoming, 325 U.S., at 618 (describing priority of appropriation as "the guiding principle"); Wyoming v. Colorado, 259 U.S., at 470 ("the cardinal rule"). The unifying
theme of the Court's decisions is not, however, any strict adherence to priority as a matter of rule, but rather the objective of protecting existing interests that rely upon prior appropriations.

In sum, priority of appropriation should control in an apportionment between states adhering to the prior appropriation doctrine unless to do so would disrupt economies built upon junior appropriations. See generally 2 R. Clark, Waters and Water Rights, §§132.3-132.5(B), at 331-347 (1967).

The cases also establish other principles: (a) One state will not be permitted to command the entire flow of an interstate stream "regardless of need or use," see Colorado v. Kansas, 320 U.S. 383, 393 (1943); (b) While priority of appropriation is a paramount consideration, water can be apportioned to junior priorities, even if such apportionment injures existing economies and senior priorities, see Wyoming v. Colorado, 259 U.S., at 484; (c) Each state bordering an interstate stream must exercise her rights in an interstate stream reasonably and institute conservation or storage practices to conserve the common supply, see, e.g., Nebraska v. Wyoming, 325 U.S., at 618; Wyoming v. Colorado, 259 U.S., at 484; (d) The law governing disputes between states is not necessarily the same as the law that governs the resolutions of disputes between private citizens, see Connecticut v. Massachusetts, 282 U.S. 660, 670 (1931); (e) A state may divert water from an interstate stream even if it has not done so previously, see New Jersey v. New York, 283 U.S. 336 (1931); Connecticut v. Massachusetts, 282 U.S. 660; and (f) Physical conditions of the river, consumptive use, return flows, and other "exigencies" that a state may present must be considered,
The Court has also articulated sovereign inaction as an equitable factor to be considered. In Washington v. Oregon, the Court concluded that it would be inequitable to deprive the existing economy in Oregon of the benefit of a diversion given Washington's tenuous history of using the stream. See 297 U.S., at 528. In Colorado v Kansas, 320 U.S., at 394, the Court noted that Kansas had not previously acted to redress the grievances it was then asserting. Though the Court observed that Kansas' inaction "might well preclude the award of relief" it sought, the Court did not specifically characterize Kansas' delay as laches. Rather, the Court's refusal to enjoin Colorado's uses was based upon the fact that Kansas had not sustained the heavy burden, to which delay added, of proving that Kansas users were injured by the Colorado diversions.

B. Facts. In 1976, C.F.& I. Steel Corp. secured an inchoate right to divert 75 cfs of water from the Colorado portion of the Vermejo River. Upon learning of CF&I's decreed right, four NM water users of the Vermejo filed suit in federal DC to enjoin CF&I from diverting the waters unless their prior rights were satisfied. The DC enjoined CF&I's out-of-priority diversion, and pltf then sought this equitable apportionment. Defts resist the diversion of any waters of this nonnavigable interstate river. At this time, there are no appropriators of Vermejo water in pltf. Deft's four major appropriators are: the Vermejo Park Corp. (Pennzoil), Kaiser Steel Corp., the Phelps Dodge Corp., and the Vermejo Conservancy District.
C. Master's report. The master concluded that pltf should be permitted a transmountain diversion of 4000 acre feet per calendar year. The master characterized pltf's interest as a junior appropriation in the form of an inchoate water right and read this Court's opinions as holding that senior water rights may be subrogated to junior water rights so that equity may prevail. The master considered it irrelevant that pltf had not used the Vermejo in the past.

The master believed that there is sufficient water available to meet the needs of VPC, Kaiser, and PD. As to the VCD, however, the master noted that it had never been an economically feasible operation, and relying on Nebraska v. Wyoming, the master stated that priority of appropriation, while the guiding principle for an apportionment, is not a hard and fast rule. The master believed that there were countervailing equities in favor of pltf.

Summary of the Arguments

1. Deft argues that priority of appropriation is not a mere factor in settling interstate water disputes. Rather, it is the paramount basis of decision, to be modified or varied to protect existing economies, as the facts of each case warrant. The Vermejo river has been fully appropriated in deft for nearly a century, and no use or diversion has ever been made in pltf. Deft also raises the defense of laches: pltf comes a little late to invoke the high equity that moves the conscience of the court in giving judgment between states. North Dakota v. Minnesota, 263 U.S. 365, 374 (1933).
Deft contends that the design of pltf's evidentiary presentation was twofold: to minimize deft's need for Vermejo water and to inflate the amount of water available for diversion by deft. The master determined the historic diversion demand in deft on the basis of the comparatively limited uses resulting from drought in the 1970's and the "available" water in deft on the basis of average annual discharge. Neither the time period chosen nor the discharge statistics used were proper bases for decision. Indeed, if there were no injury, CF&I presumably could exercise its junior water rights until it reduced the supply for the senior economies.

Finally, although the Court has recognized the validity of parens patriae claims, "this principle does not go so far as to permit resort to our original jurisdiction in the name of a state but in reality for the benefit of particular individuals." Oklahoma v. Cook, 304 U.S. 387, 394 (1938). The eleventh amendment prevents pltf from lending its name to CF&I by bringing this suit.

2. Pltf argues that deft's legal argument is reducible to the contention that priority of appropriations is the only factor to be considered in an equitable apportionment, which actually involves a consideration of many factors. The Court has rejected a rigid adherence to any particular legal doctrine, always attempting to achieve an equitable apportionment in light of the facts. In no equitable apportionment proceeding wherein water was available to both states has a state been allowed to divert the entire flow of an interstate stream, thereby denying the right of the other state to make diversions from that stream. The master's recommendation is based upon the factual conclusion that pltf's diversion would not
materially injure deft's uses, upon a balancing of the equities that show that the injury, if any, to deft would be offset by the benefit to pltf, and upon countervailing equities in Colorado. His recommendation and conclusions, especially in light of deft's ability to prevent any injury to its users through reasonable conservation measures, are equitable to both states and are supported by the evidence in the record. Deft's argument that pltf is guilty of laches misses the mark. The Washington users in Washington v. Oregon failed to exercise their decreed rights for over 30 years before asserting them, while pltf's rights are recent and an attempt to exercise them has been made since their inception.

Discussion

I. Eleventh Amendment

Notwithstanding pltf's conflicting desire to maintain minimum instream flows, pltf filed this action in an attempt to undo the injunction of the federal DC. CF&I owns the entire Vermejo drainage in pltf, and there is no other intended use except by CF&I.

In New Hampshire v. Louisiana, 108 U.S. 76, 84 (1883) (suit by New Hampshire to collect debts owed to its citizens by Louisiana), the Court held that its original jurisdiction could not extend to an action that, as Louisiana had described, was "merely a vicarious controversy between individuals." See, e.g., Cook, 304 U.S., at 393 (suit by Oklahoma on behalf of creditors of a state bank that was in liquidation) ("[W]e must look beyond the mere legal title of the complaining State to the cause of action asserted and to the nature of the State's interest."); Kansas v. United States, 204 U.S. 331, 341 (1907) (action by Kansas to obtain patent from U.S. for
land owned by a railroad company and in which the state had no interest) ("[T]he name of the State is being used simply for the prosecution in this court of the claim of the railroad company, and our original jurisdiction can not be maintained.").

Despite pltf's arguments to the contrary, cf. *Maryland v. Louisiana*, 451 U.S. 725, 741 n.16 (1981) (stating that "[u]sually, when we decline to exercise our original jurisdiction, we do so by denying the motion for leave to file"), the jurisdictional issue is presented. Pltf's best argument is that it has, in precisely the same manner as deft, a substantial interest in this litigation. A dispute "directly affecting the property rights and interests of a state" is a proper subject of litigation between states, *Missouri v. Illinois*, 180 U.S. 208, 240 (1901), and a state has an inherent interest in its natural resources, which is direct enough to support a suit against another state on its own behalf and on behalf of its citizens, see *Wyoming v. Colorado*, 259 U.S., at 468 (state's interest in water rights is "indissolubly linked with the rights of the appropriators"); *Georgia v. Tennessee Copper Co.*, 206 U.S. 230, 237 (1907) (a state has "an interest independent of and behind the titles of its citizens, in all the earth and air within its domain"). See also *New Jersey v. New York*, 283 U.S. 336 (NY sought water for NYC); *Connecticut v. Massachusetts*, 282 U.S. 660 (Massachusetts seeking water for Boston); *Wyoming v. Colorado*, 259 U.S. 419 (Colorado representing two private corporations). In the cases upon which deft primarily relies, the state had no interest in the protection of a natural resource.
Finally, pltf contends that it represents not only the interests of CF&I, but also the interests of other Colorado citizens. The city of Trinidad and the Purgatoire River Water Conservancy District have also expressed an interest in using water from the Vermejo.

If deft's eleventh amendment argument were accepted, it would be difficult for any state to bring an equitable apportionment proceeding. Jurisdiction could become a numbers game, turning on how many interests the state actually represented. Piercing the state's veil could be an unprincipled exercise more appropriate for determining the equities on the merits than for determining this Court's jurisdiction. Cf. Note, The Original Jurisdiction of the United States Supreme Court, 11 Stan. L. Rev. 665, 677 (1959) ("[T]he parens patriae question should turn on the extent of harm experienced by the entire state rather than the number of persons that appear to be directly affected.").

II. Application of Doctrine of Equitable Apportionment

The master found: "A thorough examination of the economies in New Mexico convinces the Master that the injury to New Mexico, if any, will be more than offset by the benefit to Colorado." Such statement, taken alone, would suggest no injury. In the next paragraph, however, the master concluded that sufficient water is available for VPC, Kaiser, and PD. Rather than including VCD in that list, however, the master found that the project "has never been an economically feasible operation." The master then noted that "[m]ost of the people in the area have income from sources other than farming and ranching."
The master's report is subject to two interpretations: (a) there will be no injury as a result of pltf's diversions; or (b) there will be injury, but the benefits to pltf will outweigh the harm to deft.

A. Balancing. As to the balancing of comparative benefits, the Court has been explicit: "The fact that the same amount of water might produce more in lower sections of the river is immaterial." *Nebraska v. Wyoming*, 325 U.S., at 621. See *Wyoming v. Colorado*, 259 U.S., at 468-469. The Court should also preclude balancing of existing equities and proposed uses. In *Arizona v. California*, the master reported: "New Mexico also claims the right to water for future requirements. It is here, however, that priority of appropriation has its greatest effect. It would be unreasonable in the extreme to reserve water for future use in New Mexico when senior downstream appropriators in Arizona remain unsatisfied." Special Master Report, *Arizona v. California*, at 331 (Dec. 5, 1960) (Rifkind) (emphasis added).

Thus, if the master's report is to be upheld, it must be on other grounds. The Court should ensure water for the existing economies and, only if there is water remaining, apportion some for pltf's use. It is therefore important to determine the amount of water and deft's needs.

Although neither party discusses the issue, it is not clear by what standard of review this Court scrutinizes the master's findings. Although the master to some extent resembles a trial judge, he can only recommend, not decide. See *R. Stern & E. Gressman*, Supreme Court Practice §10.7, at 610 (5th ed. 1978).
the other hand, rule 9.2 of this Court states that "motions in original actions shall be governed, so far as may be, by the Federal Rules of Civil Procedure, and in other respects those Rules, where their application is appropriate, may be taken as a guide to procedure in original actions in this Court." Under Fed. R. Civ. P. 53(e)(2), "the court shall accept the master's findings of fact unless clearly erroneous." There seems no reason to depart from this standard in this case. See OCAW v. NLRB, 547 F.2d 575, 580 (CADC 1976) (using "clearly erroneous" standard to review factual findings of master appointed by CA), cert. denied, 431 U.S. 966 (1977). But see Mississippi v. Arkansas, 415 U.S. 289, 296 (1974) (Douglas, J., dissenting) ("Heretofore the Court has not considered itself limited in its review of its Masters by the 'clearly erroneous' test.").

One final matter. Pltf argues that this Court's decisions uniformly place the burden on the downstream state to show by clear and convincing proof that diversions in an upstream state would cause serious injury to the substantial interests of the lower citizens. See, e. g., Colorado v. Kansas, 320 U.S., at 393-394; Connecticut v. Massachusetts, 282 U.S., at 669; Kansas v. Colorado, 206 U.S., at 117. It is true that in those cases that the downstream party had the burden of proof, at least on certain issues in the case, but each time the downstream parties was also the complaining party. It would seem that the burden of proof is on the complaining state and indeed, "is much greater than that generally required to be borne by private parties." North Dakota v. Minnesota, 263 U.S., at 374.
B. Deft's Need for Vermejo Water.

1. Major appropriators. VPC and Kaiser are above the Dawson Gauge; PD and VCD are below. PD and Kaiser have priority over VPC; VCD apparently has the last rights to the water. Under the water allocations on the Vermejo River, each user is entitled to 2 acre feet of water per acre to be irrigated with the exception of the VCD, which is entitled to only 1.5 acre feet per acre irrigated.

a. VPC. The master noted that both states disagree on the number of acres irrigated by VPC, but did not specifically determine VPC's exact water needs. Pltf points to the testimony of the VPC's manager in support of its assertion that VPC irrigates only 250 acres. Deft, on the other hand, contends that pltf's conclusion is directly contradicted by four pieces of evidence: (1) the VPC's manager also testified "that sometime during the 60's there was a tremendous amount of more acreage irrigated than there is today due to the lack of water"; (2) an employee of VPC since 1963 testified that approximately 700 acres had been irrigated at VPC from the time he began work until the early 1970's; (3) the ranch has decreed rights to irrigate 870 acres; and (4) the VPC manager testified of a drought beginning in 1974.

It would seem that the master would have been correct in assigning 500 acre feet (250 irrigated acres) for VPC's needs.

b. Kaiser. Kaiser has decreed rights of 630 acre feet, 430 of which are leased from PD. The master found that Kaiser diverts an average of 251 acre feet per year and that Kaiser has never fully diverted its decreed appropriation. The master also apparently credited the evidence that Kaiser had an actual return flow of 33%.
Pltf argues that the present operation has used no more than 361 acre feet, and that was in 1976. Since then the use has actually decreased. Moreover, Kaiser indicated uncertainty whether they would increase their operation beyond its current size.

Deft notes that in 1980 Kaiser diverted 311 acre feet and that each year it applies for an extension of time on the beneficial use of the difference between its total right and the amount actually diverted. Deft points out that, as Kaiser develops its coal reserves, its water rights will be exercised on a gradually expanding basis; it owns one billion tons of coal reserves; it presently produces $60 million worth of coal annually; it accounts for nearly $32 million in annual revenues to the economy; it has no storage rights and is completely dependent upon the daily availability of water in the Vermejo; and the cost of diverting water from the Cimarron River is estimated at $12 million. To the extent the master concluded that Kaiser needed only 250 acre feet per year, he probably underestimated the mine's current needs.

c. PD. The master found that PD owns rights to irrigate 501 acres of land, 400 acre feet of which have been leased to Kaiser to avoid any possibility that the rights would be forfeited under deft's law. PD's land is farmed under lease to the CS Cattle Co., which irrigates only 150 of a possible 300 acres.

There was testimony that, before 1965, the PD irrigated 450 to 500 acres and reduced the acreage only after a flood would have required a new diversion system to be built. There was also testimony, however, from VCD's general manager, that PD had not irrigated more than 80 acres. VPC has no storage rights or
facilities, and its ability to use water is necessarily limited by the quantity available in the stream during the irrigating season.

Although the master did not specifically find PD's exact needs, he would not have been "clearly erroneous" in estimating VPC's irrigated acreage at 150 acres.

d. Stock Ponds. The master noted that, beneath the PD diversions, water is available for stock ponds. These ponds are small and usually contain less than 10 acre feet per pond, but the number of such ponds are not administered or limited by deft. The master found that the number of stock ponds is significant and accounts for a substantial depletion of the Vermejo's flow. Pltf argues that these stock ponds are the most significant depletions of the river flow between the state line and the VCD.

e. VCD. The master found that the VCD, an association of 63 farms and a wildlife refuge, is the largest user of Vermejo water, although it also receives water from other sources. The VCD has never irrigated its full allotment, and the inefficiency of its canal system is striking: The master found that as much as 33% of the water diverted is lost before it goes to the fields and that "the project is a failure in spite of the tremendous outpouring of money, effort and time."

Deft disputes the master's conclusion that VDC is inefficient. The Southwestern Regional Director of the Bureau of Reclamation testified that repayment by the VCD to the U.S. for the capital costs of the project were made from 1966 to 1974, with a partial payment in 1975, and that the lack of payments since 1975 was caused by the shortage of water supply. The witness also
testified that to the best of his knowledge the VCD has always met its operation and maintenance obligations.

Using a 25-year average, pltf puts VCD's water use at 14,535 acre feet per year, but this figure includes water from both the Vermejo and the Chico Rico system, the latter of which supplies 30% of VCD's demand and, according to pltf, could become the more important source of water to the VCD. Pltf also notes that the average number of acres actually irrigated is only 4,574, and during the 1970's, the average was 4,147, thus somewhat refuting deft's contention that the first figure is depressed by drought conditions. Two thousand more acre feet are diverted for stockwatering. Pltf also argues that VCD's actual efficiency from river to crops is less than 25% (only 3,575 of the 14,535 available acre feet of water actually is applied to a beneficial use).

e. Other uses. Deft argues that the master made no analysis at all of the needs of five farms that divert water from the main canal of the VCD but are not members of the district. They own water rights for the irrigation of 478 acres. Pltf also notes these needs, putting the acres actually irrigated at 275, with a water need of 550 acre feet. The rights of these individual users are senior to those of the VCD.

2. Supply to the Canadian River. The master found that very little, if any, water escapes from the VCD's diversion works and that the effect of a diversion in pltf on those who live below the VCD would be negligible and virtually nonexistent. The master stated that "[t]here was no competent evidence of any dependency on Vermejo water by users downstream from the Vermejo Conservancy
District and no calls have ever been made for the water by
downstream users."

Deft argues that the master's conclusion effectively excludes
41,150 acres of irrigated land on the Canadian River from his
consideration, together with the storage rights of the Conchas and
Ute Reservoirs, amounting to 750,000 acre feet. The average peak
discharge of the Vermejo was, according to pltf, 2200 cfs, nearly
four times the capacity of the Vermejo canal, and on 74 separate
occasions the discharge exceeded the canal's capacity. Pltf, on the
other hand, considers the users below VDC "irrelevant": (1) the VCD
has never relinquished water to downstream users; and (2) there is
no requirement to relinquish water. Pltf contends that appreciable
amounts of water spilled past the VCD's diversion structure in only
six years, totaling for the 30-year period only 6900 acre feet, and
that such spills occur only when flood flows exceed the capacity of
the VCD's diversion structure, which is only .01% of the time.

The master did not clearly err when he found that the Vermejo
"is essentially a closed system" in that "little, if any, of the
water of the Vermejo reaches the Canadian River.

C. The Amount of Water Available for Diversion. As the master
notes, USGS records from 1916 to present (Dawson Gauge) indicate an
average annual flow of 12,919 acre feet. Pltf uses the figure
11,035 acre feet (1955-1979 time period), and deft uses 9800 acre
feet (1950-1978). In addition, CF&I's measuring devices for the
years 1977-1980, inclusive, indicate 8400 acre feet per year, but
these private measurements were discounted by the master as low.
The master noted that the Court has rejected the use of averages and
yearly flows as a means to establish dependable supply, see Colorado v. Kansas, 320 U.S., at 396-397 (noting that more relevant statistic is "the amount of divertible flow at times when water is most needed for irrigation"), but also stated that both pltf and deft used average flows in their testimony.

Deft stresses that it is critical to draw a distinction between average annual flow and divertible supply. Pltf's average yearly figure was distorted by the presence of flood flows, which are largely unusable to irrigators because they rush past the headgates carrying damaging debris and silt. Deft concedes that it, too, used average annual flow for estimating that portion of the Vermejo lying within Colorado, but used other evidence--annual precipitation data, monthly and daily stream flow data, a monthly study of historic water supply of the VCD--for the rest of its hydrologic analysis.

Pltf argues that it chose its analysis period to correspond to the period of operation of the "rehabilitated" VDC. Deft's analysis period includes the extremely dry years of 1950-1954 and excludes any of the wet years during the 1940's, thus producing a figure that is only 77% of the average annual flow for the entire period. Pltf contends that deft's figures are thus not fairly representative of the average annual flow at Dawson Gauge.

The master did not specifically find the exact amount of divertable water. The master could have reasonably relied on the CF&I figures to show the amount of water produced in pltf and used pltf's 25-year average for the Dawson Gauge, which in 1980 alone showed a discharge of 14,790 acre feet. Indeed, the 4-year average (1977-1980) was very close to the 25-year average.
2. Conclusion. It seems clear that VPC and Kaiser will have sufficient water to supply their needs and that the master did not err in so finding. There is evidence that the accretion below the Dawson Gauge is between 800 and 1800 acre feet annually, so the Dawson Gauge figure may not reflect all of the water that PD and the VCD receive. In any case, PD's present irrigation needs are minimal (300 acre feet per year), leaving around 11,000 acre feet for the stock ponds, the five independent farms, and the VCD.

**VCD** needs 6221 acre feet to irrigate 4,147 acres and 2000 more for stockwatering. PD and the five independent farms account for 850 acre feet more. Because the master made no factual findings as to the stock ponds, it is impossible to determine their needs. If the 11,000 figure is reduced by CF&I's 4000 acre feet diversion, there will be a shortage, ultimately to VCD, of over 2,000 acre feet.

As deft points out, even Colorado's statistics indicate clearly that there will be a reduction of water to the mainstem Vermejo users: the average annual shortage in the VCD was computed to be 6300 acre feet (57% of the demand of the VCD's 7380 irrigable acres), and the uncontradicted evidence shows that an award of 3650 acre feet per annum would comprise 33% of the average historic water supply received by the VCD during the period 1955-1979. Indeed, if CF&I truly believes that there is sufficient water to satisfy all existing users and its proposed diversion, it would presumably proceed with its project.

C. Other alternatives. There are two other ground upon which the master's recommendation might be adopted or rejected.
1. Waste. In Wyoming v. Colorado, 259 U.S., at 484, the Court stated that the doctrine of equitable appropriation "lays on each of these States the duty to exercise her right reasonably and in a manner calculated to conserve the common supply." There is certainly plenty of evidence to support the master's conclusion that the VCD's use of water is highly inefficient. According to pltf, the 2000 acre feet used for stockwatering purposes could be reduced to less than 100 acre feet by using a closed system, and there is evidence that such a savings would offset a 4000 acre feet diversion in pltf. On the other hand, it is not clear that this improvement would in any way offset the undetermined amount of water diverted by non-VCD stock ponds.

Although this may be pltf's strongest argument, it probably should be rejected in this case for two reasons. First, such a ruling would give junior, nonexisting economies coercive force where they had none before, and it could increase the number of suits brought within this Court's original jurisdiction. Second, the Court is ill-equipped to determine what is "necessary" waste and what is "bad" waste. The Court should have some faith in the market to ensure that rights to resources are purchased and put to their most productive use without resort to reallocation by this Court.

2. Laches. Deft argues that the facts here are far stronger than in Washington v. Oregon for using laches. The pltf's failure to display some sovereign interest in the interstate waters bars pltf from disrupting the existing dependence in another state. Pltf, on the other hand, argues that the facts in this case do not support a defense of laches because, after deft's appropriators
filed suit in federal court to enjoin the planned use, it, unlike the Washington users in *Washington v. Oregon*, acted promptly to protect its rights. As to displaying some sovereign interest in the Vermejo, pltf argues that a state has an inherent interest in the natural resources within its boundaries and that the right to a fair share of those resources is vested and, under normal circumstances, is indefeasible.

Although inaction should certainly be considered as an equity in an apportionment proceeding, it probably should not be considered as a complete defense in this case. The fact that pltf has never exercised any interest in the Vermejo waters is a strong factor, however, militating against permitting it to undermine existing economies for the benefit of a future one.

**Summary**

1. The eleventh amendment does not bar jurisdiction over this case.

2. Deft's senior, existing economies should not be injured for the sake of pltf's junior, proposed uses.

3. The master's recommended diversion will reduce the water now needed to maintain the existing senior economies in deft.

4. The master's report should not be adopted. The Court should appoint a new master to take evidence, make findings, and report to the Court.
No. 80 Original
COLORADO
v.
NEW MEXICO, et al.

October 28, 1983 Conference
List 5, Sheet 4

Exceptions of New Mexico to the
Additional Factual Findings of the
Special Master and Reply.
Also Narrative Tender of Evidence
Submitted by Defendants and Requested
Findings of Fact and Conclusions of
Law.

(Special Master-Judge Ewing T. Kerr)

SUMMARY: Colorado filed this action seeking entitlement to divert some
of the water of the Vermejo River. The Special Master concluded that Colorado
was entitled to a diversion of 4,000 acre-feet per calendar year. After New
Mexico filed exceptions to the Special Master's Report, the Court heard
argument last Term and remanded the case to the Special Master for additional
factual findings. Colorado v. New Mexico, ___ U.S., 74 L.Ed.2d 348
(1982). The Special Master filed his Additional Factual Findings, New Mexico
filed exceptions to the Additional Factual Findings and Colorado has filed a
reply in support of the Findings.

Deny - I agree that the Findings indicate that
Colorado filed this action seeking entitlement to divert some water of the Vermejo River. The Special Master concluded that Colorado is entitled to a diversion of 4,000 acre-feet per calendar year. After New Mexico filed exceptions to the Special Master's Report, the Court heard oral argument and remanded the case to the Special Master for additional findings. Colorado v. New Mexico, 440 U.S. 506, 74 L.Ed.2d 348.

The Special Master filed his Additional Factual Findings, New Mexico filed exceptions to the Additional Factual Findings and Colorado has filed a Memorandum in Support of the Findings.

I agree that the Findings indicate that...
The exceptions raise three major issues: (a) how is "available water" defined and measured; (2) how specific should a Special Master's findings be in an equitable apportionment case; and (3) to what extent may present uses be limited or curtailed in favor of alternate future uses. The first two issues are raised and addressed by the parties. The third issue was implicit in the Court's first opinion and may control the course of this litigation.

FACTS: (1) The River. The Vermejo River is a non-navigable interstate river which originates in the southern portions of Colorado and flows into New Mexico. It extends approximately 55 miles before joining the Canadian River. (A map of the river is attached). During the summer months, the river is about five feet wide and one foot deep. Nonetheless, the Vermejo River provides much of the water for Colfax County, New Mexico.

The Vermejo River has its origins in snowmelts from the mountains and is fed in Colorado by three creeks. Colorado's proposed diversion would come from these creeks. Colorado has made no prior official diversions from the Vermejo. The New Mexico downstream users allege that their entitlements have always exceeded the amount of water available.

(2) Litigation History. In 1975, Colorado granted inchoate water rights to CF & I Steel Corporation which intends to divert water from the Vermejo onto another watershed for commercial and agricultural purposes. Four New Mexico users sought injunctive relief in the D.C. (N. Mex.) in order to prevent CF & I from diverting water out of priority to the downstream users' detriment. The D.C., applying the doctrine of prior appropriation, granted relief. CF & I's appeal to the CA 10 has been stayed pending this litigation.

In 1978, Colorado moved for leave to file an original complaint seeking equitable apportionment of the Vermejo. The Court granted the motion and appointed Judge Ewing T. Kerr (senior Judge, D.C. Wyo.) as Special Master. After 16 days of hearing evidence, he submitted his report on January 9, 1982.
After the filing of exceptions and argument, this Court on Dec. 13, 1982 issued its opinion remanding the case to the Master for additional factual findings. The Master denied New Mexico's request for additional testimony and filed his additional factual findings on June 7, 1983. New Mexico filed extensive exceptions to the Findings and Colorado tendered a reply in support of the additional findings. The Master has also submitted New Mexico's "Narrative Tender of Evidence and Requested Findings of Fact and Conclusions of Law."

THIS COURT'S OPINION: Justice Marshall delivered the opinion of the Court with concurring opinions by the Chief Justice (joined by Justice Stevens) and Justice O'Connor (joined by Justice Powell). The Court held that equitable apportionment was a question of federal law and that the rule of priority is not the sole criterion.

Justice Marshall held that "equitable apportionment will protect only those rights to water that are 'reasonably acquired and applied'." "Thus, wasteful or inefficient users will not be protected." "Similarly concededly senior rights will be deemed forfeited or substantially diminished where the rights have not been exercised or asserted with reasonable diligence." "We have invoked equitable apportionment not only to require the reasonably efficient use of water, but also to impose on states an affirmative duty to take reasonable steps to conserve and augment the water supply of an interstate stream." [citation omitted]

In the following paragraph Justice Marshall explains the Court's approach:

We recognize that the equities supporting the protection of existing economies will usually be compelling. 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. Under some circumstances, however, the countervailing equities supporting a diversion for future use in one state may justify the detriment to existing users in another state. This may be the case, for example, where the state seeking a diversion demonstrates by clear and convincing evidence that the benefits of the diversion substantially outweigh the harm that might result. In the determination of whether the state proposing the diversion has carried this burden, an important consideration is whether the existing users could offset the diversion by reasonable conservation measures to prevent waste. This approach comports with our emphasis on flexibility in equitable apportionment and also accords sufficient protection to existing uses.

The Court found that the Master had not clearly set forth factual findings supporting his conclusions and remanded for additional findings in the following areas:

1. the existing uses of water from the Vermejo River, and the extent to which present levels of use reflect current or historical water shortages or the failure of existing users to develop their uses diligently;

2. the available supply of water from the Vermejo River, accounting for factors such as variations in streamflow, the needs of current users for a continuous supply, the possibilities of equalizing and enhancing the water supply through water storage and conservation, and the availability of substitute sources of water to relieve the demand for water from the Vermejo River;

3. the extent to which reasonable conservation measures in both states might eliminate waste and inefficiency in the use of water from the Vermejo River;

4. the precise nature of the proposed interim and ultimate use in Colorado of water from the Vermejo River, and the benefits that would result from a diversion to Colorado;

5. the injury, if any, that New Mexico would likely suffer as a result of any such diversion, taking into account the extent to which reasonable conservation measures could offset the diversion.

The Master was authorized to make any other factual findings he considered relevant, to hold additional hearings, if necessary, and to reaffirm his original recommendation or make a different recommendation on the basis of the evidence and applicable principles.

THE MASTER'S ADDITIONAL FACTUAL FINDINGS: The Additional Factual Findings are divided into five parts in response to the five inquiries in the Court's order.
Existing Users. The Master's first finding is that the current levels of use "primarily reflect failure on the part of existing users to fully develop and put to work available water." Implicit in this finding is the conclusion that the present users' entitlements, to the extent they exceed their current use, do not merit recognition in this action for equitable apportionment. The effect of this finding is to reduce the present users entitlements from approximately 16,000 acre feet to 8,500 acre feet of water.

Among the Master's reasons for this reduction are: (a) there was sufficient water available for all users except the Vermejo Conservancy District; therefore, the failure to use the water must be due to lack of diligence; (b) the Vermejo Park Corporation and Kaiser Steel Corp. have alternate sources of water; (c) Phelps-Dodge may not "reserve" water for possible future mining, and (d) some of the individual users do not devote full time to their farms.

The Vermejo Conservancy District was described as a project "that has failed from the beginning to develop its allotted acreage, has failed to meet its financial obligations, and quite possibly should never have been built." The Master noted that (1) nonuse by the District could not have been caused by the drought of the seventies because the nonuse has existed since the fifties, (2) "other testimony supported the contention that the shortage in the District resulted from unregulated stockponds, fishponds and water detention structures," and (3) the district receives one-third to one-half of its water from sources other than the Vermejo River.

The Available Water. The Master recognized that a most difficult aspect of this case is how to measure the available supply of water. One aspect of the problem is that the only active stream gauge on the river is

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2 The District is an association of sixty-three New Mexico farms, in addition to the Maxwell Wildlife Refuge formed to provide water for irrigation and other uses.
operated by the U. S. Geological Survey near Dawson, New Mexico. This gauge is below the diversion points for Vermejo Park Corp. and Kaiser and above the diversion point for the Vermejo Conservancy District. A second problem is determining the proper definition of "available water." The third problem is analyzing the consequences of not being able to specifically measure the amount of available water.

Colorado would determine the availability based on average annual flow of the river at the Dawson gauge adding the depletions of the appropriators prior to the gauge, an accretion between the gauge and the Vermejo Conservancy District and an adjustment for alleged ponds and foot dams. New Mexico argues that based on Wyoming v. Colorado, 259 U.S. 419 (1922) available water means "divertable dependable water" and that average annual flows are of little relevance to that definition.

The Master does not reject New Mexico's definition but chastises New Mexico for presenting "no alternative means of measuring the amount of available water." Because neither New Mexico nor any of the users other than Kaiser measures the amounts diverted "it is difficult to determine exactly how much water has been and is being diverted by New Mexico users."

The Master notes that in Wyoming v. Colorado, supra, the Court declined to rely heavily on average flows and instead considered, "the unalterable need for a supply which is fairly constant and dependable, or is susceptible of being made so by storage and conservation within practicable limits." 259 U.S. at 484.

Applying this test of practical availability to the adjusted average flow tables and therefore excluding years of exceptionally high or low flows of water, the Master finds an average of between 10,900 and 11,543 acre feet a year is available. He notes that the average annual acre feet during the 1970's drought was 8,262 acre feet. The Master conditions his conclusion by stating:
Obviously, the figures can be used to reach nearly any result, and averages are unfortunately unavailable to irrigate crops and provide water for other users, however, it is the opinion of the Master that even looking at each individual month and each individual year, there does not exist a situation where supply is intermittent and materially deficient at short intervals.

The Master concludes that "the available supply of water from the Vermejo River is sufficient for current New Mexico users." He makes the following points in support of his conclusion: (a) the District "has great ability to store water and enhance the supply," (b) New Mexico users are not doing all that is possible to preserve and enhance available supply, (c) only Kaiser has a need for a continuous supply of water, (d) the highest flow at the Dawson gauge is during the summer months when the need for water is greatest, and (e) the New Mexico users have other water sources which, although insufficient to be total replacements, serve to relieve the demand.

(3) Conservation. The Master is particularly critical of New Mexico's lack of administration. He suggests "monitoring, regulating and controlling the system in an effort to determine more accurately actual use, and to decrease nonuse, waste and general inefficiency." More careful administration is recommended for four areas: (1) loss of water through unregulated stockponds, fishponds and water detention structures; (2) the removal of silt and other debris that block dam and supply canals and thereby reduce the amount of water diverted, (3) attempt to control headgate spills, divert all water available and fully develop all available stream sources; and (4) remedy the "failure of many users to devote sufficient time to the complete development of available water resources".

The Master's conclusion as to the District was that "[W]hether lack of administration, lack of diligence, lack of resources or lack of ability is the cause, there is little doubt that the District has failed as a water reclamation project and has serious financial and operational problems of its own." The Master suggests that there is a problem of loss through evaporation
in the District's seven reservoirs. Although New Mexico claims that the District falls into the middle range in reclamation project efficiencies, the Master concludes that:

The existence of other low efficiency systems is not justification for failure to fully develop water sources here. New Mexico argues that Colorado has merely pointed out areas of inefficient water use without making viable suggestions which would reduce or eliminate the inefficiency. It is the opinion of the Master that New Mexico's inefficient water use should not be charged to Colorado.

The Master, however, found that Colorado's system of water administration and its plans for use and reuse of the diverted water suggest that Colorado's use will be efficient.

(4) **Colorado's Intended Uses of the Water.** Colorado would initially use the diverted water for irrigation of 2,000 acres owned by CF & I and the use and reuse of the water as it flows down the valley. The proposed permanent uses of the water include a water hydroelectric plant generating power for a sawmill, coal washing at CF & I coal mines, domestic and recreational purposes, possible synthetic fuel development and, supplementation of current inadequate water supply. The water would be diverted to the Purgatoire River system whose resources are overappropriated and the diversion would alleviate existing shortages of water for city and irrigation uses.

(5) **Injury to New Mexico from Diversion.** The Special Master feels that the harm to New Mexico will be minimal because (a) "only about one-third of the total divertible water in the Vermejo River would be diverted by Colorado" and (b) "reasonable conservation measures on the part of New Mexico could increase the available supply of water to a point where the Colorado diversion might not have any impact at all."

The Master notes that Colorado produces approximately three-fourths of the water in the Vermejo system. His clear conclusion is that as a matter of equitable apportionment Colorado ought to be allowed to divert approximately one-third of the divertable water. It is unclear whether the Special Master
thinks that any amount of harm to New Mexico could defeat Colorado's right to an equitable apportionment; here the Master simply concludes that much, if not all, of the harm can be alleviated by conservation.

NEW MEXICO'S EXCEPTIONS: Four major arguments are presented in New Mexico's 116-page exceptions: (1) the Master erred in excluding the evidence New Mexico tendered after the remand and in not holding additional hearings; (2) the Master totally failed to appreciate the hydrology of the Vermejo River; (3) the Master erred in not finding that the existing uses were restricted by shortages of water; and (4) the Master generalized about water conservation without specifically identifying any particular conservation measures and without discussing the economic and physical feasibility of any given measure. New Mexico also argues that the Master idealized Colorado's future use and criticized New Mexico's present use and that the Master recommends permanent injury to New Mexico. Finally, New Mexico suggests that equitable apportionment provides no basis upon which to rearrange priorities interstate.

(1) Exclusion of Evidence. In December 1980, the U. S. Geological Survey installed a streamflow gauge on the Vermejo Conservancy District's Canal below the Dawson gauge. New Mexico wanted to introduce the readings from the new gauge for the years 1981 and 1982. New Mexico contends that this evidence demonstrates (a) that the District does not receive as much water as the Master claims, and (b) that the Vermejo River does not terminate at the District headgate but proceeds downstream to form part of the historical supply of the Canadian River users.

New Mexico also sought to introduce the results of a hydrographic survey on stockponds in the Vermejo drainage. The survey allegedly shows that "there are few stockponds, that they constitute a beneficial use of long standing and that the water they deplete is insignificant in regard to the water shortage experienced by the Vermejo Conservancy District."
New Mexico also proposed to present evidence of its completion of a closed pipeline. This evidence is relevant to an evaluation of the District's conservation efforts.

(2) Hydrology. New Mexico alleges that the Special Master used average annual flow to determine availability. This was improper because (a) this Court has rejected average flow as a standard for determining available water, (b) it is contrary to the facts of the flow of the Vermejo and (c) it assumes that the Vermejo River is a closed system.

New Mexico suggests that this Court has rejected dependence on average flows as a basis of determining divertable dependable water because they are necessarily inflated by flood flows which are not divertable. New Mexico cites Colorado v. Kansas, 320 U.S. 383, 397 (1943) as holding that the critical inquiry is into:

> the amount of divertable flow at times when water is most needed for irrigation. Calculations of average annual flow, which include flood flows, are, therefore, not helpful in ascertaining the dependable supply of water usable for irrigation. 320 U.S. at 397.

The Master's failure to provide for flood flows and peak runs, neither of which are divertable, is compounded by his assumption that the Vermejo River is a closed system. He fails to recognize that the floodflows and peak runs included in the average annual and monthly flows are lost to the District because they proceed down river to the Canadian River. A substantial section of the exceptions is devoted to presenting evidence that much of the high flows during the summer months were the results of flash floods and are not divertable. New Mexico concludes that the Special Master failed to understand the realities of the hydrology and that his average of 11,543 acre feet as available is simply unsupported by the evidence.

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3New Mexico's discussion and Colorado's discussion in its reply contain extensive references to New Mexico's Narrative Tender of Evidence.
(3) Existing Uses Restricted by Shortages. Because the Special Master overestimates the amount of divertable water he fails to appreciate the shortages which have caused in the curtailment of irrigation. New Mexico also argues that the Special Master ignored the evidence that the number of acres irrigated since 1954 had consistently decreased because of the shortage of water. Among the evidence to this effect was (a) Kaiser securing extensions of time in which to apply its allotment to beneficial use, (b) the testimony of Vermejo Park's foreman and the foreman for CS Cattle Co., (c) the testimony of the private users and (d) Congress' delay in 1980 of the District's repayment obligation on Rep. Lujon's statement that "the quantity of water that was to have been available to irrigate the crops has consistently fallen extremely short" (pages 48-49 of Exceptions, n. 15).

(4) Conservation Measures. New Mexico suggests that the Master did not understand that in every western state "the concept of waste does not include the unavoidable loss of water incident to its application to beneficial use." This distinction, allegedly glossed over by Colorado, is critical because there are no practicable or financially feasible conservation measures available to the District's farmers.

New Mexico argues that (a) officials of the Bureau of Reclamation and others testified that any inability in the District to maintain diversion or delivery works has been caused by water shortages, not imprudent irrigation practices, (b) no water user can design diversion works and canals that would intercept peak flows, (c) the stockponds are of beneficial use and the depletion caused by the stockponds is insignificant, (d) the District's operation of reservoirs is as efficient as possible, (e) the alternate sources referred to by the Master are fully allotted and used, and (f) the history of

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the District’s development of a closed stockwater system evinces the District’s diligence.

In sum, New Mexico alleges that the Special Master, although recognizing that he lacked specific data on divertable water, declined to accept additional evidence and proceeded to reach findings that are unsupported by the evidence that was before him.

COLORADO’S REPLY: Colorado supports the Special Master’s decision not to accept new evidence and defends his findings that (a) the downstream users' nonuse is due to lack of diligence, (b) there is adequate water to meet most purposes and (c) conservation efforts by New Mexico would minimize any harm from the diversion. Colorado also reiterates the beneficial uses that will flow from its diversion. Finally Colorado suggests some terms and conditions for its diversion to ensure the most equitable sharing of the Vermejo.

(1) Additional Hearings were Unnecessary. Colorado argues that the Special Master already had before him detailed testimony and exhibits on headgate spills and the historical water supply and usages of the Canadian water uses. Thus, the evidence New Mexico sought to introduce was cumulative. The existing evidence established two facts: (a) the District was "entitled to divert all the flows of the Vermejo at its point of diversion and no priorities on the Canadian are entitled to demand that water be permitted to pass this diversion" and (b) the flood flows for the most part do not originate in Colorado and therefore could not be diverted by Colorado.

Colorado suggests that evidence on stockpond depletions was unnecessary because the Master basically recognized that stockponds were not a major problem. No new hearing was required on the closed stock water system because the only new evidence was that the system was complete and the record already contained exhaustive evidence of the District efforts to construct the system.

(2) Lack of use Due to Lack of Diligence. The Master found that for all the users except the District there had always been adequate water for the
full development of their allotments and therefore their failures to use their
full allotments constitute abandonments. Colorado argues that the Master
properly discounted the users' statements as self-serving.

Colorado suggests that the evidence shows no corollation between the
amount of water available in a particular year and the number of acres
irrigated by the District. New Mexico overlooks the amount of water available
in the reservoirs which was not released for irrigation. New Mexico also
equates maximum duty of water with minimum amount necessary to irrigate. The
District's maximum duty of water is 1.5 acre feet per acre but the District
can and has irrigated crops with less water. Thus New Mexico's exhibits which
are based on a need of 1.5 acre feet per acre and on the District's allotted
number of acres (an amount which has never been irrigated) produce a greatly
inflated minimum need.

Colorado suggests that the Canadian River users' interests are of no
concern for three reasons. First, Colorado's points of diversion are located
above 9,920 feet elevation. The flood flows which escape diversion usually
originate in intense thunderstorms that occur at lower elevations than the
diversion points. Thus, Colorado would not divert water that would otherwise
find its way to the Canadian River. Colorado's other arguments are that New
Mexico in other proceedings discounted the impact of the Vermejo on the
Canadian water users and that historically the flood flows reaching the
Canadian have been negligible.

(3) Available Water. Colorado claims that the Special Master did not
rely on average annual flows "but instead looked at the best available
information, the monthly flows for each month of each year 1916, 1917, 1920
and 1928 through 1979." New Mexico should not be heard to complain because
its own lax administrative practice has prevented the development of more
precise data. New Mexico may not discredit the Master's findings by
exaggerating its users' demand for water.
Colorado also suggests that New Mexico's general indifference to administration along the Vermejo sanctions wasteful water uses. As an example, Colorado cites the District's 30-year tolerance of an open stockwater system and refusal to place flow meters at diversion points.

(4) Conservation Effects. New Mexico keeps no record of diversions or of the amounts of water applied to beneficial use. With the exception of Kaiser, the individual users maintain records. New Mexico refused to cooperate with Colorado in installing measuring devices at their border. Colorado reiterates that New Mexico "should not be permitted to use its own lack of administration and record keeping to establish its claim that no water can be conserved."

Colorado suggests that the 2,000 acre feet of water saved by the closed stock and domestic water system "standing alone will offset the effects of a Colorado diversion of 4,000 acre feet annually" because of evaporation and depletions as the water moves downstream. In other words it takes 4,000 acre feet at Colorado's diversion points to have 2,000 acre feet at the District's canal. New Mexico benefits from the closed option in having better quality water available all year. The District is not entitled to retain all the water saved because this would allow a water user to gain equity from waste.

Colorado urges that the District should make better use of its reservoir system. Finally, Colorado notes that its proposed diversion is "less than one-half of the water which it produces and only approximately one-fourth of the Vermejo River's virgin flow and would not offset the flow in the New Mexico tributaries to the Vermejo River or in the Chico River System."

(5) Terms and Conditions to Promote Sharing. Colorado suggests (a) "that its diversion of water from the Vermejo River watershed in Colorado be limited to points at or above those three points decreed in the Colorado water
adjudication proceeding" and (b) "Colorado's diversion should be calculated on the basis of a ten-year progressive average." Those conditions would ensure that Colorado could never divert much more than one-fourth of the Vermejo's flow and would share the hardships of lean years with New Mexico, recovering its share up to 4,000 acre feet per year when there are surpluses.

**DISCUSSION:** The Court's opinion recognized the inherent problems in balancing an existing use with a proposed future use. To facilitate this difficult task, the Court remanded the case to the Master with a request for specific factual findings. The Master's treatment of available supply of water and the extent to which conservation measures might eliminate waste and inefficiency has not advanced the Court's ability to decide the controversy.

(1) Available Water. The critical determination is the amount of available water. This determination underlies an evaluation of the users' past performances as well as the need for conservation. Although the Master does make findings as to available averages (between 11,543 and 8,262 acre feet of water) he undercuts his findings by stating, "[O]bviously, the figures can be used to reach nearly any result, and averages are unfortunately unavailable to irrigate crops and provide water for other uses...." His conclusion that the supply is neither "intermittent" nor "materially deficient at short intervals" does not support his finding as to the amount available.

The Master's work was initially complicated by the lack of specific data as to the amounts used and the flow at the diversion points. New Mexico sought to provide additional specific data in the form of the readings from a recently installed flow meter at the point of the District's diversion. The Master elected not to take additional evidence but failed to explain his election.

The Master's findings are further undercut by his failure to consider the loss of divertable water due to flood flows and peak runs. Although he
recognized that averages are unavailable for use, he did not adjust his averages accordingly.

The Master's approach to the problem increased the importance of the determination of available water. He first uses the amount of available water to reduce the users' allotment and then to determine their present needs. Thus, if the Master's figure is inflated, the users have not only had their allotments improperly reduced, but they have not been allowed sufficient water to meet their reduced allotments.

(2) Conservation. The Master's conclusion that proper conservation measures will provide an adequate water supply is not supported by any specific findings. It is true that New Mexico does not closely monitor use and flow but monitoring will not increase the available amount of water. The Master refers to loss of water through unregulated stockponds but declined to accept New Mexico's evidence that such loss was negligible. The Master refers to alternate sources of water but does address New Mexico's allegation that these sources are fully allotted and used. He notes that many individual users do not devote sufficient time to complete development of available water resources but does not discuss the feasibility of the users doing so.

The Master alludes to removing silt and other debris that block dams and supply canals and to attempts to control headgate spills. His report, however, contains no findings of blockages or unreasonable spills. He does not suggest how much water could be conserved by these methods and, most importantly, does not discuss the feasibility of these remedies. The Vermejo Conservancy District is relative poor. The District cannot repay its federal loan and had a difficult time arranging financing for its closed stock water system.

The Court's opinion (see footnote 13 and Justice O'Connor's concurrence) recognized that Colorado has the burden of demonstrating by clear and convincing evidence that there is an adequate supply to meet all the
reasonable uses or that reasonable conservation measures will produce such a supply. The Master's Additional Factual Findings may not allow the Court to make that determination.

CONCLUSION: The Court may have no alternative but to remand the case to the Special Master or a new Special Master to take additional evidence and to make specific findings as to the amount of divertable water and the feasibility of, and benefits from, specific conservation measures. A detailed set of inquiries may be necessary to assure that the Court gets the specific findings it needs to resolve this litigation.

Unless the Court finds that the Additional Factual Findings are adequate, oral argument at this time may not be valuable. Without Specific findings that consider and evaluate the complex if not conflicting evidence, the Court may not be able to balance Colorado's proposed use against New Mexico's traditional use.

The only alternative would be to find that regardless of the harm to New Mexico, Colorado is entitled to some water and its proposed use of the water is clearly better than New Mexico's use. This might set a dangerous precedent because with technological advances, one state's proposed use will often be substantially more efficient than another state's traditional use. Another alternative would be to find that Colorado has failed to demonstrate that clear and convincing evidence that New Mexico's uses are sufficiently wasteful and inefficient to allow the diversion. This course burdens Colorado with the inadequacies of a Master's report which favored Colorado.

10/20/83

PJC

Schickele

Map attached to memo
Colorado has not met the burden of showing "waste" in New Mexico's traditional use of these waters. Because Colorado supports the present Findings and urged the Master not to consider additional evidence, it seems appropriate to enter judgment against Colorado on this basis.

David
October 28, 1983 Conference
Supplemental List

No. 80 Original
COLORADO
v. NEW MEXICO

Exceptions of New Mexico to the
Additional Factual Findings of the
Special Master and Reply
Also Narrative Tender of Evidence
Submitted by Defendants and Requested
Findings of Fact and Conclusions of Law
Also Motion of New Mexico for Leave to
File Reply Brief.
(Special Master Judge Ewing T. Kerr)

SUMMARY: This memorandum supplements my prior memorandum of Oct. 20,
1983, and is occasioned by New Mexico's Oct. 24, 1983 motion for leave to file
a reply brief.

BACKGROUND AND CONTENTIONS: New Mexico seeks leave to file a reply brief
because Colorado, after waiving its right to file exceptions to the Special
Master's Report, takes exception to the Report in its reply brief to New
Mexico's exception.

New Mexico argues that Colorado, by suggesting a ten-year progressive
average for its diversion, seeks substantially more water than the Special

Grant - motion for reply brief:
It still appears that the Court should enter judgment against Colorado
New Mexico's reply brief also reiterates New Mexico's argument that: (1) the exclusion of evidence on the supply of Vermejo water was prejudicial; (2) "Colorado's attempt to refute the fact that Vermejo's supply did not meet the demand by New Mexico's users in the late 1960's, and the 1970's relies on a misleading use of average figures;" and (3) Colorado did not present evidence of any reasonable conservation measures which might have supported the Master's findings of fact.

**DISCUSSION:** As the reply brief was received before the Court considered the exceptions, the motion might as well be granted.

The reply brief further supports the position that the Special Master failed to adequately determine the available supply of water or to indicate what specific conservation measures were appropriate and whether they are economically or physically feasible. A remand for further findings accompanied by specific questions may be an appropriate course of action.

10/26/82

Schickele

PJC
COLORADO

vs.

NEw MEXICO

Exceptions of New Mexico to Additional Factual Findings of the Special Master and reply. Also Narrative Tender of Evidence submitted by defendants and requested findings of fact and conclusions of law. (Statement by Special Master that he elects not to take additional evidence). Also motion of New Mexico for leave to file reply brief.

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Set for Reargument.
Grant Reply Brief
MEMO TO JOE:

This is a quarrel between these two states that has been going on for years as to which has the right to the water, and how much, of the Vermejo River - a stream that I could jump across at some seasons of the year. Most of the water that serves New Mexico users rises in Colorado, a smaller portion coming from within New Mexico.

The case was here last Term, and you should take a look at the Court's decision in Colorado v. New Mexico, 103 S. Ct. 539 (1982). Although the case has been in litigation for some time, and a large record had been developed - with both states introducing a great deal of evidence - we were dissatisfied with the findings of the Special Master. Accordingly, the case was remanded with directions that the Special Master make more specific findings.

There are only nine existing users of the water, all in New Mexico. There has been no appropriators of water from the river in Colorado, although prospective ones have
been identified and I believe at least one is a party to this litigation.

The Court's opinion last Term (I do not recall who wrote it) rejected New Mexico's reliance on the "doctrine of prior appropriation", a doctrine I think has substantial support in this Court's decisions. It held, at least for this case, that the doctrine of "equitable apportionment" - a more "flexible doctrine" - should be applied by the Special Master on remand.

I was in dissent, as I thought the weight of more recent authority favored prior appropriation.

I have read rather hurriedly the "additional factual findings" of the Special Master. His conclusion (p. 28, 29) is stated simply. He concludes that the "available supply of water from the river is sufficient for current New Mexico users, and with reasonable conservation measures would meet the needs of Colorado users as well". His conclusions depend on "reasonable conservation measures" being adopted in both states. He applies equitable considerations to rule in favor of Colorado. The Special Master noted Colorado would "benefit greatly from the additional water", that the "injury, if any, to New Mexico ... could be offset by reasonable conservation"
measures". He emphasized that about "three-fourths of the water" in the system comes from Colorado.

The Master accordingly reaffirmed his original recommendations in his report of December 31, 1981 that would establish Colorado's "equitable entitlement to four thousand acre feet annually".

New Mexico has filed a 111-page brief attacking the Master's additional findings and in effect charging the Master with neglect because he refused to receive additional evidence from New Mexico. Colorado responded with a 57-page brief, to which New Mexico in turn replied with a 26-page reply brief.

I am not competent to evaluate the pros and cons of these arguments. We have Special Masters to make these factual decisions. In this case, unless there is reason to conclude that the Special Master did not comply with the Court's directions on remand, and in spite of my view that the prior appropriation doctrine should prevail, I am inclined to approve the Special Master's findings and recommendations. New Mexico does make an argument, persuasive if you accept all that is said in its brief, that the Special Master failed to comply with the directions of this Court because he took no additional
evidence — as New Mexico requested. Colorado replies that a full record already existed, and that each party had had every opportunity to introduce all of the evidence it wished to present to the Master. At least for now, I cannot fault the Special Master — presumably an expert on water rights — for concluding that additional evidence was not necessary.

* * *

Joe, I do not think a Bench memo as such is needed. You should read last Term's decision and Jim Browning's Bench memo. Also get the basic sense of the briefs of the parties. A summary memo of two or three pages — indicating whether you agree or disagree with my views expressed above — would be helpful. Then please say your prayers that the case is not assigned to us.

LFP, JR.
BENCH MEMORANDUM

No. 80 Orig.

Colorado v. New Mexico

Joseph Neuhaus

January 7, 1984

Question Presented

Is Colorado entitled to an equitable apportionment of 4000 acre-feet annually of the headwaters of the Vermejo River, which is currently used in its entirety by New Mexico?
New Mexico makes a number of objections which are not persuasive. In my view, the Master correctly found that the Vermejo is essentially a closed system, or at least that the water that does spill past the last diversion point and flow to Canadian River users will not be affected appreciably by Colorado's proposed diversion. I am also in general agreement that all of the users above the Vermejo Conservancy District ("the District"), which is the last user, will not be affected to any great extent by the proposed diversion. All of them allow in excess of 4000 acre-feet of water to pass by their diversion points in most years, even though all have priorities senior to the District's. There is no question, however, that the District will suffer a fairly severe drop in the water available for its use unless it or the State of New Mexico institutes conservation measures.

The essence of the Master's holding is that there are reasonable conservation measures that New Mexico or the District could undertake that would offset the entire diversion proposed by Colorado. See Additional Findings at 28-29. He also suggests, that if any injury were felt by the District, the benefits of the proposed uses by Colorado would outweigh the harm, since the District is a project of marginal value anyway. See id., at 8. He does not appear to rest heavily on this suggestion, however. Cf. Colorado v. New Mexico, 103 S.Ct. 539, 544 (1982) (same grounds in first report). Last Term's opinion makes clear that if these findings are supported by clear and convincing evidence, Colorado is entitled to whatever amount of water could be offset by rea-
sonable conservation measures in New Mexico, or (perhaps) would be put to a significantly better use by Colorado. Id., at 547 and n. 13. Although the briefs discuss many other points, therefore, it seems to me that the essential question before the Court is whether clear and convincing evidence supports the Master's finding that there are reasonable conservation measures that New Mexico could take to make up the 4000 acre-foot diversion.

The evidence on what conservation measures are "reasonable" and what their effect would be is very thin. While the Master suggests three specific measures that could be taken—reduce the number of stockponds, unblock runoff canals, improve diversion facilities to reduce spills—he does not evaluate the feasibility of any of them nor suggest that any would have a major impact. See Additional Findings at 18-19. The heart of his holding on conservation is his comparison of the general administration of the New Mexico and Colorado water systems. Id., at 12-16; see id., at 18 ("the most important element [of improving conservation] is administration"). New Mexico does not seriously dispute the Master's point that Colorado takes a much more active and precise role in administering its water system than New Mexico does. The Colorado state government appears to meter virtually every diversion of state water, and ensures its beneficial consumption. New Mexico relies largely on complaints to inform it of wasteful use. See id., at 12-16; see also N.M. Reply Br. at 21-22.

There is almost no discussion in the reports or the briefs, however, of whether requiring New Mexico to implement similar
administrative measures would be reasonable. The implication of
the Master's analysis is that requiring a vast improvement in New
Mexico's monitoring of stream flow and diversions, and enforce-
ment of allocations, would be reasonable because Colorado suc-
cceeds in doing it. On the other side, there is unrebutted evi-
dence that the low efficiency rating of the District (discussed
below) falls about in the middle range of reclamation project
efficiencies. See Additional Findings at 20. This at least sug-
gests that few other States and projects in the arid West have
found it reasonable to do much more than New Mexico is doing.
The question therefore may be whether the meaning of "reasonable" con-
servation measures depends on what most States do, or on what
most States should be doing. Last Term's opinion gives no clue.
I am inclined to believe the Master's implicit view is correct:
the definition of "reasonable" should be linked to some objective
standard. The reason for this is that it seems odd to speak of
mere thorough administration as "unreasonable." (In any case, I
may be wrong about the fact that other States are more like New
Mexico than like Colorado.) In sum, it is "reasonable" to re-
quire New Mexico to approximate the thoroughness of Colorado's regu-
ulatory system if doing so would markedly conserve water.

The question remains whether Colorado has proven that these
measures would yield conservation, and this is New Mexico's main
point of dispute. See N.M. Br. at 69, 72-73. As with "reason-
ableness," there is very little discussion of this question by
the Master or by Colorado. The closest thing to hard evidence
appears to be the fact that the District has an efficiency of
24.6% to 32%, while it was contended—and the Master appeared generally to accept—that Colorado’s similar use of the water would result in an efficiency of 60-75%. Additional Findings at 20-21; see also Colorado Br. at 47. On the other hand, Colorado’s proposed use appears to be at a far higher elevation—where there presumably is less evaporation and perhaps less seepage—than New Mexico’s. What seems most likely is that the Master proceeded on an informed hunch and a general impression. See Additional Findings at 16. I am inclined to agree with that hunch. That is, my suspicion is that closer government scrutiny of the use of water in New Mexico would result in better use of it. But this is only a suspicion, and there is no decent evidence of how much water might be saved. It seems to me that better evidence might have been adduced on this point, such as by showing the efficiency of existing water use projects in Colorado.¹

Thus, I believe the Master is right that it is more likely than not that New Mexico can improve its conservation procedures

¹There is one other important piece of evidence on the question of conservation. Beginning at some point prior to trial, but with construction taking place during trial, New Mexico has funded and built a closed stockwater system that all agree should save about 2000 acre-feet per year. (Colorado says the system will actually save a full 4000 acre-feet per year, Colo. Br. at 43, but I am dubious, see Additional Findings at 20.) The fact that this system was not built until about 30 years after the District was opened, and only after litigation was begun, tends to confirm that New Mexico has been less than diligent. I would not want to make much of this point, however, because States should be encouraged to undertake conservation measures at all times without fear that it will be seen as an admission of laxness.
to offset the diversion of some water to Colorado. Whether Colorado has proven this by clear and convincing evidence, on the other hand, is a closer question. And whether Colorado has shown by that standard that the amount that can be offset is precisely—or even approximately—4000 acre-feet per year seems doubtful. On the one hand, this is the Master's presumably expert opinion. On the other hand, from all that appears in his reports the recommendation amounts to little more than a penalty or liquidated damages for laxness. Obviously, I could go either way, but my inclination is to decline to adopt the Master's recommendations. The vague hunches upon which the Master relies simply do not amount to clear and convincing evidence of inefficient use of "'serious magnitude,'" 103 S.Ct., at 548, n. 13. The likely result of adopting the recommendations would be that the Western States would begin to adopt Colorado-type regulatory systems, to the extent they do not exist now, in order to fend off similar suits. This would probably be a good result, and in keeping with the spirit of last Term's majority opinion. See 103 S.Ct., at 546 ("wasteful or inefficient uses will not be protected"). But it would seem to be the kind of policy judgment that should be made on the basis of a more thorough record that New Mexico's system is in fact grossly inefficient.

If the Court does adopt the recommendations, I suggest rejecting Colorado's proposed "terms and conditions." Colo. Br. at 54-56. Colorado purports to offer a concession that its diversions will only be above certain points, and suggests a "corollary" that its diversion be calculated on the basis of a ten-year
progressive average. I think New Mexico is right that the concession is already a part of the Master's findings. That is, the Master already envisioned that Colorado's diversion points would be above the state line, and any Colorado-produced water below those points would flow unimpeded into New Mexico. See Additional Findings at 29. Therefore, Colorado simply is trying to get an additional averaging provision added into the decree, a provision that New Mexico says historically would have resulted in increasing the Master's award by 14%.

I do not think the Master committed "reversible error" in declining to accept New Mexico's proffered new evidence.

Recommendation: Decline to adopt recommendations; dismiss suit.
Seminur (for N. Mex)

Use of 40 acres of water in N. Mex. would have to be cut in half.

Not enough water in River to allow any for Colo.

(W.H.R. noted we do not review the facts found by the Master)

The Master never looked at the "Demand" for water in N. Mex. He did not look closely at the "Supply".

Burdens on Colo to show by clear and convincing ev. that conservation measures would protect N. Mex users. But apart from generalities, Master did not identify the measures.

5/Master's report would cut the water available to N. Mex. in half.

Colo. put on no testimony as to how the water could be "administered" to conserve water here.

We should Desmin. Colo. has not carried its burden in taking.
Welles (for Colo)

Colo. says Meteor found (1) that conservation would provide sufficient water, (2) the injury to N. Mex. would be much less than benefits to Colo. Thus, appportionment would be equitable.

Waste waste by Verdeygo Conservancy District in ‘outrageous’

The importance of Administration to conserve water is emphasized by Meteor

District already has ‘perfected conservation measures’

Advance effect of water allowed to Colo. would be minimal. The effect would be on the District — not the other N. Mex. users.

And Dist. ‘had access to other water. This, their conservation, would prevent injury to District.

Other diverters above District, were wasteful. There was no conservation by or regulation of these up-stream users.'
Summ (Reply)

The conservation measures designed were adopted prior to their suit.
The reservoirs of the District are major conservation measures.
Pre-Ch water.
80 Oreg. Cal. v. W. Mex

Last Term's decision settles Col's right to "equitable apportionment."

Sp./Master found equit. entitled Col. 1,000 acre ft. annually provided "reasonable conservation measures" were adopted by W. Mex.

Burden of proof is on Col. if failed to carry it. Col's has not shown by "clear & convincing" ev. what measures reasonably could & should be adopted by W. Mex.

Holding: Reject recommendation in Plenary suit.
The Chief Justice

Overrule Exceptions

Agree with Master

Justice Brennan

Overrule Exceptions

Master Report is unsatisfactory

but well not dissent entirely

Justice White

Sustain Exceptions

These findings are not
explicit enough on supply of
water or as to conservation.

Colo. has not sustained
burden of proof that would
justify taking water from N. M.
Justice Marshall: Sustain Exception

Justice Blackmun: Overrule Exception
But won't dissent

Justice Powell: Sustain Exception
Agree with B R W view
Justice Rehnquist: Sustain Exceptions

Justice Stevens: Overrule Exceptions

Re: 80 Orig. – Colorado v. New Mexico

January 12, 1984

Dear Chief,

Sandra will try her hand at an opinion in this case.

Sincerely yours,

[Signature]

The Chief Justice

Copies to the Conference

cpm
JUSTICE O'CONNOR delivered the opinion of the Court.

In this original action, the State of Colorado seeks an equitable apportionment of the waters of the Vermejo River, an interstate river fully appropriated by users in the State of New Mexico. A Special Master, appointed by this Court, initially recommended that Colorado be permitted a diversion of 4,000 acre-feet per year. Last Term, we remanded for additional factual findings on five specific issues. U. S. — (1982). The case is before us again on New Mexico's exceptions to these additional findings. We now conclude that Colorado has not demonstrated by clear and convincing evidence that a diversion should be permitted. Accordingly, we sustain New Mexico's exceptions and dismiss the case.

I

The facts of this litigation were set forth in detail in our opinion last Term, see id., at — — — —, and we need recount them here only briefly. The Vermejo River is a small, nonnavigable stream, originating in the snow belt of the Rocky Mountains. The river flows southeasterly into New Mexico for roughly 55 miles before feeding into the Canadian River. Though it begins in Colorado, the major portion of the Vermejo River is located in New Mexico. Its waters historically have been used exclusively by farm and industrial users in that State.
In 1975, however, a Colorado corporation, Colorado Fuel and Iron Steel Corporation (C. F. & I.), proposed to divert water from the Vermejo River for industrial and other uses in Colorado. As a consequence, several of the major New Mexico users sought and obtained an injunction against the proposed diversion. The State of Colorado, in turn, filed a motion for leave to file an original complaint with this Court, seeking an equitable apportionment of the Vermejo River’s waters. We granted Colorado its leave to file, and the Court of Appeals for the Tenth Circuit stayed C. F. & I.’s appeal pending our resolution of the equitable apportionment issue.

We then appointed a Special Master, the Honorable Ewing T. Kerr, Senior Judge of the United States District Court for the District of Wyoming, who held a lengthy trial at which both States presented extensive evidence. On the basis of this evidence, the Master recommended that Colorado be allowed to divert 4,000 acre-feet of water per year. His recommendation rested on two grounds: first, that New Mexico could compensate for some or all of the Colorado diversion through reasonable water conservation measures; and second, that the injury, if any, to New Mexico, would be outweighed by the benefit to Colorado from the diversion.

New Mexico took exceptions, both legal and factual, to the Master’s recommendation. As to the Master’s view of the law of equitable apportionment, New Mexico contended that the Master erred in not focusing exclusively on the priority of uses along the Vermejo River. Id., at ——. The Court rejected that contention:

“We recognize that the equities supporting the protection of existing economies will usually be compelling. . . . Under some circumstances, however, the countervailing equities supporting a diversion for future use in one state may justify the detriment to users in another state. This may be the case, for example, where the state seeking a diversion demonstrates by clear and convincing evidence that the benefits of the diversion substantially ou-
weigh the harm that might result. In the determination of whether the state proposing the diversion has carried this burden, an important consideration is whether the existing users could offset the diversion by reasonable conservation measures . . . .” *Id.*, at —— — (footnote omitted).

In short, though the equities presumptively supported protection of the established senior uses, the Court concluded that other factors—such as waste, availability of reasonable conservation measures, and the balance of benefit and harm from diversion—could be considered in the apportionment calculus. *Id.*, at ——.

New Mexico also took issue with the factual predicates of the Master’s recommendation. Specifically, it contended that Colorado had failed to prove by clear and convincing evidence that New Mexico currently uses more than its equitable share of the Vermejo River’s waters. On this matter, we found the Master’s report unclear and determined that a remand would be appropriate.

To help this Court assess whether Vermejo River water could reasonably be made available for diversion, the Master was instructed to make specific findings concerning:

“(1) the existing uses of water from the Vermejo River, and the extent to which present levels of use reflect current or historical water shortages or the failure of existing users to develop their uses diligently;

(2) the available supply of water from the Vermejo River, accounting for factors such as variations in stream flow, the needs of current users for a continuous supply, the possibilities of equalizing and enhancing the water supply through water storage and conservation, and the availability of substitute sources of water to relieve the demand for water from the Vermejo River; [and]

(3) the extent to which reasonable conservation measures in both states might eliminate waste and ineffi-
ciency in the use of water from the Vermejo River[.]”

Then, to assist this Court in balancing the benefit and harm from diversion, the Master was asked to make findings concerning:

“(4) the precise nature of the proposed interim and ultimate use in Colorado of water from the Vermejo River, and the benefits that would result from a diversion to Colorado; [and]

(5) the injury, if any, that New Mexico would likely suffer as a result of any such diversion, taking into account the extent to which reasonable conservation measures could offset the diversion.” Id., at — (footnote omitted).

Finally, the Court authorized the Master to consider any other relevant factors, to gather any additional evidence necessary to making the requested findings, and to offer another—although not necessarily different—recommendation. Id., at —, and n. 14.

On remand, New Mexico filed a motion to submit new evidence. Colorado opposed the motion and attested that, unless the record were reopened, it did not intend to offer any additional evidence in support of its case. The Special Master denied New Mexico’s motion. Then, on the basis of the evidence previously received, he developed additional factual findings and reaffirmed his original recommendation.

II

Last Term, because our initial inquiry turned on the factors relevant to determining a just apportionment, the Court explained in detail the law of equitable apportionment. This Term, because our inquiry turns on the evidentiary material Colorado has offered in support of its complaint, we find it necessary to explain the standard by which we judge proof in actions for equitable apportionment.
The function of any standard of proof is to "instruct the factfinder concerning the degree of confidence our society thinks he should have in the correctness of factual conclusions for a particular type of adjudication." In re Winship, 397 U. S. 358, 370 (1970) (Harlan, J., concurring). By informing the factfinder in this manner, the standard of proof allocates the risk of erroneous judgment between the litigants and indicates the relative importance society attaches to the ultimate decision. See Addington v. Texas, 441 U. S. 418, 423-425 (1979).

Last Term, the Court made clear that Colorado's proof would be judged by a clear and convincing evidence standard. Colorado v. New Mexico, supra, at ----, and n. 13. In contrast to the ordinary civil case, which typically is judged by a "preponderance of the evidence" standard, we thought a diversion of interstate water should be allowed only if Colorado could place in the ultimate factfinder an abiding conviction that the truth of its factual contentions are "highly probable." See C. McCormick, Evidence § 320, at 679 (1954). This would be true, of course, only if the material it offered instantly tilted the evidentiary scales in the affirmative when weighed against the evidence New Mexico offered in opposition. See generally McBaine, Burden of Proof: Degrees of Belief, 32 Calif. L. Rev. 242, 251-254 (1944).

Requiring Colorado to present clear and convincing evidence in support of its proposed diversion is necessary to appropriately balance the unique interests involved in water rights disputes between sovereigns. The standard reflects this Court's long-held view that a proposed diverter should bear most, though not all, of the risks of erroneous decision: "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." Colorado v. New Mexico, supra, at ----; see also id. at n. 9. In addition, the clear and convincing evidence
standard accommodates society's competing interests in increasing the stability of property rights and in putting resources to their most efficient uses: "[T]he rule of priority [will] not be strictly applied where it 'would work more hardship' on the junior user 'than it would bestow benefits' on the senior user[... though] the equities supporting the protection of existing economies will usually be compelling." Id., at — (quoting Nebraska v. Wyoming, 325 U. S. 589, 619 (1945)). In short, Colorado's diversion should and will be allowed only if actual inefficiencies in present uses or future benefits from other uses are highly probable.

III

With these principles in mind, we turn to review the evidence the parties have submitted concerning the proposed diversion. As our opinion noted last Term, New Mexico has 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." Id., at n. 13. Accordingly, the burden shifted on remand to Colorado to show, by clear and convincing evidence, that reasonable conservation measures could compensate for some or all of the proposed diversion and that the injury, if any, to New Mexico would be outweighed by the benefits to Colorado from the diversion. The Master found that Colorado had met its burden, but we do not agree.

A

To establish whether Colorado's proposed diversion could be offset by eliminating New Mexico's nonuse or inefficiency, we asked the Master to make specific findings concerning existing uses, supplies of water, and reasonable conservation measures available to the two states. After assessing the evidence both States offered about existing uses and available supplies, the Master concluded that "current levels of use primarily reflect failure on the part of existing users to
fully develop and put to work available water." Additional
Factual Findings 28. Moreover, with respect to reasonable
conservation measures available, the Master indicated his be-
lief that more careful water administration in New Mexico
would alleviate shortages from unregulated stockponds,
fishponds, and water detention structures, prevent waste
from blockage and clogging in canals, and ensure that users
fully devote themselves to development of available re-
sources. He further concluded that "the heart of New Mexi-
coco's problem is the Vermejo Conservancy District," Addi-
tional Factual Findings 20, which he considered a failed
"reclamation project [that had] never lived up to its expecta-
tions or even proved to be a successful project, . . . and [that]
quite possibly should never have been built." Id., at 8.
Though the District was in the "middle range in reclamation
project efficiencies," id., at 20, the Master was of the opinion
"that [the District's] inefficient water use should not be
charged to Colorado." Ibid. Furthermore, though Colo-
rado had not submitted evidence or testimony of any con-
servation measures that C. F. & I. would take, the Master
concluded that "it is not for the Master or for New Mexico to
say that reasonable attempts to conserve water will not be
implemented by Colorado." Id., at 21.

We share the Master's concern that New Mexico may be
overstating the amount of harm its users would suffer from a
diversion. Water use by appropriators along the Vermejo
River has remained relatively stable for the past thirty
years, and this historic use falls substantially below the de-
creed rights of those users. Unreliable supplies satisfacto-
riely explain some of this difference, but New Mexico's at-
tempt to excuse three decades of nonuse in this way is, at the
very least, suspect. Nevertheless, whatever the merit of
New Mexico's explanation, we cannot agree that Colorado
has met its burden of identifying, by clear and convincing evi-
dence, conservation efforts that would preserve any of the
Vermejo River water supply.
For example, though Colorado alleged that New Mexico could improve its administration of stockponds, fishponds, and water detention structures, it did not actually point to specific measures New Mexico could take to conserve water. Thus, ultimately all the Master could conclude was that some unspecified "reduction and/or regulation . . . could not help but be an effort, however small, to conserve the water supply . . . ." Id., at 18. Similarly, though Colorado asserted that more rigorous water administration could eliminate blocked diversion works and ensure more careful development of water supplies, it did not show how this would actually preserve existing supplies. Even if Colorado's generalizations were true, they would prove only that some junior users are diverting water that senior appropriators ultimately could call; they would not prove that water is being wasted or used inefficiently by those actually diverting it. In short, the administrative improvements Colorado suggests are either too general to be meaningful or involve redistribution, as opposed to preservation, of water supplies. Society's interest in minimizing erroneous decisions in equitable apportionment cases requires that hard facts, not suppositions or opinions, be the basis for interstate diversions. Colorado has not produced such facts.

Colorado's attack on current water use in the Vermejo Conservancy District is inadequate for much the same reason. Our cases require only conservation measures that are "financially and physically feasible" and "within practicable limits." See, e. g., Colorado v. New Mexico, supra, at ——; Wyoming v. Colorado, 239 U. S. 419, 484 (1922). The District currently falls in the middle of reclamation project efficiencies and has taken considerable steps to improve the efficiency of its future water use. Additional Factual Findings 20. The Master did not find to the contrary; he simply concluded that New Mexico's inefficient use should not be charged to Colorado. But Colorado has not identified any "financially and physically feasible" means by which the Dis-
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COLORADO v. NEW MEXICO

District can further eliminate or reduce inefficiency and, contrary to the Master's suggestion, we believe that the burden is on Colorado to do so.

Finally, there is no evidence in the record that "Colorado has undertaken reasonable steps to minimize the amount of the diversion that will be required." Colorado v. New Mexico, supra, at ___. Nine years have passed since C. F. & I. first proposed diverting water from the Vermejo River. Yet Colorado has presented no evidence concerning C. F. & I.'s inability to relieve its needs through substitute sources. Furthermore, there is no evidence that C. F. & I. has settled on a definite or even tentative construction design or plan, or that it has prepared an economic analysis of its proposed diversion. Indeed, C. F. & I. has not even conducted an operational study of the reservoir that Colorado contends will be built in conjunction with the proposed diversion. It may be impracticable to ask the state proposing a diversion to provide unerring proof of future uses and concomitant conservation measures that would be taken. But it would be irresponsible of us to apportion water to uses that have not been, at a minimum, carefully studied and objectively evaluated, not to mention decided upon. Financially and physically feasible conservation efforts include careful study of future, as well as prudent implementation of current, water uses. Colorado has been unwilling to take any concrete steps in this direction, and we therefore conclude that it has not carried its burden of proof on this issue.

B

We also asked the Master to help us balance the benefits and harms that might result from the proposed diversion. The Master found that Colorado's proposed interim use is agricultural in nature and that more permanent applications might include use in coal mines, timbering, power generation, domestic needs, and other industrial operations. The Master admitted that "[t]his area of factfinding [was] one of
the most difficult [both] because of the necessarily speculative nature of [the] benefits . . . ." and because of Colorado's "natural reluctance to spend large amounts of time and money developing plans, operations, and cost schemes . . . ."

Additional Factual Findings 23. Nevertheless, because the diverted water would, at a minimum, alleviate existing water shortages in Colorado, the Master concluded that the evidence showed considerable benefits would accrue from the diversion. Furthermore, the Master concluded that the injury, if any, to New Mexico would be insubstantial, if only because reasonable conservation measures could, in his opinion, offset the entire impact of the diversion. Id., at 24–28.

Again, we find ourselves without adequate evidence to approve Colorado's proposed diversion. Colorado has not committed itself to any long-term use for which future benefits can be studied and predicted. Nor has Colorado specified how long the interim agricultural use might or might not last. All Colorado has established is that a steel corporation wants to take water for some unidentified use in the future.

By contrast, New Mexico has attempted to identify the harms that would result from the proposed diversion. New Mexico commissioned some independent economists to study the economic effects, direct and indirect, that the diversion would have on persons in New Mexico. No doubt, this economic analysis involves prediction and forecast. But the analysis is surely no more speculative than the generalizations Colorado has offered as "evidence." New Mexico, at the very least, has taken concrete steps toward addressing the query this Court posed last Term. Colorado has made no similar effort.

Colorado objects that speculation about the benefits of future uses is inevitable and that water will not be put to its best use if the expenditures necessary to development and operation must be made without assurance of future supplies. We agree, of course, that asking for absolute precision in forecasts about the benefits and harms of a diversion would
be unrealistic. But we have not asked for such precision. We have only required that a state proposing a diversion conceive and implement some type of long-range planning and analysis of the diversion it proposes. Long-range planning and analysis will, we believe, reduce the uncertainties with which equitable apportionment judgments are made. If New Mexico can develop evidence to prove that its existing economy is efficiently using water, we see no reason why Colorado cannot take similar steps to prove that its future economy could do better.

In the nine years that have passed since C. F. & I. first requested a diversion, neither it nor Colorado has decided upon a permanent use for the diverted water. It therefore is no surprise that Colorado cannot conduct studies or make predictions about the benefits and harms of its proposed diversion. Under the clear and convincing evidence standard, it is Colorado, and not New Mexico, that must bear the risk of error from the inadequacy of the information available.

C

As a final consideration, the Master pointed out that approximately three-fourths of the water in the Vermejo River system is produced in Colorado. He concluded, therefore, that "the equities are with Colorado, which requests only a portion of the water which it produces." Additional Factual Findings 29. Last Term, the Court rejected the notion that the mere fact that the Vermejo River originates in Colorado automatically entitles Colorado to a share of the river's waters. Colorado v. New Mexico, supra, at n. 8. Both Colorado and New Mexico recognize the doctrine of prior appropriation, id., at ——, and appropriative, as opposed to riparian, rights depend on actual use, not land ownership. See id., at n. 4. It follows, therefore, that the equitable apportionment of appropriated rights should turn on the benefits, harms, and efficiencies of competing uses, and that the source of the Vermejo River's waters should be essen-
tially irrelevant to the adjudication of these sovereigns' competing claims. *Id.*, at n. 3. To the extent the Master continued to think the contrary, he was in error.

IV

We continue to believe that the flexible doctrine of equitable apportionment extends to a state's claim to divert previously appropriated water for future uses. But the state seeking such a diversion bears the burden of proving, by clear and convincing evidence, the existence of certain relevant factors. The complainant must show, for example, the extent to which reasonable conservation measures can adequately compensate for the reduction in supply due to the diversion, and the extent to which the benefits from the diversion will outweigh the harms to existing users. This evidentiary burden cannot be met with generalizations about unidentified conservation measures and unstudied speculation about future uses. The Special Master struggled, as best he could, to balance the evidentiary requirement against the inherent limitations of proving a beneficial future use. However, we do not find enough evidence to sustain his findings. Until Colorado can generate sufficient evidence to show that circumstances have changed and that a diversion is appropriate, the equities compel the continued protection of the existing users of the Vermejo River's waters.

Accordingly, we sustain the State of New Mexico's exceptions to the Special Master's Report and Additional Factual Findings, and dismiss the case.

*It is so ordered.*
February 24, 1984

80 Orig. Colorado v. New Mexico

Dear Sandra:

Please join me.

Sincerely,

Justice O'Connor

cc: The Conference
February 24, 1984

Re: 80 Orig. - Colorado v. New Mexico

Dear Sandra,

Please join me.

Sincerely,

Justice O'Connor

Copies to the Conference

cpm
February 27, 1984

Dear Sandra,

I voted at Conference to overrule New Mexico's objections. However, your opinion persuades me that we should sustain those exceptions and dismiss the case. Accordingly, please join me.

Sincerely,

Justice O'Connor

Copies to the Conference
March 1, 1984

Re: 80 Original Colorado v. New Mexico

Dear Sandra:

Please join me.

Sincerely,

Justice O'Connor

cc: The Conference
Re: No. 80 Original - Colorado v. New Mexico

Dear Sandra:

Please join me.

Sincerely,

Justice O'Connor

cc: The Conference
March 12, 1984

Re: No. 80 Orig.-State of Colorado v. State of New Mexico

Dear Sandra:

Please join me.

Sincerely,

T.M.

Justice O'Connor

cc: The Conference
Re: 80 Original - Colorado v. New Mexico

Dear Sandra:

I join.

Regards,

Justice O'Connor

Copies to the Conference
MEMORANDUM TO JUSTICE POWELL

From: Joe
Re: No. 80 Orig. Colorado v. New Mexico

As you will recall, you have joined the majority in this case. However, Justice Stevens' dissent has caused Justice O'Connor to amend her opinion in a way that seems to make bad law.

One of the pieces of evidence on N.M.'s side was the claim that efficiency of the Vermejo Conservancy District was in the middle range of conservancy districts in the West. This was cited in the original opinion at p. 8. JPS challenged this finding, saying that there was testimony that the District was not in the middle range at all, and saying that the Master "implicitly" credited this latter testimony. As a result, SOC amended her opinion to say:

"A State can carry its burden of proof in an equitable apportionment action only with specific evidence about how existing uses might be improved; assertions about the relative efficiencies of competing projects will not do." Op. 3d draft at 9.

This conclusion seems wrong to me. If it were in fact the case that the District was at the far low end of efficiencies for such projects, that would make the case very different. One would then be more inclined to think that the generally lax administration cited by the Master resulted in unusual waste. I do not think Colorado would have to show precisely how the District might save water if the District is demonstrably an unusually wasteful user. Thus, if the District had an efficiency rating of
24%, and all other projects in the West had ratings over 50%, that alone might be enough to require N.M. to explain the differential. My concern is that SOC's opinion precludes relying solely on this kind of evidence. I wonder if it would be possible to suggest to SOC that she tone down this holding a bit. For example, she might say:

"A State can carry its burden of proof in an equitable apportionment action only with specific evidence about how existing uses might be improved, or with clear evidence that a project is far less efficient than most other projects. Mere assertions about the relative efficiencies of competing projects will not do."
SUPREME COURT OF THE UNITED STATES

No. 80 Orig.

STATE OF COLORADO, PLAINTIFF v. STATE OF NEW MEXICO AND PAUL G. BARDACKE, ATTORNEY GENERAL OF NEW MEXICO

ON EXCEPTIONS TO SPECIAL MASTER'S REPORT

[June 4, 1984]

JUSTICE O'CONNOR delivered the opinion of the Court.

In this original action, the State of Colorado seeks an equitable apportionment of the waters of the Vermejo River, an interstate river fully appropriated by users in the State of New Mexico. A Special Master, appointed by this Court, initially recommended that Colorado be permitted a diversion of 4,000 acre-feet per year. Last Term, we remanded for additional factual findings on five specific issues. 459 U. S. 176 (1982). The case is before us again on New Mexico's exceptions to these additional findings. We now conclude that Colorado has not demonstrated by clear and convincing evidence that a diversion should be permitted. Accordingly, we sustain New Mexico's exceptions and dismiss the case.

I

The facts of this litigation were set forth in detail in our opinion last Term, see id., at ----, and we need recount them here only briefly. The Vermejo River is a small, nonnavigable stream, originating in the snow belt of the Rocky Mountains. The river flows southeasterly into New Mexico for roughly 55 miles before feeding into the Canadian River. Though it begins in Colorado, the major portion of the Vermejo River is located in New Mexico. Its waters historically have been used exclusively by farm and industrial users in that State.
In 1975, however, a Colorado corporation, Colorado Fuel and Iron Steel Corp. (C. F. & I.), proposed to divert water from the Vermejo River for industrial and other uses in Colorado. As a consequence, several of the major New Mexico users sought and obtained an injunction against the proposed diversion. The State of Colorado, in turn, filed a motion for leave to file an original complaint with this Court, seeking an equitable apportionment of the Vermejo River's waters. We granted Colorado its leave to file, and the Court of Appeals for the Tenth Circuit stayed C. F. & I.'s appeal pending our resolution of the equitable apportionment issue.

We then appointed a Special Master, the Honorable Ewing T. Kerr, Senior Judge of the United States District Court for the District of Wyoming, who held a lengthy trial at which both States presented extensive evidence. On the basis of this evidence, the Master recommended that Colorado be allowed to divert 4,000 acre-feet of water per year. His recommendation rested on two grounds: first, that New Mexico could compensate for some or all of the Colorado diversion through reasonable water conservation measures; and second, that the injury, if any, to New Mexico would be outweighed by the benefit to Colorado from the diversion.

New Mexico took exceptions, both legal and factual, to the Master's recommendation. As to the Master's view of the law of equitable apportionment, New Mexico contended that the Master erred in not focusing exclusively on the priority of uses along the Vermejo River. Id., at 181–182. The Court rejected that contention:

"We recognize that the equities supporting the protection of existing economies will usually be compelling . . . Under some circumstances, however, the countervailing equities supporting a diversion for future use in one State may justify the detriment existing users in another State. This may be the case, for example, where the State seeking a diversion demonstrates by clear and convincing evidence that the benefits of the di-
version substantially outweigh the harm that might result. In the determination of whether the State proposing the diversion has carried this burden, an important consideration is whether the existing users could offset the diversion by reasonable conservation measures...." *Id.*, at 187-188 (footnote omitted).

In short, though the equities presumptively supported protection of the established senior uses, the Court concluded that other factors—such as waste, availability of reasonable conservation measures, and the balance of benefit and harm from diversion—could be considered in the apportionment calculus. *Id.*, at ----.

New Mexico also took issue with the factual predicates of the Master's recommendation. Specifically, it contended that Colorado had failed to prove by clear and convincing evidence that New Mexico currently uses more than its equitable share of the Vermejo River's waters. On this matter, we found the Master's report unclear and determined that a remand would be appropriate.

To help this Court assess whether Vermejo River water could reasonably be made available for diversion, the Master was instructed to make specific findings concerning:

("1) the existing uses of water from the Vermejo River, and the extent to which present levels of use reflect current or historical water shortages or the failure of existing users to develop their uses diligently;

"(2) the available supply of water from the Vermejo River, accounting for factors such as variations in stream flow, the needs of current users for a continuous supply, the possibilities of equalizing and enhancing the water supply through water storage and conservation, and the availability of substitute sources of water to relieve the demand for water from the Vermejo River; and"

"(3) the extent to which reasonable conservation measures in both States might eliminate waste and in-
efficiency in the use of water from the Vermejo River[.]” Id., at 189-190.

Then, to assist this Court in balancing the benefit and harm from diversion, the Master was asked to make findings concerning:

“(4) the precise nature of the proposed interim and ultimate use in Colorado of water from the Vermejo River, and the benefits that would result from a diversion to Colorado; [and]
“(5) the injury, if any, that New Mexico would likely suffer as a result of any such diversion, taking into account the extent to which reasonable conservation measures could offset the diversion.” Id., at 190 (footnote omitted).

Finally, the Court authorized the Master to consider any other relevant factors, to gather any additional evidence necessary to making the requested findings, and to offer another—although not necessarily different—recommendation. Id., at ——, and n. 14.

On remand, New Mexico filed a motion to submit new evidence. Colorado opposed the motion and attested that, unless the record were reopened, it did not intend to offer any additional evidence in support of its case. The Special Master denied New Mexico’s motion. Then, on the basis of the evidence previously received, he developed additional factual findings and reaffirmed his original recommendation.

II

Last Term, because our initial inquiry turned on the factors relevant to determining a just apportionment, the Court explained in detail the law of equitable apportionment. This Term, because our inquiry turns on the evidentiary material Colorado has offered in support of its complaint, we find it necessary to explain the standard by which we judge proof in actions for equitable apportionment.
No. 80 Orig.—OPINION

COLORADO v. NEW MEXICO 5

The function of any standard of proof is to "instruct the factfinder concerning the degree of confidence our society thinks he should have in the correctness of factual conclusions for a particular type of adjudication." In re Winship, 397 U. S. 358, 370 (1970) (Harlan, J., concurring). By informing the factfinder in this manner, the standard of proof allocates the risk of erroneous judgment between the litigants and indicates the relative importance society attaches to the ultimate decision. See Addington v. Texas, 441 U. S. 418, 423–425 (1979).

Last Term, the Court made clear that Colorado's proof would be judged by a clear-and-convincing-evidence standard. Colorado v. New Mexico, supra, at -----, and n. 13. In contrast to the ordinary civil case, which typically is judged by a "preponderance of the evidence" standard, we thought a diversion of interstate water should be allowed only if Colorado could place in the ultimate factfinder an abiding conviction that the truth of its factual contentions are "highly probable." See C. McCormick, Law of Evidence § 320, p. 679 (1954). This would be true, of course, only if the material it offered instantly tilted the evidentiary scales in the affirmative when weighed against the evidence New Mexico offered in opposition. See generally McBaine, Burden of Proof: Degrees of Belief, 32 Calif. L. Rev. 242, 251–254 (1944).

Requiring Colorado to present clear and convincing evidence in support of its proposed diversion is necessary to appropriately balance the unique interests involved in water rights disputes between sovereigns. The standard reflects this Court's long-held view that a proposed diverter should bear most, though not all, of the risks of erroneous decision: "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." Colorado v. New Mexico, 459 U. S., at 187; see also id., at 182, n. 9. In addition, the clear-and-convincing-
evidence standard accommodates society's competing interests in increasing the stability of property rights and in putting resources to their most efficient uses: "[T]he rule of priority [will] not be strictly applied where it 'would work more hardship' on the junior user 'than it would bestow benefits' on the senior use[...though] the equities supporting the protection of existing economies will usually be compelling." Id., at 186 (quoting Nebraska v. Wyoming, 325 U. S. 589, 619 (1945)). In short, Colorado's diversion should and will be allowed only if actual inefficiencies in present uses or future benefits from other uses are highly probable.

III

With these principles in mind, we turn to review the evidence the parties have submitted concerning the proposed diversion. As our opinion noted last Term, New Mexico has 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." 459 U. S., at n. 13. Accordingly, the burden shifted on remand to Colorado to show, by clear and convincing evidence, that reasonable conservation measures could compensate for some or all of the proposed diversion and that the injury, if any, to New Mexico would be outweighed by the benefits to Colorado from the diversion. Though the Master's findings on these issues deserve respect and a tacit presumption of correctness, the ultimate responsibility for deciding what are correct findings of fact remains with us. See Mississippi v. Arkansas, 415 U. S. 289, 291–292, 294 (1974); C. Wright, A. Miller, & E. Cooper, Federal Practice and Procedure §4054, pp. 196–197 (1978). Upon our independent review of the record, we find that Colorado has failed to meet its burden.

A

To establish whether Colorado's proposed diversion could be offset by eliminating New Mexico's nonuse or inefficiency,
we asked the Master to make specific findings concerning existing uses, supplies of water, and reasonable conservation measures available to the two States. After assessing the evidence both States offered about existing uses and available supplies, the Master concluded that “current levels of use primarily reflect failure on the part of existing users to fully develop and put to work available water.” Additional Factual Findings 28. Moreover, with respect to reasonable conservation measures available, the Master indicated his belief that more careful water administration in New Mexico would alleviate shortages from unregulated stockponds, fishponds, and water detention structures, prevent waste from blockage and clogging in canals, and ensure that users fully devote themselves to development of available resources. He further concluded that “the heart of New Mexico’s water problem is the Vermejo Conservancy District,” id., at 20, which he considered a failed “reclamation project [that had] never lived up to its expectations or even proved to be a successful project, . . . and [that] quite possibly should never have been built.” Id., at 8. Though the District was quite arguably in the “middle range in reclamation project efficiencies,” id., at 20, the Master was of the opinion “that [the District’s] inefficient water use should not be charged to Colorado.” Ibid. Furthermore, though Colorado had not submitted evidence or testimony of any conservation measures that C. F. & I. would take, the Master concluded that “it is not for the Master or for New Mexico to say that reasonable attempts to conserve water will not be implemented by Colorado.” Id., at 21.

We share the Master’s concern that New Mexico may be overstating the amount of harm its users would suffer from a diversion. Water use by appropriators along the Vermejo River has remained relatively stable for the past 30 years, and this historic use falls substantially below the decreed rights of those users. Unreliable supplies satisfactorily explain some of this difference, but New Mexico’s attempt to
excuse three decades of nonuse in this way is, at the very least, suspect. Nevertheless, whatever the merit of New Mexico's explanation, we cannot agree that Colorado has met its burden of identifying, by clear and convincing evidence, conservation efforts that would preserve any of the Vermejo River water supply.

For example, though Colorado alleged that New Mexico could improve its administration of stockponds, fishponds, and water detention structures, it did not actually point to specific measures New Mexico could take to conserve water. Thus, ultimately all the Master could conclude was that some unspecified "reduction and/or regulation . . . could not help but be an effort, however small, to conserve the water supply. . . ." Id., at 18. Similarly, though Colorado asserted that more rigorous water administration could eliminate blocked diversion works and ensure more careful development of water supplies, it did not show how this would actually preserve existing supplies. Even if Colorado's generalizations were true, they would prove only that some junior users are diverting water that senior appropriators ultimately could call; they would not prove that water is being wasted or used inefficiently by those actually diverting it.

In short, the administrative improvements Colorado suggests are either too general to be meaningful or involve redistribution, as opposed to preservation, of water supplies. Colorado's attack on current water use in the Vermejo Conservancy District is inadequate for much the same reason. Our cases require only conservation measures that are "financially and physically feasible" and "within practicable limits." See, e.g., Colorado v. New Mexico, supra, at 192; Wyoming v. Colorado, 259 U. S. 419, 484 (1922). New Mexico submitted substantial evidence that the District is in the middle of reclamation project efficiencies and that the District has taken considerable independent steps—including, the construction, at its own expense and on its own initiative, of a closed stockwater delivery system—to improve the effi-
ciency of its future water use. Additional Factual Findings
20. The Master did not find to the contrary; indeed, he commended New Mexico for the substantial efforts it had taken. See ibid. Nevertheless, he accepted Colorado’s general assertion that the District was not as efficient as other reclamation projects and concluded that New Mexico’s inefficient use should not be charged to Colorado. But Colorado has not identified any “financially and physically feasible” means by which the District can further eliminate or reduce inefficiency and, contrary to the Master’s suggestion, we believe that the burden is on Colorado to do so. A State can carry its burden of proof in an equitable apportionment action only with specific evidence about how existing uses might be improved, or with clear evidence that a project is far less efficient than most other projects. Mere assertions about the relative efficiencies of competing projects will not do.

Finally, there is no evidence in the record that “Colorado has undertaken reasonable steps to minimize the amount of the diversion that will be required.” Colorado v. New Mexico, supra, at 186. Nine years have past since C. F. & I. first proposed diverting water from the Vermejo River. Yet Colorado has presented no evidence concerning C. F. & I.'s inability to relieve its needs through substitute sources. Furthermore, there is no evidence that C. F. & I. has settled on a definite or even tentative construction design or plan, or that it has prepared an economic analysis of its proposed diversion. Indeed, C. F. & I. has not even conducted an operational study of the reservoir that Colorado contends will be built in conjunction with the proposed diversion. It may be impracticable to ask the State proposing a diversion to provide unerring proof of future uses and concomitant conservation measures that would be taken. But it would be irresponsible of us to apportion water to uses that have not been, at a minimum, carefully studied and objectively evaluated, not to mention decided upon. Financially and physically feasible conservation efforts include careful study of future, as
well as prudent implementation of current, water uses. Colorado has been unwilling to take any concrete steps in this direction.

Society's interest in minimizing erroneous decisions in equitable apportionment cases requires that hard facts, not suppositions or opinions, be the basis for interstate diversions. In contrast to JUSTICE STEVENS, we do not believe Colorado has produced sufficient facts to show, by clear and convincing evidence, that reasonable conservation efforts will mitigate sufficiently the injury that New Mexico successfully established last Term that it would suffer were a diversion allowed. No State can use its lax administration to establish its claim to water. But once a State successfully proves that a diversion will cause it injury, the burden shifts to the diverter to show reasonable conservation measures exist. Colorado has not carried this burden.

B

We also asked the Master to help us balance the benefits and harms that might result from the proposed diversion. The Master found that Colorado's proposed interim use is agricultural in nature and that more permanent applications might include use in coal mines, timbering, power generation, domestic needs, and other industrial operations. The Master admitted that "[t]his area of fact finding [was] one of the most difficult [both] because of the necessarily speculative nature of [the] benefits . . ." and because of Colorado's "natural reluctance to spend large amounts of time and money developing plans, operations, and cost schemes . . . ." Additional Factual Findings 23. Nevertheless, because the diverted water would, at a minimum, alleviate existing water shortages in Colorado, the Master concluded that the evidence showed considerable benefits would accrue from the diversion. Furthermore, the Master concluded that the injury, if any, to New Mexico would be insubstantial, if only
because reasonable conservation measures could, in his opinion, offset the entire impact of the diversion. *Id.*, at 24-28.

Again, we find ourselves without adequate evidence to approve Colorado’s proposed diversion. Colorado has not committed itself to any long-term use for which future benefits can be studied and predicted. Nor has Colorado specified how long the interim agricultural use might or might not last. All Colorado has established is that a steel corporation wants to take water for some unidentified use in the future.

By contrast, New Mexico has attempted to identify the harms that would result from the proposed diversion. New Mexico commissioned some independent economists to study the economic effects, direct and indirect, that the diversion would have on persons in New Mexico. The study these economists produced was submitted at the original hearing, conducted prior to the remand, as evidence of the injury that would result from the reduction in water supplies. No doubt, this economic analysis involve prediction and forecast. But the analysis is surely no more speculative than the generalizations Colorado has offered as “evidence.” New Mexico, at the very least, has taken concrete steps toward addressing the query this Court posed last Term. Colorado has made no similar effort.

Colorado objects that speculation about the benefits of future uses is inevitable and that water will not be put to its best use if the expenditures necessary to development and operation must be made without assurance of future supplies. We agree, of course, that asking for absolute precision in forecasts about the benefits and harms of a diversion would be unrealistic. But we have not asked for such precision. We have only required that a State proposing a diversion conceive and implement some type of long-range planning and analysis of the diversion it proposes. Long-range planning and analysis will, we believe, reduce the uncertainties with which equitable apportionment judgments are made. If New Mexico can develop evidence to prove that its existing
economy is efficiently using water, we see no reason why Colorado cannot take similar steps to prove that its future economy could do better.

In the nine years that have passed since C. F. & I. first requested a diversion, neither it nor Colorado has decided upon a permanent use for the diverted water. It therefore is no surprise that Colorado cannot conduct studies or make predictions about the benefits and harms of its proposed diversion. Under the clear-and-convincing-evidence standard, it is Colorado, and not New Mexico, that must bear the risk of error from the inadequacy of the information available.

C

As a final consideration, the Master pointed out that approximately three-fourths of the water in the Vermejo River system is produced in Colorado. He concluded, therefore, that “the equities are with Colorado, which requests only a portion of the water which it produces.” Additional Factual Findings 29. Last Term, the Court rejected the notion that the mere fact that the Vermejo River originates in Colorado automatically entitles Colorado to a share of the river's waters. Colorado v. New Mexico, 459 U.S., at 181 n. 8. Both Colorado and New Mexico recognize the doctrine of prior appropriation, id., at —, and appropriative, as opposed to riparian, rights depend on actual use, not land ownership. See id., at 179 n. 4. It follows, therefore, that the equitable apportionment of appropriated rights should turn on the benefits, harms, and efficiencies of competing uses, and that the source of the Vermejo River's waters should be essentially irrelevant to the adjudication of these sovereigns' competing claims. Id., at 181, n. 8. To the extent the Master continued to think the contrary, he was in error.

IV

We continue to believe that the flexible doctrine of equitable apportionment extends to a State's claim to divert previously appropriated water for future uses. But the State
seeking such a diversion bears the burden of proving, by clear and convincing evidence, the existence of certain relevant factors. The complainant must show, for example, the extent to which reasonable conservation measures can adequately compensate for the reduction in supply due to the diversion, and the extent to which the benefits from the diversion will outweigh the harms to existing users. This evidentiary burden cannot be met with generalizations about unidentified conservation measures and unstudied speculation about future uses. The Special Master struggled, as best he could, to balance the evidentiary requirement against the inherent limitations of proving a beneficial future use. However, we do not find enough evidence to sustain his findings. Until Colorado can generate sufficient evidence to show that circumstances have changed and that a diversion is appropriate, the equities compel the continued protection of the existing users of the Vermejo River's waters.

Accordingly, we sustain the State of New Mexico's exceptions to the Special Master's Report and Additional Factual Findings, and dismiss the case.

It is so ordered.
June 1, 1984

No. 80 Orig. Colorado v. New Mexico

Dear Lewis,

I am happy to make the change you suggest and will do so.

Sincerely,

[Signature]

Justice Powell
June 1, 1984

80 Orig. Colorado v. New Mexico

Dear Sandra:

In your third draft, responding to John, you made a change that reads as follows:

"A State can carry its burden of proof in an equitable apportionment action only with specific evidence about how existing uses might be improved; assertions about the relative efficiencies of competing projects will not do." Op. 3d draft at 9.

This seems to be more categoric than necessary. If in fact the District were being operated far less efficiently than similar projects, I would think proof of that would be very persuasive. What would you think of a change along the following lines:

"A State can carry its burden of proof in an equitable apportionment action only with specific evidence about how existing uses might be improved, or with clear evidence that a project is far less efficient than most other projects. Mere assertions about the relative efficiencies of competing projects will not do."

This would still leave the burden on Colorado in this case, for example, to prove that in fact the District is far less efficient.

Sincerely,

Justice O'Connor
LPP/vde
SOC for the Court 1/12/84
1st draft 2/24/84
2nd draft 3/19/84
3rd draft 5/29/84
4th draft 5/30/84
5th draft 5/31/84

Joined by BRW 2/24/84
Joined by LFP 2/24/84
Joined by WJB 2/27/84
Joined by WHR 3/1/84
Joined by HAB 3/7/84
Joined by TM 3/12/84
Joined by CJ 4/6/84

JPS will dissent 3/13/84
1st draft 5/29/84
2nd draft 5/31/84