THE APPLICATION OF FEDERAL RESERVED WATER RIGHTS TO GROUNDWATER IN THE WESTERN STATES

INTRODUCTION

Since the turn of the century, courts have been dealing with elements of what has become the "federal reserved water rights doctrine." Although the right has been expanded and reduced by courts, its present nature is such that when the federal government reserves land for public use, the government also reserves the amount of water necessary to accomplish the primary purposes of the reservation. Generally, the reservation right has only been applied to surface water. Notwithstanding ninety years of development, surface water rights of the federal government—as opposed to those of state and private appropriators—are still in a state of flux.

Recently, the controversy surrounding federal reserved water rights has been expanded by the possibility of extending the rights to groundwater. In 1976, the Supreme Court partially addressed the problem, but produced no conclusive holding.¹ Several lower courts have also addressed the extension of this doctrine with varying conclusions.²

Historically, the interrelationship of surface water and groundwater is a concept that the legal community finds difficult to discern.³ Water levels in both sources are affected by the hydrological cycle, which is the endless movement of water from the atmosphere to the land and seas and back to the atmosphere.⁴ Groundwater, as part of the cycle, not only maintains the moisture content of soil, but also is a significant source of supply of surface and ocean waters.⁵ Located in aquifers, the importance of groundwater is readily apparent.⁶

⁴ T. Dunne & L. Leopold, WATER IN ENVIRONMENTAL PLANNING 4-6 (1978).
⁵ Id.
This article addresses the issue of the extension of federal reserved water rights to groundwater. This is accomplished by: (1) exploring the constitutional bases, judicial development and criticisms of federal reserved water rights; (2) noting that surface water and groundwater are interrelated within the hydrological cycle; and (3) determining if the principles which hold that federal reserved water rights attach to surface water also apply to groundwater. This article also discusses the problems which the extension of the doctrine might cause and offers possible solutions to those problems.

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Power Source

The federal government operates from three constitutional power sources in its regulation of water usage on federal land located within a state: the commerce clause, property clause, and the supremacy clause. The commerce clause was initially used to subject all tidal and fresh water, which was navigable in fact, to the power of Congress. The property clause states: "The Congress shall have Power to dispose of and make all needful Rules and Regulations respecting the Territory or other Property belonging to the United States; and nothing in this Constitution shall be so construed as to Prejudice any Claims of the United States..." U.S. CONST. art. IV § 3, cl. 2.

The supremacy clause is the overlying power which allows the federal government to directly conflict with state government. It states:

This Constitution, and the laws of the United States which shall be made in Pursuance thereof, and all Treaties made, or which shall be made, under the authority of the United States, shall be the supreme Law of the Land; and the Judges in every State shall be bound thereby, any Thing in the Constitution or Laws of any State to the Contrary notwithstanding.

U.S. CONST. art. VI, cl. 2.
navigation power of Congress. This application of the commerce clause has been expanded over the years to include waters that are "susceptible" to being navigable in their natural or improved condition. In effect, the power has been expanded to such an extent that there are now few areas it does not reach. As one commentator has summarized:

Navigation has thus ceased to be the measure and limit of federal power. But, for reasons of history only, navigation remains the basis and the constitutional touchstone. Once navigation purposes are present, Congress may in effect use the waters of both navigable and non-navigable streams for whatever purposes and in whatever manner it wishes. In so doing, it can completely override any state water plan. It can prevent, in toto, state law from being applied to "federal" waters; or, on a lesser scale, it can prevent state law from being applied to federal waters in a particular situation where its application conflicts with the federal interests. Finally, as a matter of comity, it may submit to state regulation.

The property clause is the second constitutional source of power by which the federal government can override state water law. All the land now in the western United States, except that in Texas, at one time belonged to the federal government; however, when these states were admitted into the union, the territories becoming state lands, the federal government did not relinquish title to all of the formerly public lands. Therefore, as owner, the gov-

10. The Daniel Ball, 77 U.S. (10 Wall) 557, 563 (1870) (waters are navigable when they form in their ordinary condition, by themselves or by uniting with other waters, a continued highway over which commerce is or may be carried).
11. United States v. Appalachian Elec. Power Co., 311 U.S. 377, 406-07 (1940) (the United States enjoined Appalachian Electric from erecting a hydroelectric dam on a navigable river because it had not obtained a permit from the Federal Power Commission). The Federal Power Act recognizes that navigation may be achieved through artificial means. Section 796(8) of the Act defines navigable waters as those which either in their natural or improved condition are used or are suitable for use for the transportation of persons or property in interstate commerce. 16 U.S.C. § 796(8) (1976).
14. See 2 E. Morreale, supra note 12, at § 102.1. This allows the property clause to reach non-navigable water on public lands when those waters have not been appropriated under state law. Navigable waters are subject to control by the
ernment has asserted rights to unappropriated water, i.e., water not claimed by state citizens under a state permit system, for these lands through the property clause.\textsuperscript{15}

The supremacy clause is the final basis of power for federal control over water on federal land. It allows the government to exercise constitutional prerogatives without regard to state law,\textsuperscript{16} unless there is a clear congressional mandate\textsuperscript{17} or specific congressional action\textsuperscript{18} providing for state control. As a result, it is unlikely that state law could preclude reasonable water use by a federal agency if Congress specifies a particular federal usage.\textsuperscript{19} However, as Congress has the power to override state law, it also has the power to defer to state control by delegating power to the states.\textsuperscript{20} The Supreme Court has recognized such delegation by Congress to state regulation of water resources on public land.\textsuperscript{21} Therefore, the true issue in regard to the use of the supremacy clause as a power source is not the existence of congressional authority, but whether Congress has exercised or delegated the power to regulate water on public land.\textsuperscript{22}

\textsuperscript{15} Arizona v. California, 373 U.S. 546, 597-98 (1963) (the plenary power that Congress has under the property clause by virtue of federal ownership of public lands includes the power to control the disposition and use of water on such lands). \textit{See} United States v. Grand River Dam Authority, 363 U.S. 229, 234-35 (1960) (the federal government was the initial proprietor for the western lands, so any claim by a state or private person must derive from a federal title).


\textsuperscript{17} Kern-Limerick Inc. v. Scurlock, 347 U.S. 110, 122 (1954) (the federal government, as purchaser of equipment to be used to construct buildings for the United States Navy, is not subject to state gross receipt tax).

\textsuperscript{18} Paul v. United States, 371 U.S. 245, 263 (1963) (state regulation of milk prices could not be applied to the sale of milk for strictly military consumption or resale at federal commissaries).

\textsuperscript{19} Cappaert, 426 U.S. at 137-38 (1976) (the purpose of the reservation was to maintain a pond, and a state appropriator could not decrease the level to the extent that the purpose would be frustrated); \textit{See also} United States v. New Mexico, 438 U.S. 696, 699-700 (1978) (Congress has given the President power to reserve federal lands, and water is frequently necessary to achieve the purpose of the reservation).

\textsuperscript{20} First Iowa Hydro-Elec. Coop. v. Federal Power Comm'n, 328 U.S. 152, 175 (1946) (although federal rights supercede state rights in areas of conflict, Congress may still defer to state law in chosen areas).


Early Statutes

When Congress was encouraging migration to the West, it promulgated three statutes which appeared to defer control of waters within the states to the state government. These statutes recognized state-granted rights of prior appropriators over riparian rights of federal patentees. In the first of the three, the Act of 1866, section nine provided: Whenever, by priority of possession, rights to the use of water for mining, agricultural, manufacturing, or other purposes, have vested and accrued, and the same are recognized and acknowledged by the local customs, laws, and the decisions of courts, the possessors and owners of such vested rights shall be maintained and protected in the same; and the right of way for the construction of ditches and canals for the purposes herein specified is acknowledged and confirmed.

Four years later, in the Act of 1870, Congress amended the Act of 1866. The Act of 1870 provided: “All patents granted, of homesteads allowed, shall be subject to any vested and accrued water rights, or rights to ditches and reservoirs used in connection with such water rights, as may have been acquired under or recognized by section 51 of this title.” These two statutes recognized and sanctioned possessory rights to water on public lands asserted under local laws and customs, thereby validating state appropriation laws. As a result, the federal government is thus restricted

23. An appropriator must have an intent to apply the water to some beneficial use, existing at the time or contemplated in the future, by diverting from the natural channel, or by some other act possess the channel, and actually apply it to some useful or beneficial purpose within a reasonable time. Nebraska v. Wyoming, 325 U.S. 589, 614 (1945).
24. A riparian owner has the right to the benefits of the streams as it passes through his land for all reasonable uses to which it may be applied. Potomac Steamboat Co. v. Upper Potomac Steamboat Co., 109 U.S. 672, 682 (1884).
25. Act of July 26, 1866, ch. 262, § 9, 14 Stat. 253 (1866) (current version codified at 43 U.S.C. § 661 and 30 U.S.C. § 51 (1976)). This Act and the Desert Land Act of 1870 were designed to confirm the validity of water rights which had been obtained under state law.
26. Id.
28. Id.
29. Federal Power Comm'n v. Oregon, 349 U.S. 435, 447-48 (1955). The court stated: The purpose of the Acts of 1866 and 1870 was governmental recognition and sanction of possessory rights on public lands asserted under local laws and customs. Jennison v. Kirk, 98 U.S. 453. ... The Desert Land Act severed, for purposes of private acquisition, soil and water rights on public lands, and provided that such water rights were to be acquired in the manner provided by the law of the State of location. California-Oregon Power Co. v.
to asserting water rights over unappropriated waters which exist at the time of a federal reservation of land.\textsuperscript{30}

The third statute which granted power to the states to regulate water within their boundaries was the Desert Land Act of 1877.\textsuperscript{31} This act provided:

That the right to the use of water by the person so conducting the same, on or to any tract of desert land of three hundred and twenty acres shall depend upon bona fide prior appropriation; and such right shall not exceed the amount of water actually appropriated, and necessarily used for the purpose of irrigation and reclamation; and all surplus water over and above such actual appropriation and use, together with the water of all lakes, rivers, and other sources of water supply upon the public lands and not navigable, shall remain and be held free for the appropriation and use of the public for irrigation, mining and manufacturing purposes subject to existing rights. \ldots \textsuperscript{32}

Application of the Desert Land Act limits the rights of appropria-
tors in several ways. Under the Act, interests extend only to:
(1) non-navigable sources of water; (2) sources on public land;
(3) water actually used in the appropriation; and (4) water used
only for irrigation, mining and manufacturing purposes. The Act is
aimed at appropriation and use by the public and does not directly
limit federal rights to use water for congressionally authorized
purposes on federal lands. Also, the Act does not apply to three of
the western states.\textsuperscript{33} However, the Act did provide homesteaders
with a right to water, subject to prior appropriation, for limited pur-
poses. This Act is significant in two regards. First, it severs water

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\item \textsuperscript{30} See Beaver Portland Cement Co., 295 U.S. 142. ... See also, Nebraska v. Wyoming, 325 U.S. 589, 611-616. ... \textit{Id.} (emphasis original).
\item \textsuperscript{31} See Federal Power Comm'n v. Oregon, 349 U.S. 435, 447-48 (1955). A reservation is land withdrawn, reserved or withheld from private appropriation and disposal under the public land laws, and also lands and interests in land acquired and held for any public purposes. 16 U.S.C. § 796(2). In the appropriation system, first in time means first in right. Congress has recognized, through the Acts of 1866 and 1870, the right of private users to appropriate water on public lands by following state appropriation laws. Once an appropriation right is established, the federal government cannot take it away when it subsequently reserves water necessary for a reservation, because the private right is first in time. Therefore, a federal reservation of water is limited to water which is unappropriated at the time of the reservation. \textit{Id.}
\item \textsuperscript{32} The Desert Land Act of March 3, 1877, ch. 107, § 1, 19 Stat. 377 (1877) (current version codified at 43 U.S.C. § 321 (1976)). The statute stands for the concepts of severance of water from the land and plenary control by the states. \textit{Id.}
\item \textsuperscript{33} See Little, \textit{Appropriation of Federal Non-Indian Water Rights}, 27B ROCKY Mtn. Min. L. INST. 1708, 1718 (1982). Kansas, Nebraska and Oklahoma were never included. \textit{Id.}
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rights from land rights. Second, it directs patentees of federal lands to acquire water rights through state appropriation laws.

These three acts form a trilogy of federal deference to state water law. This deference was fortified by California Oregon Power Co. v. Beaver Portland Cement Co., where the Court stated:

Nothing we have said is meant to suggest that [the Desert Land Act], as we construe it, has the effect of curtailing the power of the states affected to legislate in respect of waters and water rights as they deem wise in the public interest. What we hold is that following the act of 1877, if not before, all non-navigable waters then a part of the public domain became publici juris, subject to the plenary control of the designated states... with the right in each to determine for itself to what extent the rule of appropriation or the common-law rule in respect of riparian rights should obtain.

Judicial Development of Federal Reserved Water Rights in Surface Water

While legislation indicates a strong deference by the federal government to state control of surface water, this deference is not absolute. The initial case which indicated that Congress did not intend that the states have absolute control of the waters within their boundaries was United States v. Rio Grande Dam & Irrigation Co. In that case, the federal government sought to enjoin the construction of a dam on a non-navigable portion of the Rio Grande River, arguing that the dam's impoundment of water would harm the downstream navigability of the river. Although the Court recognized New Mexico's right of control over a portion of the river, it specified two limitations on that right. First, in the absence of specific authority from Congress, a state cannot legislatively destroy the right of the United States to the continued flow of its water, if that flow is necessary for the beneficial uses of governmental property. Second, a state's control of water is limited by

35. Cappaert, 426 U.S. at 145.
36. 295 U.S. 142 (1935).
37. Id. at 163-64.
38. 174 U.S. 690 (1899). The Court held that obstructing navigational capacity was prohibited by the commerce clause. The concept was extended to diversion from non-navigable streams if such a diversion would destroy downstream navigation. Id. at 707-09. The Court further stated in dicta that a state could not without Congressional consent "destroy the right of the United States, as the owner of lands bordering on a stream, to the continued flow of its waters, so far at least as may be necessary for the beneficial uses of the governmental property." Id. at 703.
the superior power of the federal government to secure the uninterrupted navigability of all navigable streams within the United States.39

Winters v. United States,40 which created a specific, limited exception to the trend of federal deference, was the first case to apply the principles which are now called “federal reserved water rights.” In Winters, the Supreme Court held that the federal government had the power to reserve water for the benefit of the Fort Belknap Indian Tribe, which was confined to a reservation pursuant to a federal treaty. At issue was the ability of the federal government to reserve water rights when creating the reservation, which would take priority over subsequent private appropriations obtained pursuant to state law. The lands of the reservation were arid and would be practically valueless without irrigation.41 The private appropriators argued that the federal government had no right to reserve water. In passing over that issue, the Court focused on the issue of intent, stating that the federal government did intend to use the water, and that the power of the government to reserve water and exempt it from appropriation under state law could not be denied.

In finding the required intent to reserve the water as a companion to the reservation of land, the Court emphasized that the congressional purpose of the reservation was to provide a habitable environment.42 From this rationale the idea of a federal reserved right by implication arose.43

Although Winters held that the federal government had power to reserve surface water in the limited context of the Indian reservation, the general trend of federal deference to state control of water in all other contexts was quickly reaffirmed in a 1935 Supreme Court case, California Oregon Power Co. v. Beaver Portland Cement Co.44 That case further strengthened the position

39. Id. at 703.
40. 207 U.S. 564 (1908). The government was held to have impliedly intended that the stream water be used for irrigation and other purposes, and that the water necessary for those purposes was impliedly reserved. Id. at 575-77.
41. Id. at 578. The primary purpose of this reservation was to provide land for an agrarian Indian culture. Id.
42. Id. at 577.
43. See Little, Appropriation of Federal Non-Indian Water Rights, 27B ROCKY MTN. MIN. L. INST. 1709, 1730 (1982). Congress is not required to expressly reserve water if it is obvious that the purpose of the reservation could not be achieved without it. Winters v. United States, 207 U.S. 564, 575-77 (1908).
44. 295 U.S. 142 (1935). The Court held that after the Desert Land Act of 1877, there were no common law riparian rights on public land. Each state was free to determine whether riparian rights should attach to such tracts upon passing to private ownership. Id. at 158, 160-64.
that, through the Desert Land Act, the federal government was deferring control of non-navigable water on public land to the states.\footnote{See text at note 37 supra.}

For the next twenty years, federal water law seemed to be settled. The Winters doctrine, which applied to Indian reservations, was a lone exception to the rule of federal deference set out in Beaver Portland Cement. In 1955, Federal Power Commission v. Oregon\footnote{349 U.S. 435 (1955). This is generally referred to as the Pelton Dam case.} (Pelton Dam) reopened the controversy by extending, to non-Indian land, the Winters doctrine of federal reserved water rights, which had previously been limited to Indian land only.\footnote{Id. at 448.} In Pelton Dam, the Supreme Court affirmed the Federal Power Commission (FPC) grant of a license allowing a private power company to build a dam.\footnote{Id. at 448.} Oregon had refused to issue a construction permit, arguing that the dam would interfere with the migration of salmon in the Deschutes River.\footnote{Id. at 452.} However, the FPC claimed authority over the project because the stream and dam would be on federal land.\footnote{Id. at 442.} In its holding, the Court upheld the FPC's authority to issue the license under the property clause and the Federal Power Act.\footnote{Id. at 448.} It is important to note that the federal land where the dam was to be built was not merely public land, but was reserved land. Therefore, the Acts of 1866\footnote{See note 25 supra.} and 1870\footnote{See note 27 supra.} and the Desert Land Act,\footnote{See note 31 supra.} which apply only to public lands open for sale and distribution to the public—not reserved lands, which are designated for specific public purposes\footnote{349 U.S. 435, 448 (1855). Section 3 of the Federal Power Act defines “public lands” and “reservations” as follows:}—were not the basis for the Court's
decision.

The federal government's claim to reserved water rights was further strengthened by the Supreme Court's subsequent holding in *Arizona v. California*, which dealt primarily with the issues of interstate apportionment of water and the extent of the Secretary of the Interior's authority. However, the Court also addressed a claim by Arizona that past federal court decisions had given title to land under navigable water to the states to be held in trust for the public. In rejecting this argument, the Court stated:

> [T]hose cases involved only the shores of and lands beneath navigable waters. They do not determine the problem before us and cannot be accepted as limiting the broad powers of the United States to regulate navigable waters under the Commerce Clause and to regulate government lands under Art. IV, § 3 [the property clause] of the Constitution. We have no doubt about the power of the United States under these clauses to reserve water rights for its reservations and its property.

*Arizona v. California*, and its predecessor, *Pelton Dam*, clearly establish that the United States has a judicially recognized right to reserve surface water on reserved land as well as the land itself.

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1. 'public lands' means such lands and interests in lands owned by the United States as are subject to private appropriation and disposal under public land laws. It shall not include 'reservation,' as hereinafter defined;
2. 'reservations' means national forests, tribal lands embraced within Indian reservations, military reservations, and other lands and interests in lands owned by the United States, and withdrawn, reserved, or withheld from private appropriation and disposal under the public land laws, also lands and interests in lands acquired and held for any public purposes, but shall not include national monuments or national parks . . .

16 U.S.C. § 796(1) and (2).
56. 373 U.S. 546 (1963). This case involved a complex scheme to apportion the Colorado River water among California, Arizona and Nevada through the Colorado River Compact. *Id.* at 552. The Court rejected at argument by Arizona that the federal government had no right to reserve water because the states held title to the land under the navigable stream. *Id.* at 597-98. This case also stands for the proposition that reserved rights are based on future as well as present needs. *Id.* at 600-01.
57. *Id.* at 597-98.
58. *Id.*
59. See *United States v. District Court in and for the County of Eagle*, 401 U.S. 520, 522-23 (1971). The Court held that the United States had the right to reserve water for the use and benefit of federal reserved land and the federal reserved land could include any type of federal enclave. *Id.* The next developments within federal reserved water law were of a procedural nature. The McCarran Amendment, passed in 1952, waives the sovereign immunity of the United States in cases in which the presence of the United States as a party is necessary to the full and fair adjudication of competing claims to water rights. For the text of the amendment, see Department of Justice Appropriation Act of July 10, 1952, ch. 651, § 208(a)-(c), 66 Stat. 560 (1952) (codified at 43 U.S.C. § 666 (1976)). This waiver is, however, limited
However, the Court has also limited this right.

The most recent Supreme Court cases dealing with federal reserved water rights are *California v. United States* and *United States v. New Mexico*. *California* dealt with a potential impoundment of unappropriated water by the United States. The United States sought declaratory relief, stating that it could impound the water without regard to state substantive law. In rejecting this claim, the Court held that the Reclamation Act of 1902 allowed the state to impose any condition, not inconsistent with a specific congressional directive, on the control, appropriation, use or distribution of water in a federal reclamation project. Therefore, as a result of *California*, until the United States reserved water or complied with state law to appropriate it, use by the federal government was limited to the same extent as use by any individual.

*United States v. New Mexico* noted that, even when a federal reservation of land is involved, there are limits on federal water rights for that land. *New Mexico* dealt with an implied reservation of water in the Gila National Forest. The United States claimed that the reservation included water to preserve the timber in the forest, to secure favorable water flows and to maintain minimum instream flows for aesthetic, recreational and fish-preservation to those cases involving a general adjudication of all the rights of various owners on a given stream. See, e.g., *Dugan v. Rank*, 372 U.S. 609, 618 (1963) (the United States could not be joined under the McCarran Act in a proceeding seeking to enjoin it from impounding water when only a limited number of private parties were involved). The scope of the McCarran Amendment has been determined by United States v. District Court in and for the County of Eagle, 401 U.S. 520 (1971) and Colorado River Water Conservation District v. United States [Akin], 424 U.S. 800 (1976). In *Eagle*, the Supreme Court unanimously held that the federal government could be joined in a state court proceeding to identify and quantify all of the water rights claimed by the United States in a river system. This holding applied to federal reserved water rights. 401 U.S. at 523. In *Akin*, the court held that federal and state courts had concurrent jurisdiction over a suit to quantify the United States' water rights within a river system, but that a federal court should give effect to state court holdings on issues of water right quantifications. 424 U.S. at 817. The Supreme Court gave three factors for choosing the state court over the federal court: (1) inconvenience to the defendants posed by the location of the federal forum; (2) the absence of any significant proceedings in the federal court; and (3) the policy of the McCarran Amendment favoring the consolidation of water rights adjudications. *Id.* at 820.

63. 438 U.S. at 674, 678-79.
65. *Id.* at 718.
The extent of the implied reservation was held to depend upon the intent present at the time of the original reservation of land. The reservation took place in 1899 and was based on provisions in the Organic Administration Act of 1897, which only sought to preserve the timber in forests and secure favorable water flows. The United States claimed that the Multiple-Use Sustained-Yield Act of 1960 amended the Organic Administration Act to include outdoor recreation, range, timber, watershed, wildlife and fish purposes. The Court held that this later Act did not apply retroactively and therefore could not broaden the purposes for which the Gila National Forest was reserved.

In New Mexico, the Supreme Court restricted the reservation of water only to the quantity necessary to fulfill those primary purposes set out in the legislation originally creating the reservation. The Court concluded that, unless Congress expressly indicated to the contrary, federal agencies must abide by state water law, and where water is valuable only for a secondary use on a federal land reservation, Congress intended the United States to acquire water in the same manner as any other appropriator. This case suggests that the Court has drawn back the boundaries of federal reserved water rights by strictly construing the purposes for which water can be reserved.

Judicial development of federal reserved water rights, in summary, has produced the following comprehensive definition of the nature and extent of the doctrine:

[W]hen the Federal Government withdraws its land from the public domain and reserves it for a federal purpose, the Government, by implication, reserves appurtenant water then unappropriated to the extent needed to accomplish the purpose of the reservation. In so doing the United States acquires a reserved right in unappropriated

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66. *Id.* at 705. The claim for a minimum instream flow was based on the Multiple-Use Sustained-Yield Act of 1960, 16 U.S.C. § 528 (1976). This Act provides: “It is the policy of the Congress that the national forests are established and shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes.” *Id.*


68. 438 U.S. at 707.


70. *Id.*

71. 438 U.S. at 713. The Multiple-Use Act specifically states that it is supplemental to the Organic Administration Act of 1897, but says nothing about being applied retroactively. 16 U.S.C. § 528 (1976).

72. 438 U.S. at 702. This had a restrictive effect on reserved water rights which reached a peak in *Cappaert*. The requirement of “primary purpose” allows a court to quantify the amount of water reserved.
water which vests on the date of the reservation and is superior to the rights of future appropriators. Reservation of water rights is empowered by the Commerce Clause, Art. 1, § 8, which permits federal regulation of navigable streams, and the Property Clause, Art. IV, § 3, which permits federal regulation of federal lands. The doctrine applies to Indian reservations and other federal enclaves, encompassing water rights in navigable and nonnavigable streams.

In determining whether there is a federally reserved water right implicit in a federal reservation of public land, the issue is whether the government intended to reserve unappropriated and thus available water. Intent is inferred if the previously unappropriated waters are necessary to accomplish the purposes for which the reservation was created.73

This definition requires that the reserved water right only be for the primary purpose of the reservation.74 Further, the quantity of water under the right is to be determined by that which is reasonable to fulfill the reservation's primary purpose.75 However, this reasonable quantity encompasses both existing uses and future water requirements.76 In addition, it is not necessary to meet state law requirements in order to obtain the right.77 Finally, the right is not lost if it simply lies dormant for many years.78

These characteristics have led to criticisms of the doctrine. The major criticism is that there is a great deal of uncertainty in the quantitative extent, i.e., the amount of water, of federal reserved water rights, and as to when the rights will be exercised. Dean Trelease has summarized the criticism as follows:

Rights created by the reservation doctrine . . . are wild cards that may be played at any time, blank checks that may be filled in for any amount, or that may never be cashed. They deter other uses, and cause losses of benefits, and they encourage or permit Federal uses that are financially possible with the money at hand but economically undesirable because more is lost than gained.79

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74. 438 U.S. at 702.
75. 426 U.S. at 139.
77. 426 U.S. at 143, 145.
78. 373 U.S. at 600-01.
The federal right is deemed first in time, and thus superior, and is not affected by nonuse. As a result, the doctrine allows the United States to subordinate junior, i.e., subsequent, appropriators, without compensation, who have been relying on and using water which was available because the United States had not previously exercised its right to the water.

In response to criticisms concerning the "wild card" nature of federal reserved water rights in surface water, five major reports have been commissioned since 1970 to study federal water policies, including reserved water rights. The proposals made by these reports show a desire for federal deference to state law, quantification of federal reserved rights in water, compensation for divested state appropriators, and resolution of state conflicts with federal assertions of water rights. However, Congress has failed to act on these proposals.

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81. See id.
82. The first was the Public Land Law Review Commission (PLLRC) report, published in 1970. The PLLRC was established to conduct a comprehensive review of the laws, policies and practices relating to public lands, including the use of water resources. The Commission recommended "legislative action to dispel the uncertainty which the implied reservation doctrine has produced and to provide the basis for cooperative water resources development planning between the federal government and the public land states." The report set out four proposals to accomplish the goal, and concluded that Congress should:

1. Provide a reasonable period of time within which Federal land agencies must ascertain and give public notice of their projected water requirements for the next forty (40) years for reserved areas, and forbid the assertion of the reservation claim for any quantity or use not included within such public notice.
2. Establish a procedure for administrative or judicial determination of the reasonableness of the quantity claimed, or the validity of the proposed use under present law.
3. Provide that procedures for creation of future withdrawals and reservations require, as a condition to claims of reserved water rights, a statement of prospective water requirements and an express reservation of such quantity of unappropriated water; and
4. Require compensation to be paid where the utilization of the implied reservation doctrine interferes with uses under rights vested under state law prior to the 1963 decision in Arizona v. California.

The compensation requirement arose from concern over the lack of notice by the federal government to private appropriators who had developed dependence on their amount of appropriation prior to the government's taking of water. The Commission noted that prior to Arizona v. California, no water user could have been on actual or constructive notice of the existence of an implied federal water right. Although this report served to bring the problem to public light, no federal action was taken on its recommendations. See generally Public Land Law Review Comm'n, One Third of the Nation's Land 144, 147-49 (1970).

The PLLRC report was followed in 1973 by one from the National Water Commission. The Water Commission report identified problems similar to those highlighted in the PLLRC report, however, the Commission proposed different
An analysis of the potential extension of the federal reserved remedies, believing that the PLLRC proposals would require great expense and lead to inflated reserved claims by the federal government. The Commission made ten proposals; three of which were particularly significant: (1) direct federal agencies to establish, quantify and record their water uses in conformity with state law; (2) require compensation to private appropriators when reserved rights or navigational servitude were exercised; and (3) provide new federal procedures for the condemnation of water rights and the settlement of legal disputes. The other proposals also indicated a desire for increased deference to state water law. Similarly, there was no action taken on this report. See generally Final Report to the President and to the Congress of the United States by the National Water Commission, Water Policies of the Future 461, 463-68 (1973).

In 1974, the Justice Department prepared a draft proposal for changes in federal water rights, which became known as the "Kiechel Bill." It dealt primarily with procedural changes with the goal of quantifying federal water rights. The proposal stressed a three step approach: (1) an inventory and quantification of federal reserved rights by administrative procedures; (2) submission of a report of the inventories to Congress and state agencies; and (3) judicial review in federal courts of the administrative determination at the insistence of state administrators or holders of conflicting water rights, unless federal rights have already been adjudicated in proceedings to which the United States has been a party. Again, no action has been taken on this proposal. See U.S. Department of Justice, Proposed Bill to Provide for the Inventorying and Quantification of Reserved, Appropriative and Other Rights to the Use of Water by the United States (June 1974 draft). See also Kiechel, Inventory and Quantification of Federal Water Rights—A Common Denominator of Proposals for Change, 8 Nat. Resources L. 255, 258-60 (1975).

A fourth report, released in 1979, was requested by President Carter and was composed of a task force of water using agencies. The report called for an inventory of types of claims, reservations, purposes and water sources, and a cost estimate of quantifying all water rights. Varying time tables would apply, depending on the type of water use, for the accomplishment of the inventory. The federal agencies would also be required to satisfy a notification requirement so that the federal water rights concerned could be more easily incorporated into state systems. The most interesting portion of the report, for the purposes of this article, was the assertion that federal reserved water rights extend to groundwater. This assertion was based on the right to sustain "a groundwater level for general ecosystem maintenance." See Task Force 5a—President's Water Policy Implementation, Report of Federal Task Force on Non-Indian Reserved Rights (June 1979) (review draft) (noted in Trelase, Uneasy Federalism—State Water Laws and National Water Uses, 55 Wash. L. Rev. 751, 760 (1980)). The task force was made up of representatives from the Departments of Agriculture, Defense, Energy, Interior and Justice.

The fifth and most recent proposal, known as the "Roe Bill," was drafted by the attorneys general of various western states. The proposal has five major recommendations: (1) non-Indian reserved rights not based on state law are to be relinquished, except for some instream flow rights, and Indian reserved rights are given an additional eight years to be exercised, at the end of which unexercised rights will be relinquished; (2) future reserved rights must be declared by the President, and the points of diversion, purpose, use and amount required must be specified; (3) except in limited circumstances, all adjudication of the rights would take place in state courts or administrative bodies; (4) compensation must be given for rights vested under state law which are displaced by federal rights; and (5) the Secretary of the Interior is required to study and evaluate physical solutions to resolve water use controversies caused by the exercise of federal rights. See Water Rights Coordination Act of 1981 (Mar. 1981) (draft) (noted in Little, Administration of Federal Non-Indian Water Rights, 27B Rocky Mt. Min. L. Inst. 1709, 1776 (1982)).
water rights doctrine first requires an examination of the law of groundwater, which has evolved separately from the doctrines governing surface water. The law of groundwater continues to evolve, with five different doctrines of groundwater use having gained support at various times: (1) absolute ownership; (2) reasonable use; (3) correlative rights; (4) the Restatement rule; and (5) prior appropriation.

The absolute ownership doctrine, as applied to groundwater, originated in Acton v. Blundell, an 1843 English case. Two adjoining landowners had been withdrawing groundwater from a common source, and the plaintiff sought damages for the impairment of his water supply. The court denied relief based on the rationale that groundwater was considered to be the property of the overlying landowner, who may withdraw any amount of water, regardless of effect or waste. This absolute ownership doctrine is still followed by Texas in some circumstances.

The reasonable use doctrine, developed as a modification of the absolute ownership doctrine, recognizes groundwater ownership by the overlying landowner, but imposes the limitation that the overlying landowner may not use the water for unreasonable purposes. Under this doctrine, use of groundwater off the landowner's premises is deemed unreasonable per se if other landowners, whose lands overlie the common groundwater supply, are

83. 152 Eng. Rep. 1223 (Exch. 1843). The rule was first applied in the United States in Frazier v. Brown, 12 Ohio St. 294 (1861). This doctrine is also known as the "English rule." A landowner sought damages for the impairment of his groundwater supply caused by his neighbor's withdrawal of groundwater. The court held that overlying landowners have unrestricted use of groundwater. Id. at 311.
85. Id. at 1235. The court stated:
[T]he person who owns the surface may dig therein, and apply all that is there found to his own purposes at his free will and pleasure; and that if, in the exercise of such right, he intercepts or drains off the water collected from underground springs in his neighbour's well, this inconvenience to his neighbour falls within the description of damnum absque injuria, which cannot become the ground of an action.
86. City of Corpus Christi v. City of Pleasanton, 154 Tex. 289, 276 S.W.2d 798 (1955). The doctrine was modified in Friendswood Dev. Co. v. Smith-Southwest Indus., 576 S.W.2d 21 (Tex. 1978). The court held that the groundwater use cannot be negligent, willfully wasteful, or for the purpose of malicious injury. If such a use occurs and is the proximate cause of the subsidence of other land, the user is liable for damages. Id. at 30.
88. Id.
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hurt. Nebraska and Arizona still follow the reasonable use doctrine as a partial basis in their groundwater laws.

The correlative rights doctrine was judicially established in California by Katz v. Walkinshaw. This doctrine modifies overlying ownership by imposing a pro rata sharing among all users of the particular groundwater source. In a time of shortage, all users are entitled only to a percentage of their respective normal usage. For example, if only seventy-five percent of the normal supply is available, each user has rights to seventy-five percent of the normal individual amount. This doctrine is not usually used to determine actual withdrawal amounts, but rather to determine when a user must begin paying for the water. The user gets the water “free,” to the point of the safe yield of the groundwater source, but then must begin paying for the cost of importing surface water to recharge the excessively depleted aquifer. This doctrine is applied in its pure form only in California.

The rule proposed in the Second Restatement of Torts was judicially adopted by Wisconsin in State v. Michels Pipeline Con-

89. Farmers Inv. Co. v. Bettwy, 113 Ariz. 520, —, 556 P.2d 14, 19-20 (1976) (a landowner with two tracts of land over a common groundwater basin could not withdraw the water under one tract and transport it to the other tract, when such activity was causing subsidence of an adjoining landowner’s property).
91. 141 Cal. 116, 70 P. 663 (1902), rev’d on rehearing, 141 Cal. 137, 74 P. 766 (1903). See 2 W. Hutchins, supra note 87, at 570-75 (1974). Because of the unique nature of this doctrine, the court set up guidelines. They are: (1) as between those transporting for use beyond the overlying land, the right is only usufructuary and the priority of appropriation applies; (2) as between one party who is using the water on his land, and one who is not, (a) if the landowner was using the water before the appropriator, the landowner’s right is paramount, and (b) if the appropriator was first, the landowner is limited to the quantity necessary for use; (3) as between two landowners using the water on the overlying land, both are given a fair proportion. Id. at —, 74 P. at 772.
92. Pasadena v. Alhambra, 33 Cal. 2d 908, 207 P.2d 17 (1949). The court held: “[T]hat prescriptive rights were established by appropriations made . . . subsequent to the commencement of the overdraft . . . such rights were acquired against both overlying owners and prior appropriators. . . . Production of water . . . should be limited by a proportionate reduction in the amount which each party had taken throughout the statutory period. Id. at —, 207 P.2d at 32-33.
94. Id. Southern California is somewhat unique in that it has chosen to buy large amounts of surface water, which it uses to recharge its aquifers. The safe yield concept is the amount of water which can annually be withdrawn from a groundwater source without causing a gradual decline in the water level. Id.
The rule subjects a landowner to liability for causing unreasonable harm to the aquifer through excessive diminution of the water table. Under this rule, which is a mix of the reasonable use and correlative rights doctrines, the apportionment of water is based on a balancing of utility against harm, rather than on equality of rights among users.

The final doctrine is the appropriation doctrine, which was originally developed to govern surface water allocations. In its application to groundwater, the appropriation doctrine requires that the applicant first obtain a permit from the state to physically withdraw groundwater, and then put the water withdrawn to a beneficial use. Groundwater is treated as property of the state subject to appropriation through a statutory system. When groundwater levels cannot satisfy demand, appropriators with the earliest appropriation dates have priority. Therefore, in a pure appropriation system, water is distributed in order from the earliest to the latest permit priority date until all available water is distributed. However, the characteristics of groundwater require some modifications of the appropriation system so that a workable and logical distribution system is available. These modifications generally take the form of statutorily established "use preferences." Domestic uses are characteristically deemed to have the highest preference, with commercial uses being the least pre-

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95. 63 Wis. 2d 278, —, 217 N.W.2d 339, 351 (1974). Michels involved the pumping of groundwater to construct a sewer. The water table was lowered by the pipeline company and many of the private wells in the area went dry. Id. at —, 217 N.W.2d at 340. The proposed RESTATEMENT (SECOND) OF TORTS § 858A (1971) provides:

NON-LIABILITY FOR USE OF GROUNDWATER—EXCEPTIONS. A possessor of land or his grantee who withdraws ground water from the land and uses it for a beneficial purpose is not subject to liability for interference with the use of water by another, unless (a) The withdrawals of water causes unreasonable harm . . . through lowering the water table or reducing artesian pressure. . . .

Id. at 350-51.

96. 217 N.W.2d at 343-46. This tort analysis adds two limiting factors to the reasonable use doctrine: unreasonable harm to a neighbor and reasonable share of supply. See id.

97. See id. at 350.

98. 5 R. POWELL, POWELL ON REAL PROPERTY § 743, at 491 (1979). The doctrine developed from mining practices which required nonriparian water use. Id. at 442-43.


100. Id. at § 37-90-109. Priority is determined by the date of filing for a permit.


These use preferences modify the pure appropriation system because a use with a higher preference will be allocated water in a time of shortage before a lower preference, regardless of any priority in time under the state appropriation permit system.

Basic differences between the characteristics of surface and groundwater have given rise to modifications in the groundwater appropriation system. Groundwater supplies have only slight seasonal variations, whereas surface water quantities can vary drastically. This is due to the difference in the rate of flow. The slower rate of groundwater transmission is a stabilizing factor, but it also results in a slow recharge rate and limited access to the total amount of water in the aquifer. Although there is little evaporation, there is an accompanying higher cost of obtaining the supply. Since an aquifer serves to store water, a user can withdraw more than the annual rate of recharge. However, the aquifer may be permanently damaged if an excessive amount of water is withdrawn. In contrast surface water withdrawal is normally limited to the yearly amount of flow, with the cost of acquisition being relatively low. Surface water supply is recharged on a yearly basis, but as much as sixty percent of the flow may be lost to evaporation. These varying characteristics have led some commentators to conclude that the two water supplies must be treated differently by federal and state laws. In spite of this assertion, the majority of western states have in fact adopted the prior appropriation system to govern the allocation of both surface water and groundwater. A single system of allocation, which may result in a beneficial distribution of all available water—whether from sur-


105. Haase, supra note 6, at 2083-85. Specifically, groundwater cannot effectively be regulated by the prior appropriation system because of slow rate of flow within the aquifer. It is impractical to make a junior appropriator stop pumping if the water saved will not reach the senior appropriator for a number of years. Id. See Note, Federally Reserved Rights to Underground Water—A Rising Question in the Arid West, 17 Utah L. Rev. 43, 52 (1973).

106. The western states align themselves as follows:

Appropriation Doctrine:


Reasonable use:
face or underground sources—envisions a concept called “conjunctive management.”

**Conjunctive Management of Surface Water and Groundwater**

The conjunctive management of surface water and groundwater involves treating the two sources as an interconnected, single source\(^1\) in order to maximize the economic benefits of both resources.\(^2\) Since it is clear that groundwater and surface water are so closely connected within the total hydrological cycle that the use of one water type affects the other, it is suggested that there should be an integrated system of management. Thus, when one individual having a right to withdraw water from one phase of the cycle does so, affecting the availability of water to another person who has rights in another phase of the cycle, these rights must be coordinated by an integrated law. The superior right would then be preferred and protected.\(^3\)

Conjunctive management can be accomplished by legislation or by the courts. Wyoming statutory law provides: “[W]here underground waters and the waters of surface streams are so interconnected as to constitute in fact one source of supply, priorities of rights to the use of all such interconnected waters shall be correlated and such single schedule of priorities shall relate to the whole common water supply.”\(^4\) A Colorado statute calls for tributary groundwater, i.e., that which feeds a surface stream, to be treated in the law as surface water. Colorado’s Water Right Deter-

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\(^2\) Correlative Rights:


Absolute Ownership:


*None of the three largest users of groundwater, California, Texas and Nebraska, are prior appropriation states. See Aiken, The National Water Policy Review and Western Water Rights Law Reform: An Overview, 59 Neb. L. Rev. 327, 334-35 n.41 (1980).*


\(^5\) See id. at 1856. This has been accomplished by the fiction of an underground stream or underground lake with surface water laws applying to it. See Los Angeles v. Hunter, 156 Cal. 603, 606, 105 P. 755, 756 (1909). The most effective way to coordinate the two is to simply declare that the two will be treated as one source. See Hudson v. Dailey, 156 Cal. 617, 628, 105 P. 748, 753 (1909) (there is no rational basis for any distinguishing between percolating water and the water directly below and supporting the surface stream, and no reason for applying a different rule to the classes).

\(^6\) WYO. STAT. ANN. § 41-3-916 (1977).
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mination and Administration Act of 1965 provides: “It is the policy of this state to integrate the appropriation, use and administration of underground water tributary to a stream with the use of the surface water in such a way as to maximize the beneficial use of all the waters of this state.”

In the absence of express legislation, the integrated relationship between surface water and groundwater can be judicially imposed. In Albuquerque v. Reynolds, the New Mexico Supreme Court approved a system which required the retirement, i.e., termination, of surface rights before any new groundwater rights in the connecting water basin could be established. Similarly, the Nevada Supreme Court, in Griffin v. Westergard, upheld the denial of a permit to drill a well because the well would effectively draw water from an already overappropriated surface stream and thus impair surface rights.

Once the need for an integrated system is recognized, the next step should be recognition of one water right which can be satisfied by either of the two sources—groundwater or surface water. Such an approach would enable the user to maintain a stable quantity of water, yet the controlling agency could vary the source of supply depending on which would more readily support water withdrawal and be more beneficial for the system as a whole. A Colorado statute expressly allows this alternating of water source, with the stated objective of using groundwater to its fullest potential. The benefit of such a system is that a senior appropriator has two sources of water from which to satisfy an appropriation, and both sources must be exhausted before a junior appropriator will be denied his or her allocation. In addition, this integrated system is advantageous in that the increased use of groundwater should function to increase surface water supply so that additional junior surface water appropriators, particularly in dry years, will receive their allocations. Other advantages include minimized transportation losses, easy access for center pivot irrigators and

112. 71 N.M. 428, —, 379 P.2d 73, 80 (1962) (both surface water and groundwater are subject to appropriation, and a prior appropriator from a stream may enjoin another from taking groundwater which would otherwise reach the stream and is necessary to serve the prior right).
113. Id. at —, 379 P.2d at 80-81.
115. Id. at —, 615 P.2d at 237-38.
116. The concept of varying points of diversion was held to be valid in New Mexico v. Molybdenum Corp. of America, 570 F.2d 1364 (10th Cir. 1978).
118. Id. at § 37-92-502(2).
improved water quality.\textsuperscript{119}

Conjunctive use is also beneficial when a large aquifer supports a small stream from which senior appropriators divert water. Absent conjunctive use, a junior groundwater appropriator would be limited to use of a fraction of available groundwater because the aquifer level would have to be maintained in order for it to feed the surface stream. Absent the limitation, a groundwater user's withdrawals would lower the stream and the senior appropriator would be harmed by the nonexistence of surface water. Under the conjunctive use system, there are several alternative solutions. By using "bypass pumping," the junior appropriator could pump an extra amount of groundwater and deliver it directly to the senior surface water appropriator, thereby fulfilling the surface water appropriator's allocation and allowing the remaining groundwater to become available for appropriation.\textsuperscript{120} Thus, the senior appropriator is not harmed because the groundwater delivered replaces the lost surface water.

Another alternative under the conjunctive use system is to import water from another watershed to replace surface water lost by groundwater pumping\textsuperscript{121} or to replenish overdrawn supplies of groundwater.\textsuperscript{122} Surface water is used by groundwater takers to save themselves from potential disaster. An overdrawn aquifer may lose its support strength, causing subsidence of the earth. Water importation helps to prevent such an occurrence. The leader in importing water to replace groundwater is the City of Los Angeles.\textsuperscript{123}

Finally, a conjunctive use system is advantageous in that aquifers can be used as underground reservoirs. Surface water can be directed into the ground during the winter and spring wet seasons and withdrawn during summer shortages.\textsuperscript{124} This process has been termed "transient storage."\textsuperscript{125} Under an integrated system of laws, it would appear that senior rights would not be harmed when the water went from surface water to groundwater, then back to surface water.

The beneficial results of implementing a conjunctive use sys-

\begin{footnotesize}
\begin{enumerate}
\item Trelease, \textit{supra} note 108, at 1863.
\item Id. at 1864-65.
\item Id. at 1874.
\item Id.
\item Los Angeles has imported water from the Colorado River and many smaller rivers in northern California to provide water for its citizens. \textit{See} Los Angeles v. San Fernando, 14 Cal. 3d 199, 209, 537 P.2d 1250, 1260, 123 Cal. Rptr. 1, 11 (1975).
\item Trelease, \textit{supra} note 108, at 1880.
\item Id.
\end{enumerate}
\end{footnotesize}
tem make it an attractive method of allocating the interrelated surface water and groundwater. As the analysis which follows indicates, federal reserved water rights extend to groundwater as well as surface water. Therefore, a conjunctive use system would further aid in the allocation of water between competing federal claims and private appropriations granted under state permit systems.

**The Extension of Federal Reserved Water Rights to Groundwater**

*Cappaert v. United States* is the major case in the area of federal reserved groundwater rights. In *Cappaert*, the United States sought to enjoin the Cappaerts from diverting groundwater on their ranch, to the extent that those diversions reduced the water level in the Devil's Hole National Monument below the level required for the survival and propagation of the endangered desert pupfish. Devil's Hole is a deep limestone cavern of unknown depth. Fifty feet below the opening of the cavern is a pool with three shear sides and one sloping ledge. The sloping ledge allowed algae to grow, which fed the pupfish and also provided them a place to spawn. A declining water level would cause the exposure of the sloping ledge, destroying the algae and therefore the pupfish. Devil's Hole was declared a national monument in 1952 and was made a detached portion of the Death Valley National Monument. The 1952 proclamation stated that Death Valley was set aside as a national monument for the preservation of scenic, scientific, and educational features. Devil's Hole was added to the monument because the "pool is a unique subsurface remnant of the historic chain of lakes which in Pleistocene times formed the Death Valley Lake System. . ." The pool also contained pupfish, which are unique in all the world. Because of these two characteristics, the proclamation concluded that the "pool is of such outstanding scientific importance that it should be given special protection. . ." This protection was accomplished by reserving the land which contained the pool.

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127. Id. at 135. Devils Hole pond. Id. at 133.
128. Id. at 131.
129. Id. at 133-34.
130. Id. at 131-32. The proclamation can be found at Exec. Proc. No. 2961, 3 C.F.R. 147 (1952).
131. 426 U.S. at 132.
132. Id.
The Cappaerts owned a 12,000 acre ranch near Devil's Hole. The ranch required a great deal of water, but the Cappaerts had secured an adequate amount through Nevada's appropriation system. Unfortunately, their groundwater supply also supplied the pool in Devil's Hole. 133

In 1962, a copper washer was placed in the wall of Devil's Hole by the United States Geological Survey to serve as a reference point for measuring the pool's water level. The water level varied from season to season, but a trend of a decreasing level was observed. 134 If the water level remained less than three feet below the washer, the ledge was underwater, enabling algae to grow and the pupfish to spawn. A lower level would cause the rock ledge to quickly become exposed, endangering the pupfish. Since the groundwater pumping by the Cappaerts directly affected the water level of the pond, excess pumping could reduce the level to such an extent that the purpose of Devil's Hole National Monument could not be achieved. 135

In August 1971, the United States sought an injunction to limit pumping from six of the Cappaerts' wells, later adding two others to the petition. The Cappaerts admitted that the wells drew water from the same groundwater basin which formed the Devil's Hole pond, 136 thereby conceding that the more water they pumped, the more the pond level was reduced.

The key issue was whether the reservation of Devil's Hole provided the federal government with the right to maintain a specific minimum water level within the pond. 137 The Court held that the federal government could enjoin a groundwater user from pumping to such an extent as to defeat the purpose of a reservation. Therefore, a minimum groundwater level could be maintained. 138 This case, however, is not determinative of the issue of whether federal reserved water rights extend to groundwater because the Court classified the pool as surface water. A narrow interpretation of this case is that the groundwater user whose withdrawals commenced after the federal reservation of land cannot reduce the water level in an interconnected pool of surface water on federal

133. Id. at 133.
134. Id.
135. The purpose, as set out in the 1952 proclamation, is the preservation of both the unique pupfish and the pond, the latter being remnant of a Pleistocene lakes system. Id. at 131-32.
136. Id. at 135-36.
137. Id. at 137-38. To maintain the required pool depth, the government needed to maintain a specific minimum groundwater level. To accomplish this, the Cappaerts had to be enjoined from pumping from close proximity wells. Id. at 135-36.
138. Id. at 147.
land to the extent such withdrawals jeopardize the purposes of the reservation. Some commentators, however, have broadly interpreted Cappaert to extend federal reserved water rights to groundwater generally. There is language in the case which does indeed support such a general extension. The Court based federal reserved water rights on a property concept because the Desert Land Act does not apply to reserved land and federal rights are not dependent upon state laws or procedures. The extent of this property right is determined by the purpose of the reservation. The Court concluded: “Thus, since the implied-reservation-of-water-rights doctrine is based on the necessity of water for the purpose of the federal reservation, we hold that the United States can protect its water from subsequent diversion, whether the diversion is of surface or groundwater.”

There is support for both sides of the extension issue. Although the Court did not specifically hold that federal reserved water rights extended to groundwater, it did hold that the federal government could stop a private appropriator from diverting water, whether surface or groundwater, if the diversion jeopardizes the purpose of the reservations.

Lower courts have come to divergent conclusions when deciding whether to extend federal reserved water rights to groundwater. One of the more recent cases, Southeastern Colorado Water Conservancy District v. Huston, refused to extend reserved rights to groundwater. In Huston, the named defendant and other private parties had filed numerous claims to non-tributary groundwater, much of which was located under federal land

139. Id.
140. See Little, Administration of Federal Non-Indian Water Rights, 27B ROCKY Mtn. MIN. L INST. 1709, 1738 (1982); Meyers, Federal Groundwater Rights: A Note on Cappaert v. United States, 15 LAND & WATER L REV. 371, 378 (1980); Trelease, Federal Reserved Water Rights Since PLLRC, 54 DEN. L.J. 473, 485 (1977). There had been prior cases, but this was the first, and only, Supreme Court case that dealt with both federal reserved water rights and groundwater. See notes 159-68 and accompanying text infra.
142. 426 U.S. at 145.
143. Id. at 143.
144. Id.
145. Unpublished Opinion from the District Court of Arapahoe County in Colorado, Consolidated Cases, No. 79 CW 1 (Feb. 11, 1981) (non-tributary groundwater can be appropriated, but may not be developed in Colorado without the specific consent of the landowner).
146. Id. at 40.
throughout Colorado.147 The government argued that all groundwater under federal land was reserved water and the property of the United States. The Arapahoe County District Court rejected this claim by stating:

By simple pronouncement and argument, the United States of America may not be permitted to substitute a rhetorical "reservation" of waters for a conditional decree. . . . The United States may not withhold from the dedication to the people of this state all this essential natural resource under National Forests and Parks by mere language. It has no right unless or until, it procures a conditional decree and/or final decree in the courts of this state, for whatever beneficial use it intends to make of those subsurface waters and for a fixed quantity thereof.148

It is important to note that this language is only dicta, and its application is limited in large part to lands administered by the Bureau of Land Management. The Bureau's land is generally considered public land and not a reservation.149 In addition, federal reserved water rights only apply to reserved land.150 For the land that was in fact reserved, the quoted language seems to disagree with Supreme Court decisions, specifically Cappaert, which recognize federal reserved water rights.151

In another 1981 case, Colville Confederated Tribes v. Walton,152 the Ninth Circuit Court of Appeals held that a reservation entitled Indian tribes to the surface water and groundwater necessary to establish a spawning stream for salmon.153 A private appropriator had acquired a state permit to withdraw groundwater for irrigation purposes, and the withdrawal was lowering the interrelated stream to such an extent that fish could not swim in it. The court granted an injunction enjoining the use of water by private appropriators once that use reached the level of infringing on the Indians' reserved rights.154

A water master's report for In re Application For Water Rights

147. Id. at 1-2.
148. Id. at 40.
152. 647 F.2d 42 (9th Cir. 1981).
153. Id. at 48. The purpose of this reservation was to provide a homeland for an agrarian and fishing civilization. The implied reservation of water was for irrigation and the establishment of a salmon spawning area. Id. at 47-48.
154. Id. at 53.
of the United States, a 1978 Colorado case, boldly declared that federal reserved water rights did apply to groundwater. The case involved the integration of federal water rights into Colorado's water right system, with federal reserved water rights being the focus of the integration. The report covered national forests, national parks, national monuments, public springs, water holes and hot mineral springs. For every classification, the water master found:

The United States possesses a reserved right to utilize the surface, ground, and underground waters, both tributary and nontributary, which are located in, on, under, or bordering said [reservations], in such quantities of fact, conclusions of law, and proposed decree, as are reasonably necessary to fulfill the purposes for which said [reservations] were created.

According to this finding, the quantity of the reserved right is not unlimited, but rather extends only to the amount reasonably necessary to fulfill the purposes for which the reservation was created. This is a highly significant limitation. The water master quantified the reserved rights, which is important if for no other reason than it shows such can be done. Quantification is a major issue because of the wild card nature of the right. Knowing that the government can only take a certain amount of water allows other users to develop their share of the resource.

Prior to Cappaert and the cases which have followed, the extension of federal reserved water rights to groundwater was permitted by federal courts in Nevada and Montana. Tweedy v. Texas Co. dealt with the groundwater rights of a landowner whose land was within an Indian reservation. The landowner claimed that Texas Company had illegally taken groundwater for use in extracting oil and gas. The district court held that the landowner

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156. Id. Seven national forests, Rocky Mountain National Park, four national monuments, 1500 public springs and water holes and numerous mineral springs were involved. The report was incredibly extensive. id.

157. Water Master, supra note 155, at 429 (emphasis added). See also id. at 443, 456, 470, 474, 480.

158. See id. at 534-1083.

159. 286 F. Supp. 383 (D. Mont. 1968) (a landowner claiming water which was reserved by the federal government has no proprietary interest in the water, and consequently is not damaged by another's use of that water).

160. Id. at 385. The water was used to pressurize the underground areas which
had no title to the groundwater and, therefore, was not damaged.\textsuperscript{161} In establishing the Indian reservation, the court reasoned, the water rights were reserved for the benefit of the reservation,\textsuperscript{162} stating:

The \textit{Winters} case dealt only with the surface water, but the same implications which led the Supreme Court to hold that surface water had been reserved would apply to \textit{ground} water as well. The land was arid—water would make it more useful, and whether the waters were found on the surface of the land or under it should make no difference.\textsuperscript{163}

As early as 1958, a reservation of land was held to encompass groundwater as well as surface water. In \textit{State ex. rel. Shamberger v. United States},\textsuperscript{164} the United States District Court for the District of Nevada held that a naval ammunition reservation did not require a state permit to use groundwater.\textsuperscript{165} The reservation, which was created in 1935, was for the exclusive use of the United States Navy. The Navy drilled wells within the boundaries of its depot in order to provide a water supply for beneficial uses necessary for accomplishing the purposes of the reservation.\textsuperscript{166} A subsequent state statute recognized all existing groundwater rights and made subsequent withdrawal subject to the state prior appropriation doctrine.\textsuperscript{167} The issue was whether the federal government had reserved the groundwater, along with its reservation of land, thus having an existing right to the water. The court held that the area was a naval "reservation" and that the reserved rights extended to groundwater; therefore, the Navy was not required to follow state permit requirements.\textsuperscript{168}

\begin{footnotesize}
\begin{enumerate}
\item contained oil and gas. By injecting the water, the oil and gas became pressurized and could more easily be pumped out. \textit{Id.}
\item \textit{Id.} at 386-87. The court also stressed a "need and use" test, and held that the landowner had not demonstrated a need or a use for the groundwater. \textit{Id.} at 386.
\item \textit{Id.} at 385.
\item \textit{Id.} (emphasis added).
\item \textit{Id.} at 611.
\item \textit{Id.} at 603.
\item \textit{Id.} at 605-07.
\item \textit{Id.} at 601.
\item \textit{Id.} at 606-07.

\item \textit{Id.} at 606-07.
\item \textit{Id.} at 601, 611. The court relied heavily on Federal Power Comm'n v. Oregon, 349 U.S. 435 (1955) in holding that state permit requirements did not have to be met in order to use and develop reserved water. \textit{Id.} at 606-07.
\end{enumerate}
\end{footnotesize}
The Government's Golden Rule

It has been suggested that Cappaert and the other cases which support the extension of federal reserved rights to groundwater have established the government's own "golden rule." The rule asserts that the withdrawal of federal lands also reserves groundwater in a quantity which is useful for realizing the purposes of the reservation. Therefore, the federal government may pump groundwater even if it interferes with groundwater use by others, and in fact may enjoin them from using groundwater which interferes with its use for a reservation purpose.

By tracing the reserved rights through their power bases and judicial interpretations, it is reasonable to conclude that the government's "golden rule" is a plausible interpretation of federal reserved rights. However, even if this conclusion is correct, its application can still be limited. The most apparent limitation is quantification of the federal right, which would retain the applicability of the "golden rule," but only to the limits of the quantification.

There are other possible justifications for the government's use of reserved water rights, if they are extended to groundwater. In addressing the alternatives, hypotheticals illustrating some of the federal government's possible claims must be considered. In the case of well interference, the federal government could rely on Cappaert to argue that if private parties cannot lower the level of Devil's Hole pond, then they should not, under a similar rationale, be able to interfere with a well on reserved land. Conversely, if the federal government pumps to the detriment of another groundwater user, it could invoke Winters v. United States and Arizona v. California, both of which allowed the use of surface water to fulfill the purposes of the reservation, even though it disrupted existing uses by private individuals.

170. Id.
171. Id.
172. See text at note 82 supra. Quantifying the federal reserved water right is an almost uniformly demanded action by commentators.
173. Cappaert v. United States, 426 U.S. 128, 137-38 (1976) (a private pumper could not lower the level of Devil's Hole pond beyond a certain level because it would defeat the purposes of the reservation).
174. Winters v. United States, 207 U.S. 564, 576 (1908) (the court allowed reserved water rights for irrigation on an Indian reservation even though subsequent appropriators were using the water). See Arizona v. California, 373 U.S. 546, 597-600
Surface water cases may be used in arguing groundwater cases if the assumption is true that the underlying rationale for federal water rights contemplates an integrated system. If the federal government reserves land for a purpose, there is an implied reservation of the water necessary to achieve that purpose. However, if groundwater is not necessary to achieve the purpose of the reservation, then the federal reserved rights should not be so extended.

Two questions arise concerning yet another area of conflict, namely groundwater mining.176 First, can the federal government require that a specific water table level be maintained, or can the government itself be required to maintain a specific groundwater level? Second, if only a specified amount can be taken from a groundwater source by a safe yield or statutory system, how should it be divided among conflicting appropriators? Cappaert would indicate that the government can require the maintenance of a specific minimum groundwater level.177 Moreover, the government may claim that it is entitled to the water level which was present at the time of the reservation.178 The government may also request lesser restrictions, such as the water level at the time the first well was drilled, the level generally required within the state, or the level in which an economic balance between cost of withdrawal and value of the water is reached.179 It is likely that the Supreme Court, given the opportunity to directly decide the issue, would limit the quantity of the federal reserved right to the minimum level which would achieve the purposes of the reservation.

Finally, if the federal government is lowering the water table and the water is necessary to achieve the purposes of the reservation, the government would have a strong claim to the water. Again, it could rely on Winters v. United States and Arizona v. California for justification.180

If the groundwater source is very slow in recharging, the water

177. See Cappaert, 426 U.S. at 143.
178. Since the federal government can only reserve the amount of water necessary for the primary purpose of the reservation, it is unlikely that any specific water level would have to be maintained to enable the federal government to withdraw water.
180. See note 175 and accompanying text supra.
mining questions are heightened. The excess use by other pumpers may rapidly reduce a resource necessary for achieving the purposes of the federal reservation. As a result, the federal government may try to either abate such a use altogether or severely restrict it.

One possible remedy to these potential claims by the federal government is to require a strict interpretation of when a reservation of water is implied. United States v. New Mexico\textsuperscript{181} applied a form of this limitation by allowing reserved rights in surface water only for primary purposes which were established at the time of the reservation.\textsuperscript{182} This remedy should not apply, however, to the rare case where there is an explicit reservation.

Another possible approach would employ a balancing test weighing the beneficial value of the government's claim against the detriment to the private party. Although this limitation cannot be applied in determining if the reserve right exists at all,\textsuperscript{183} arguably it could be applied in determining the extent of the right. The objective of such a balancing test would be to apply a rule of reason in administering and adjudicating the rights of conflicting groundwater users.

In addition, Congress could establish an administrative agency, or authorize an existing one, to manage groundwater resources. The agency could treat all parties as equals and act in the best interest of the resources. The final possible approach would be congressional recognition of deference to state law for the regulation of groundwater under federal land, just as exists for surface water on public lands.\textsuperscript{184}

CONCLUSION

The federal government generally gives deference to the states in managing the waters within their boundaries. This deference is evidenced by the Acts of 1866 and 1870, and the Desert Land Act of 1877. However, these Acts have been held inapplicable to federally reserved land, because the federal government has implicitly claimed a right to the water necessary for use on the reservation.

The federal reserved water right has expanded and contracted through judicial interpretation. Presently, courts are concluding

\textsuperscript{181} 438 U.S. 696 (1978).
\textsuperscript{182} Id. at 702.
\textsuperscript{183} Cappaert, 426 U.S. at 138.
\textsuperscript{184} Deference to state law for surface water on public lands, as distinguished from reservations, was recognized in the Acts of 1866 and 1870, and the Desert Land Act of 1877. See notes 25-37 and accompanying text supra.
that when the federal government reserves lands for federal purposes from the public domain, the government impliedly reserves the appurtenant unappropriated water necessary to achieve the primary purposes of the reservation. Federal water rights extend to all federal reservations whether there is an implied or expressed reservation of water.

Both the federal and state governments may have simultaneous, yet independent, water management systems. If a conflict occurs which cannot be avoided through judicial construction, the federal regulation governs due to the supremacy clause. When dealing with the flexible nature of federal reserved water rights, this can cause a great deal of confusion. The quantity of the right is tied to the purpose of the reservation and applies to future use as well as present needs. The uncertain nature of the right is a major basis for its criticism, and quantification of the right has been a common remedy sought by various litigants.

The hydrological cycle was misunderstood by early courts and legislatures, and consequently, groundwater and surface water were governed by two separate systems. As knowledge of the cycle was acquired, the majority of the western states integrated surface water and groundwater into one system of appropriation. The theory of conjunctive use could be beneficial to a user in several ways: users can look to surface water or groundwater to satisfy their water right; imported water may be used to replace overdrawn groundwater; and surface water can be stored as groundwater.

Once conjunctive use systems have been established, the extent of the federal government’s rights over groundwater must be determined. It is concluded that federal reserved water rights extend to groundwater. However, as with surface water, specific criteria must be met. There must be an explicit or implied reservation which can only extend to amounts necessary to accomplish the primary purposes of the reservation. These criteria may serve as ways to limit the application of the right to groundwater. A court could strictly limit the quantity of water necessary for accomplishing the purpose of the reservation. A second possibility is the strict interpretation of whether an implied reservation has occurred. A third possible limitation is a balancing test. The test would weigh the benefit to the government by exercising the right, or a portion of it, and the detriment to users who have relied on the supply which the government would take. A final possibility is

congressional limitation of the right. At the very least, federal reserved water rights for both surface water and groundwater must be quantified. Although federal reserved water rights may be extended to groundwater, the right should be limited to preclude totally disrupting a system relied upon by numerous users.

Ned Lawrence Bork III—'83