Commentary

ARIZONA GROUND WATER LAW: THE NEED FOR LEGISLATION

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Water is one of Arizona's most critical and limited resources and a subject of continuing controversy. The volume of recent legislation, including the Central Arizona Project [CAP],[1] evidences the general concern over the use and allocation of water. Unfortunately, attempts to control water resources have been piecemeal and no comprehensive legislation has been proposed. As we shall see, Arizona has placed itself in the unusual position of having two legal categories of ground water, further complicating attempts to administer all water resources. More understanding may be generated as we trace the development of Arizona's water law, identify several special problems which it harbors, and contrast this with developments in other Western states. Finally, two legislative proposals are offered.

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1. 43 U.S.C. §§ 1501-56 (1970). State legislation has been enacted to supplement the Central Arizona Project [CAP]. *See* Senate Bill 1281, ch. 99, §§ 1-5, [1974] Ariz. Sess. Laws 312, *amending* ARIZ. REV. STAT. ANN. 45-2508, -2511, -2613, *adding* ARIZ. REV. STAT. ANN. §§ 45-2520.01, -2613.01 (Supp. 1974-75) (broadened contract and other authority of the Arizona Water Commission); Senate Bill 1321, ch. 143, § 1, [1974] Ariz. Sess. Laws 664, *adding* ARIZ. REV. STAT. ANN. § 37-106.01 (Supp. 1974-75) (empowers the State Land Department, with the approval of the governor and the joint legislative budget committee, to make contracts for CAP water on state lands for municipal and industrial purposes).

Arizona also has enacted several statutes unrelated to the CAP. *See* Senate Bill 1195, ch. 169, [1974] Ariz. Sess. Laws 845, *amending* ch. 40, § 1, [1973] Ariz. Sess. Laws 250 (appropriating funds for flood control and watershed protection projects by the Arizona Water Commission and providing for transfers of funds from one project to the other); ARIZ. REV. STAT. ANN. §§ 45-180 to -193 (Supp. 1974-75).

A review of Arizona's Water Rights Registration Act[2] of 1974 reveals the continuing dilemma presented in existing water law. The new Act, intended to identify existing water rights, requires that every person claiming an appropriative water right[3] file a detailed written notice with the State Land Department.[4] The Arizona appropriation doctrine, however, does not extend to all waters in the state. Rather, it is limited in application to *surface* waters and water in *definite underground channels.*[5] No regulatory structure exists for percolating ground waters,[6] although they constitute practically, if not actually, most of the underground waters in Arizona.[7] The use of percolating ground waters is limited only by statutes, requiring filing of a notice of intent to drill and providing for the designation of critical ground water areas,[8] and by the judicial doctrine of reasonable use. Thus, under current Arizona law, the applicability of the new Act is dependent on the type of underground water.

The statutory application of the appropriation doctrine only to surface water and water in "definite underground channels" is peculiar, although its origins are traceable to common law verbal distinctions between subterranean streams and percolating ground water sources.[9] This distinction has been criticized in scientific[10] and legal studies,[11] one legal writer characterizing it as an attempt to restate "the physical universe."[12] Indeed, as prior experience has shown, proving the existence of underground stream channels is questionable, if not impossible, in Arizona.[13] More often than not, surface and ground waters are hydro-

2. *See* ARIZ. REV. STAT. ANN. §§ 45-180 to -193 (Supp. 1974-75).
3. *Id.*
4. *Id.* §§ 45-181 to -182, 45-305(A) (1956).
5. *Id.* § 45-101 (1956).
6. Percolating ground waters are waters which "ooze, seep or filter through the soil beneath the surface, without a defined channel, or in a course that is unknown and not discoverable from surface indications without excavation for that purpose." Clinchfield Coal Corp. v. Compton, 148 Va. 437, 446, 139 S.E. 308, 311 (1927).
7. It is not certain that the concept of underground streams with bed and banks has any basis in reality. C. CORKER, GROUND WATER LAW, MANAGEMENT AND ADMINISTRATION, NATIONAL WATER COMMISSION LEGAL STUDY No. 6, at 145 (1971).
8. ARIZ. REV. STAT. ANN. §§ 45-301 to -324 (1956), *as amended,* (Supp. 1974-75).
9. *See* Chasemore v. Richards, 11 Eng. Rep. 140 (H.L. 1859); Acton v. Blundell, 152 Eng. Rep. 1223 (Ex. 1843).
10. *See* L. MACK, GROUND WATER MANAGEMENT IN DEVELOPMENT OF A NATIONAL WATER POLICY 64-78, 95-100 (1971); Thomas, *Underground Sources of Our Water,* in THE YEARBOOK OF AGRICULTURE 1955, H.R. DOC. No. 32, 84th Cong., 1st Sess. 62-77 (1955).
11. *See* J. CHALMERS, SOUTHWESTERN GROUND WATER LAW. ARID LANDS RESOURCE INFORMATION PAPER No. 4 (1974); Comment, *Arizona's Coming Dilemma: Water Supply and Population Growth,* 2 ECOLOGY L.Q. 357, 366-68 (1972); Comment, *Economic Implications for Arizona's Ground Water Law,* 1972 LAW & SOC. ORDER 626, 631 n.26.
12. C. CORKER, *supra* note 7, at 146-47.
13. The question has been discussed by the Arizona supreme court. *Compare* Pima Farms Co. v. Proctor, 30 Ariz. 96, 245 P. 369 (1926), *with* Maricopa County Municipal Water Conservation Dist. No. 1 v. Southwest Cotton Co., 39 Ariz. 65, 4 P.2d 369, *modified,* 39 Ariz. 367, 7 P.2d 254 (1931). In *Pima Farms,* the court treated ground water moving through an Arizona aquifer as a "subterranean stream," apparently on the basis

logically interrelated, and they can scarcely be separated in law, as legislatures and courts in other states have begun to realize.[14] Arizona, however, has followed an anomalous path. In *Bristor v. Cheatham*,[15] decided in 1953, the Arizona supreme court, reversing itself on rehearing, declared authoritatively that Arizona ground waters are divided into two categories. The class of "natural percolating water"[16] is governed by a rule of private property said to be founded in earlier decisions growing out of claims to water rights on the public domain[17] and common law analogies. Under this rule, percolating ground water belongs to the owner of the soil, and his use is limited only by a doctrine of reasonableness; thus, the Arizona tradition of prior appropriation is not applicable to percolating ground water. The second category of ground water, underground channels or subterranean streams, was unaffected by the *Bristor* decision and remains as a public resource, subject to the existing appropriation law.[18]

In support of its decision, the *Bristor* court noted: "We can find no authority for the assumption that there exists any custom and usage to divert ground waters for irrigation purposes and thereby secure a prior right thereto. Under both the civil and common law, ground water belonged to the owner of the soil."[19] In calling attention to these rules, particularly the common law rule that subterranean streams were governed by the same law as surface streams, the court identified why underground streams were subject to appropriation in the early West, even before there were appropriation statutes such as those in Arizona and California.[20] But the statement did not take into account that the old law and tests relied on had reference, in the main, to an era of hand-dug wells, when submersible pumps, modern gas and electric

of a concession by the parties. In the *Maricopa County* case, the court held that water percolating through an aquifer lacks essential characteristics of a stream. "The first decision was correct, because a ground water aquifer has the characteristics of a stream for the essential purpose of determining the common source of water and hence identity of competing claimants. The second decision was correct in describing differences in observable physical characteristics in surface and underground water sources and in following the preponderance of judicial authority." C. CORKER, *supra* note 7, at 298. It failed, however, to state a convincing reason "why physical differences, such as lack of bed and banks in a groundwater aquifer, justify or require a legal distinction." *Id.* The difficulty of proving the existence of a definite underground stream will cause problems for those seeking to register claims under the Ground Water Registration Act. See text accompanying notes 100-03 *infra*.

14. *See* text & notes 78-84 *infra*.

15. 75 Ariz. 227, 255 P.2d 173 (1953), *rev'g on rehearing* 73 Ariz. 228, 240 P.2d 185 (1952). The original opinion had declared percolating ground waters to be public and subject to appropriation, relying on the severance of waters from the land effected by the Desert Land Act of 1877, 43 U.S.C. § 32 (1970).

16. 75 Ariz. at 230, 255 P.2d at 174.

17. *See* Howard v. Perrin, 8 Ariz. 347, 76 P. 460 (1904), *aff'd*, 200 U.S. 71 (1905).

18. *See* ARIZ. REV. STAT. ANN. § 45-101 (1956).

19. 75 Ariz. at 232, 255 P.2d at 176.

20. See ARIZ. REV. STAT. ANN. § 45-101 (1956), and an earlier version discussed in Howard v. Perrin, 8 Ariz. 347, 76 P. 460 (1904), *aff'd*, 200 U.S. 71 (1905); CAL. WATER CODE § 1200 (West 1971).

energy, and sophisticated deep well drilling were unknown. For that reason alone, large-scale irrigation from ground water sources was extremely limited or impractical.

Although the *Bristor* court relied on "approximately fifty years' operation under an announced rule" of the common law to support its decision,[21] the court's explanation for preferring that rule has never been entirely convincing, as is evident by its 3-2 split reversing a similarly divided court which had extended the appropriation law to percolating ground waters. The court also relied on existing legislation, adding that even if the custom of appropriation had existed, "it cannot prevail nor operate contrary to legislative rule."[22] The court was referring to the statutory classes of water subject to appropriation, surface water and water in definite underground channels.[23] Thus, the *Bristor* decision set the scene for the path which, as we will see, Arizona water law has followed for over 20 years.

WATER LAW DEVELOPMENTS

The Appropriation Doctrine

Despite *Bristor's* reliance on statutory classifications and dicta from earlier cases,[24] the background of Arizona *surface* water law shows a very early and strong preference for the appropriation doctrine.[25] This is not surprising, as it is the dominant doctrine of the semi-arid West. Nor is the preference inconsistent with the history of the region, for under the law of Spain and Mexico, surface streams,[26] as well as subsurface rights to minerals,[27] were part of the national patrimony, or, as known in our legal system, a public resource.[28]

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21. 75 Ariz. at 231, 255 P.2d at 175.
22. *Id.* at 232, 255 P.2d at 176.
23. The waters of all sources, flowing in streams, canyons, ravines or other natural channels, or in *definite underground channels*, whether perennial or intermittent, flood, waste or surplus water, and of lakes, ponds and springs on the surface, belong to the public and are subject to appropriation and beneficial use as provided in this chapter.

ARIZ. REV. STAT. ANN. § 45-101(A) (1956) (emphasis added).

24. *See* Fourzan v. Curtis, 43 Ariz. 140, 29 P.2d 722 (1934); Maricopa County Municipal Water Conservation Dist. No. 1 v. Southwest Cotton Co., 39 Ariz. 65, 4 P.2d 369 (1931), *modified*, 39 Ariz. 367, 7 P.2d 254 (1932); Howard v. Perrin, 8 Ariz. 347, 76 P. 460 (1904), *aff'd*, 200 U.S. 71 (1905).
25. *See* Boquillas Land & Cattle Co. v. Curtis, 213 U.S. 339 (1909), *aff'g* 11 Ariz. 128, 89 P. 504 (1907); Clough v. Wing, 2 Ariz. 371, 17 P. 453 (1888).
26. State v. Valmont Plantations, 346 S.W.2d 853 (Tex. Civ. App. 1961), *aff'd*, 163 Tex. 381, 355 S.W.2d 502 (1962).
27. Moore v. Smaw, 17 Cal. 199 (1861) (explaining that mineral rights did not pass from the Mexican government or the Crown without express language); *cf.* Fremont v. United States, 58 U.S. (17 How.) 542 (1855).
28. The Arizona supreme court's recent holding in Farmers Inv. Co. v. Pima Mining Co., 111 Ariz. 56, 523 P.2d 487 (1974), that ground water, like sand and gravel, is a product of state trust lands, is a reminder of that early history. The court declared a state lease invalid because it violated the Arizona Enabling Act, ch. 310, § 28, 36 Stat.

We know little about early ground water uses in the Southwest, except that hand-dug wells were the primary source and that there was some use of artesian flows and springs.[29] We know a great deal, however, about surface water uses from the earliest times. Archeologists and other scholars have shown us that long before Oñate, Coronado, or Columbus, the Southwestern Indians built extensive canals and works in order to irrigate from surface streams.[30] The first surface water irrigation by European immigrants occurred along the upper Rio Grande. In 1598, Don Juan de Oñate ordered an acequia, or ditch, dug near Española, New Mexico at the confluence of the Chama and the Rio Grande.[31] About 100 to 150 years later, irrigation from surface flows was practiced in Arizona and the westerly areas ruled by Spain, such as the Pueblo of Los Angeles.[32]

But Arizona water law, as we know it, did not originate with these Indians and Spaniards; it began with the occupation of the Southwest after the Mexican War. As provided in the Treaty of Guadalupe-Hidalgo in 1848,[33] and the subsequent Gadsden Purchase,[34] the United States was obliged to recognize only those property and personal rights that existed under the prior law of Spain and Mexico. Under this law, stream waters and minerals were the property of the sovereign unless

557 (1910), and article 10, section 1 of the Arizona constitution. The latter provides that the "natural products and money proceeds of any of said lands shall be subject to the same trusts" as the lands producing them referred to in the Enabling Act and granted by the United States. 111 Ariz. at 57, 523 P.2d at 489. *See generally* Weatherspoon, Water and the Arizona Trust Lands (1974) (unpublished manuscript in the University of Arizona College of Law Library).

Perhaps this decision will encourage reexamination of the legislative history of the Desert Land Act of 1877, 43 U.S.C. §§ 321-29 (1970), and other public land statutes that were construed by the United States Supreme Court to separate water rights and interests in land. *See* California Ore. Power Co. v. Beaver Portland Cement Co., 295 U.S. 142 (1935). We do not know whether Congress considered *ground* water rights at all in that legislation. Cases prior to the Desert Land Act do not tell us much about ground water law. Earlier decisions rely on common law distinctions, while applying the appropriation doctrine. *See* Strait v. Brown, 16 Nev. 317 (1881); Keeney v. Carillo, 2 N.M. 480 (1883). *But see* Act of Aug. 4, 1955, ch. 548, 69 Stat. 491.

29. *See* McKenzie v. Moore, 20 Ariz. 1, 176 P. 568 (1918); Howard v. Perrin, 8 Ariz. 347, 76 P. 460 (1904), *aff'd*, 200 U.S. 71 (1905); Strait v. Brown, 16 Nev. 317 (1881); Mosier v. Caldwell, 7 Nev. 363 (1872); Keeney v. Carillo, 2 N.M. 480 (1883). In Southwest Engineering Co. v. Ernst, 79 Ariz. 403, 407, 291 P.2d 764, 767 (1955), the court stated:

> It is to be recognized that from the time of the earliest settlers there has been some use of ground waters through artesian wells, windmills and centrifugal pumps set at or near the water table, but that deep-well pumping of waters in substantial quantities is a comparatively recent development.

30. Clough v. Wing, 2 Ariz. 371, 380, 17 P. 453, 456 (1888).

31. G. HAMMOND & A. REY, DON JUAN DE OÑATE, COLONIZER OF NEW MEXICO 1595-1628, vols. V-VI (Coronado ser. 1953). *See also* Clark, *Water Rights Problems in the Upper Rio Grande Watershed and Adjoining Areas*, 11 NATURAL RESOURCES J. 48 (1971).

32. Opening Brief for Appellants, app. A, City of Los Angeles v. City of San Fernando, 28 Cal. App. 3d 905, 105 Cal. Rptr. 77 (Ct. App. 1972).

33. Treaty with the Republic of Mexico, Feb. 2, 1848, 9 Stat. 922 (1848), T.S. No. 207.

34. Treaty with Mexico, Dec. 30, 1853, 10 Stat. 1031 (1853), T.S. No. 208.

expressly granted to occupiers or grantees.[35] Since the United States did not follow this Continental, or regalian, theory of a national resources patrimony, Congress was induced, by questionable means many times,[36] to confirm large grants in fee. This was done without adequate inquiry concerning mineral prospects in the grants and with no idea of the subtle implications for the future of water resources that were later uncovered in the implied reservation doctrine[37] and in ground water developments.[38]

This early and generous policy of the United States toward natural resources contains the origins of Western water law. By the time the Homestead Act of 1862[39] and various railroad land grants had opened the West to private ownership, customs governing water use in the area had already been established by the miners who swarmed into California by the thousands following the discovery of gold in 1848. During the long interval from the Gold Rush of '49 to the enactment of the 1866 mining law, the mining camp practice of prior appropriation spread. Being trespassers on the public domain,[40] the miners had no rights in the land which would entitle them to assert riparian claims[41] in abutting water bodies. In order to avoid continuous friction among themselves over the diversion of stream flows through sluice boxes, the miners formed mining districts along the creeks and adopted rules recognizing established uses of water. These rules and practices were not law, but they were enforced, and they encouraged stability in the camps. Later, they became the basis for legal rights.[42] In sharp con-

35. *See* authorities cited note 27 *supra*; *cf.* United States v. San Pedro & Canon del Agua Co., 4 N.M. 225, 17 P. 337 (1888).

36. *See* H. DUNHAM, GOVERNMENT HANDOUT-A STUDY IN THE ADMINISTRATION OF THE PUBLIC LANDS 1875-1891 (1941); W. KELEHER, MAXWELL LAND GRANT (rev. ed. 1964).

37. Arizona v. California, 373 U.S. 546, 595-601 (1963); FPC v. Oregon, 349 U.S. 435, 448 (1955). NATIONAL WATER COMM'N FINAL REPORT, WATER POLICIES FOR THE FUTURE ch. 13 (1973) [hereinafter cited as NATIONAL WATER COMM'N].

38. *See* Nevada *ex rel.* Shamberger v. United States, 165 F. Supp. 600 (D. Nev. 1958), *aff'd on other grounds*, 279 F.2d 699 (9th Cir. 1960).

39. Act of May 20, 1862, 12 Stat. 392, *as amended*, 43 U.S.C. §§ 161-263 (1970).

40. Much later, President Lincoln signed the writ ordering their ejectment, which confirmed the trespass in these circumstances. United States v. Parrott, 27 F. Cas. 416 (No. 15,978) (N.D. Cal. 1858).

41. Under the doctrine of riparian rights, the owner or possessor of land bordering on water has a property interest in the flow of water in the watercourse. Only a riparian owner has the right to take water from or obstruct the flow of water in the stream. *See* RESTATEMENT OF TORTS § 843 & comments (1939).

42. The military governor of California, Colonel Mason, declared by proclamation that: "From and after this date [Feb. 12, 1848] the Mexican laws and customs now prevailing in California relative to the denouncement of mines are hereby abolished." G. COSTIGAN, HANDBOOK ON AMERICAN MINING LAW 2 n.2 (1908). The term denouncement in Mexican mining law referred to the method of application for the acquisition of land for mining purposes. *See* Castillero v. United States, 67 U.S. (2 Black) 17 (1863); Winningham v. Dyo, 48 S.W.2d 600, 603 (Tex. Civ. App. 1932).

The miners also attempted to abrogate some rights.

> The regulations voted at the early miners' meetings applied to many things beyond the legal jurisdiction of such assemblages. For instance, they imposed

trast to riparian water rights, observed in most Eastern states and based on landownership and fortuitous location, the appropriation system devised by the miners treated water rights separate from landownership and measured the rights by actual beneficial use. These appropriation practices were later adopted by the farmers and homesteaders, many of whom were disillusioned miners.

In legislation passed in 1866,[43] the federal government granted official recognition to the system of water rights which had developed in the Western states.[44] Further recognition was given in the Desert Land Act of 1877,[45] which was aimed at transferring more of the public domain into private ownership. The Desert Land Act entryman was required to reclaim arid land, and the statute provided that he could appropriate the necessary water.[46] Correspondingly, all surplus water was ordered to be held free for the appropriation[47] and use of the public. This provision led to claims for two generations that Congress had given away the water on the public domain to the states and territories.[48] Indeed, several state constitutions and statutes declared the ownership of the water within their boundaries.[49] In actuality, the Desert Land Act officially recognized the water rights systems of the states and territories and validated water rights acquired under those systems.[50]

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banishment for Asiatics, whipping and banishment for practicing lawyers, and death for horse or mule stealing and for murder. But so far as they prescribed rules about mining matters they were, in general, legally valid. Trespassers upon the public domain, and far from the seat of government in actual distance and in the means of communication, the swarming thousands, suddenly engaged in mining in California had to create for themselves laws adapted to the extraordinary conditions which confronted them, and so well did they accomplish their task as to mining that the rules and customs adopted by the miners, first in California and later on in other territories and states, received the approval of the courts, of the local legislatures, and finally, of Congress.

G. COSTIGAN, *supra* at 3-5. *See* Morton v. Solambo Copper Mine Co., 26 Cal. 527, 532-33 (1864).

43. Act of July 26, 1866, ch. 262, § 9, 14 Stat. 251 (codified at 30 U.S.C. § 1 (1970)). This law was the first United States water law applicable to Arizona, if we do not include the recognition of existing water laws at the time of General Kearney's proclamation in Santa Fe and his Code of 1846, which was promulgated on his entry into the New Mexico Territory. *See* Kearney Code of Law, *Laws* § 1, *reproduced in* 1 N.M. STAT. ANN. at 106 (1953); *Id., Water causes, Stock marks, etc.* § 1, *reproduced in* 1 N.M. STAT. ANN. at 126 (1953); Letter from Gen. Kearney to Adj. General, Santa Fe, Sept. 22, 1846, *reproduced in* 1 N.M. STAT. ANN. at 65 (1970).

44. 30 U.S.C. § 51 (1970).

45. Act of March 3, 1877, ch. 107, 19 Stat. 377, *as amended*, 43 U.S.C. §§ 321-23 (1970).

46. 43 U.S.C. § 321 (1970).

47. This statute is examined in Bristor v. Cheatham, 75 Ariz. 227, 231, 234, 255 P.2d 173, 175, 177 (1953), *rev'g* 73 Ariz. 228, 240 P.2d 185 (1952).

48. See Goldberg, *Interposition—Wild West Water Style*, 17 STAN. L. REV. 1 (1964), for the best short reply to these claims.

49. *See, e.g.*, N.M. CONST. art. 16, § 2; WYO. CONST. art. 8, § 1; ARIZ. REV. STAT. ANN. § 45-101(A) (1956).

Even Montana's newly adopted constitution declares that: "All surface, underground, flood and atmospheric waters within the boundaries of the state are the property of the state for the use of its people and are subject to appropriation for beneficial uses as provided by law." MONT. CONST. art. 9, § 3(3) (adopted 1972). *See* Stone, *Montana Water Rights—A New Opportunity*, 34 MONTANA L. REV. 57 (1973).

The legislation left the choice of doctrine to the states and affirmed their power to establish their own procedures for acquiring water rights.[51]

Since statehood, Arizona's water law, as embodied in the constitution,[52] statutes, and controlling precedents, has rejected the doctrine of riparian rights[53] in favor of the principle of first in time, first in right and the empirical test that "[b]eneficial use shall be the basis, measure and limit to the use of water."[54] But, as we have already seen in *Bristor v. Cheatham*,[55] Arizona law relating to one category of ground water departed from these principles and developed a peculiar anomaly.[56]

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50. *Bristor* relied on this reasoning. *See* 75 Ariz. at 234, 255 P.2d at 177.

51. Misunderstanding over this issue, aided by the Court's decision in California Ore. Power Co. v. Beaver Portland Cement Co., 295 U.S. 142 (1935), is at the root of the continuing conflict over federal-state water rights and the reservation doctrine espoused in the Pelton Dam decision. *See* FPC v. Oregon, 349 U.S. 435 (1955); NATIONAL WATER COMM'N, *supra* note 37, ch. 13; Hanks, *Peace West of the 98th Meridian —A Solution to Federal-State Conflicts over Western Waters*, 23 RUTGERS L. REV. 33 (1968).

52. ARIZ. CONST. art. 17, § 1.

53. *See* Brasher v. Gibson, 101 Ariz. 326, 419 P.2d 505 (1966).

54. ARIZ. REV. STAT. ANN. § 45-101(B) (1956).

55. 75 Ariz. 227, 255 P.2d 173 (1953).

56. Before examining this feature of Arizona ground water law, a few interrelated areas of water law should not escape mention, though they must be put aside in this discussion.

First, Indian water rights. Many of these claims rest on ancient practices. Others are related to the government policy of confining nomadic people to reservations, a practice which is the basis of the "reserved right" first applied to a Montana tribe in Winters v. United States, 207 U.S. 564 (1908), and broadened in Arizona v. California, 373 U.S. 546, 598-601 (1963). Arizona reservation Indians have a double reason for being concerned about ground water rights in connection with the reservation doctrine because of the overlying property ownership concept of *Bristor*. *See* Complaint, United States v. City of Tucson, Civil No. 75-39 (D. Ariz., filed Feb. 21, 1975); Complaint, Papago Indian Tribe v. Pima Mining Co., Civil No. 75-51 (D. Ariz., filed Mar. 6, 1975). These suits, seeking a declaration of surface and ground water rights in the arid Upper Santa Cruz Basin of southern Arizona, name as additional defendants Farmers Investment Company, The Anaconda Company, American Smelting and Refining Company, Amax Copper Mines, Anamax Mining Company and the State of Arizona. The Ninth Circuit has already held in a Nevada case that the reservation doctrine is applicable to ground as well as surface waters. United States v. Cappaert, 508 F.2d 313 (9th Cir. 1974), *aff'g* 375 F. Supp. 456 (D. Nev. 1974). For a general discussion of reserved water rights, see NATIONAL WATER COMM'N, *supra* note 37, ch. 14.

Second, the "Pueblo water right." This was discovered or created for Los Angeles. *See* City of Los Angeles v. City of San Fernando, 28 Cal. App. 3d 905, 105 Cal. Rptr. 77 (Ct. App. 1972), *rev'd in part*, L.A. 30119 (Cal. S. Ct., May 12, 1975). *See also* City of San Diego v. Sloane, 272 Cal. App. 2d 663, 77 Cal. Rptr. 620 (Ct. App. 1969). This doctrine, establishing an open-ended municipal water right that expands with the population, has an uncertain historical basis. *See* Clark, *The Pueblo Rights Doctrine in New Mexico*, 35 N.M. HISTORICAL REV. 265 (1960).

Third, the broad subject of water quality. Water quality is related to matters of quantity, allocation, and distribution, as the salinity of the Colorado River has demonstrated for many years. *See International Boundary and Water Comm'n, United States and Mexico Minutes* No. 242, Aug. 30, 1973. Both state and federal water quality legislation has been enacted. *See* 33 U.S.C.A. §§ 1251-1376 (Supp. 1975); ARIZ. REV. STAT. ANN. §§ 36-1851 to -1869 (1974). State and federal legislation has undergone several improvements, and regulations and programs mandated by the legislation are under way.

The fourth point is water contracts contemplated by the Colorado River Basin Act

Arizona's Nonmanagement Ground Water Policies

The *Bristor* decision, in 1953, came as a shock to many for at least two reasons. First, in a semi-arid region the characterization of water as a public resource is at the heart of the appropriation concept. This view has always been the law of Arizona with respect to surface waters and waters in definite underground channels. Second, developments in ground water law throughout the West have moved consistently away from analogies to the riparian systems of humid regions.[57] Although Western judges have often repeated the common law dichotomy between subterranean streams and percolating ground waters, it must be remembered that they were not deciding the cases on common law grounds. The Arizona statutory inclusion of "definite underground channels" looks more toward the capture and beneficial use of an un-

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of 1968, 43 U.S.C. §§ 1501-56 (1970), which passed following the decision in Arizona v. California, 373 U.S. 546 (1963), and the decree in Arizona v. California, 376 U.S. 340 (1964). Section 304(b)(1) of the Act provides for master contracts for "[i]rrigation and municipal and industrial water supply" under the project, "with organizations which have power to levy assessments against all taxable real property within their boundaries." 43 U.S.C. § 1524(b) (1970). The Act also provides for "contracts subsidiary to the master contracts." 43 U.S.C. § 1524(b) (1970). This legislation has many implications for ground water uses since:

> Neither the contractor nor the Secretary shall pump or permit others to pump ground water from within the exterior boundaries of the service area of a contractor receiving water from the Central Arizona Project for any use outside said contractor's service area unless the Secretary and such contractor shall agree . . . that a surplus of ground water exists and that drainage is or was required.

Id. § 1524(c)(3).

The contract rights discussed here, and the quantities to be allocated, are being negotiated within the framework of *Arizona v. California* and the 1968 legislation. The contract rights, as such, do not involve the Arizona appropriation doctrine.

57. *See* State *ex rel.* Emery v. Knapp, 167 Kan. 546, 207 P.2d 440 (1949), *upholding* Kansas Gen. Stat. §§ 82a-701 to -720 (Supp. 1947).

> Heretofore we have approached the questions largely on the basis of individual interest alone. Under this declaration and other provisions of the act we now approach them upon the basis of the interest of the people of the state without losing sight of the beneficial use the individual is making or has the right to make of the water. Unused or unusable rights predicated alone upon theory become of little if any importance. Broad statements found in some of our opinions, such as "Every man through whose land a stream of water runs is entitled to the flow of that stream without dimunition or alteration." Shamleffer v. Council Grove Peerless Mill Company, 18 Kan. 24, must be disregarded or modified to harmonize with this declaration. The change is an appropriate one for the legislature to make. Individuals do not live alone in isolated areas where they, at their will, can assert all of their individual rights without regard to the effect upon others.

167 Kan. at 553, 207 P.2d at 447-48. The statute in question provided: "All water within the state of Kansas is hereby dedicated to the use of the people of the state, subject to the control and regulation of the state in the manner herein prescribed." Kan. Gen. Stat. § 82a-702 (Supp. 1947). This was passed by the legislature of a *riparian* state which also had adopted the appropriation doctrine. In upholding this statute as applied to ground water, another court said: "Of course, such a modification in the law of the state must recognize valid existing vested rights, but we do not regard a landowner as having a vested right in underground waters underlying his land which he has not appropriated and applied to a beneficial use." Baumann v. Smrha, 145 F. Supp. 617, 624-25 (D. Kan.), *aff'd*, 352 F.2d 863 (10th Cir. 1956); *see* Clark, *Ground Water Legislation in the Light of Experience in the Western States*, 22 MONTANA L. REV. 42 (1960).

appropriated public resource, than to the doctrinal direction adhered to in *Bristor*.

The decision in *Bristor* has overshadowed all other ground water developments. It was an unfortunate policy choice by a divided court and set Arizona on its course of nonmanagement.[58] The court chose a private property concept of water rights for percolating ground waters rather than the allocable public resource approach of prior appropriation law—the then existing law for surface waters and waters in definite underground channels.[59] Having thus classified percolating ground water as a private property right, the court faced the problem of controlling private withdrawals of such waters. *Bristor* involved a complaint filed by domestic well users against persons who, it was alleged, were pumping ground water and transporting it "approximately three miles for the development and irrigation of land not theretofore irrigated . . . [and] not using it for any beneficial purpose upon the lands from which the same is taken . . . ."[60] Rejecting the English common law rule of nonliability for water use, the *Bristor* court adopted the American rule of reasonable use: "one may extract such water for a reasonable, beneficial use of the land from which the same is taken."[61] Thus, *Bristor*, without a trial and on unusual facts, set the stage for continued controversy over the reasonableness and priorities of competing water uses.

The question of what constitutes "reasonable use" involves multiple variables, requiring the balancing of innumerable demands for many purposes. What of competing uses generally and transfers and preferences among uses? What about the increasing demands of municipalities, the urban user, and the mining industry? How shall they be managed? Should the mines, like municipalities, be authorized by law to condemn ground water rights? Additional problems, such as double cropping, are created by irrigation uses. The courts have struggled with the problem of reconciling old rights and new irrigation uses,[62] and the problem will continue since CAP does not contemplate new irrigation uses.[63] In short, what is the meaning of reasonable use in such a wide range of competing demands?

58. *See* C. MEYERS & A. TARLOCK, WATER RESOURCE MANAGEMENT 595 (1971).
59. ARIZ. REV. STAT. ANN. § 45-101(A) (1956).
60. 75 Ariz. at 235, 255 P.2d at 178.
61. *Id.* *See* State *ex rel.* Morrison v. Anway, 87 Ariz. 206, 349 P.2d 744 (1960); State *ex rel.* Lassen v. Harpham, 2 Ariz. App. 478, 410 P.2d 100 (1966).
62. *See* ARIZ. REV. STAT. ANN. §§ 9-511, -516, 12-1111, -1112 (1956); Citizens Util. Water Co. v. Superior Court, 108 Ariz. 296, 497 P.2d 55, *cert. denied*, 409 U.S. 1022 (1972), *noted in* "Judicial Review in Eminent Domain Proceedings," 15 ARIZ. L. REV. 593, 796 (1973). Of course, condemnation could not be an answer to reasonable use questions when water is pumped from beneath Indian, Federal, or state lands.
63. Unless and until otherwise provided by Congress, water from the Central Arizona Project shall not be made available directly or indirectly for the irriga-

Is it reasonable to withdraw over 3 billion gallons of water per year from four wells on 319 acres under a 10-year state lease and transport that water 7 miles from a critical ground water area?[64] For a time, it was believed that it was unreasonable to pump ground water in order to convey it away from the overlying land. The City of Tucson, however, has been permitted by two Arizona supreme court decisions[65] to obtain water from the Avra Valley 16 miles from the city, where it is withdrawn from farm lands the city owns. For what uses and what distances away from overlying lands may ground water supplies be transported? These and many other questions, such as the relationship between the legally-designated limits of critical areas and the physical boundaries of hydrologic basins and aquifers, or drainage and recharge areas, are raised in pending litigation.[66]

The reasonable use rule chosen in *Bristor* is analogous to the concept governing riparian *surface* uses in many humid Eastern states. But riparian analogies from the multiple criteria suggested in the *Re-*

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tion of lands not having a recent irrigation history as determined by the Secretary, except in the case of Indian lands, national wildlife refuges, and, with the approval of the Secretary, State-administered wildlife management areas.

43 U.S.C. § 1524(a) (1970). Section 1524(c)(3) provides that neither the contractor nor the Secretary shall pump or permit others to pump ground water from within the exterior boundaries of the service area of a contractor receiving water from the CAP for any use outside said contractor's service area unless the Secretary and such contractor shall agree that a surplus of ground water exists.

Experience has shown that virtually all irrigation projects eventually present drainage problems. *Cf.* Vantex Land & Dev. Co. v. Schnepf, 82 Ariz. 54, 308 P.2d 254 (1957) (which involved the capture of "waste" water originating in irrigation wells). A majority of the *Vantex* court declined to consider the plaintiff's right to appropriate such water, despite the inclusion of "waste or surplus water" in the appropriation statute. *See* ARIZ. REV. STAT. ANN. § 45-101(A) (1956). The court said: "There is much interesting discussion in the briefs concerning the question whether the plaintiff can under our statutes appropriate this waste water. We think this question is immaterial to a disposition of the case and do not pass upon it." 82 Ariz. at 57, 308 P.2d at 256.

The quoted section of the CAP legislation does not anticipate the question of prospective claims under the reasonable use doctrine, where, over a long period of time, imported CAP water may raise aquifer levels in the service area. The statute provides that the Secretary and contractor can agree "that a surplus of ground water exists and that drainage is or was required." But ground waters in areas recharged "indirectly" from downward percolating "waste" or "tailwater" imported from the CAP should not, to twist a metaphor, become a windfall to private pumpers who may not be subject to the Secretary's or contractor's authority and are presently governed only by the reasonable use doctrine.

64. *See* Farmers Inv. Co. v. Pima Mining Co., 111 Ariz. 56, 57, 523 P.2d 487, 488 (1974).

65. Jarvis v. State Land Dep't, 106 Ariz. 506, 479 P.2d 169 (1970), *modifying* 104 Ariz. 527, 456 P.2d 385 (1969).

66. *See* Farmers Inv. Co. v. State Land Dep't, No. 11439-2 (Ariz. S. Ct., filed Sept. 17, 1974); Farmers Inv. Co. v. Anaconda, Civ. No. 1756 (Ariz. Ct. App., filed Oct. 15, 1974); Farmers Inv. Co. v. Anaconda, No. 116542 (Pima County Super. Ct., filed Nov. 24, 1969). Also pending is a sequel to Jarvis v. State Land Dep't, 106 Ariz. 506, 479 P.2d 169 (1970), relative to issues raised in a report prepared by a special master on order of the Arizona supreme court. In another recent case, a state lease of ground water rights was cancelled for failure to sell to the highest bidder, in the same manner required for timber, stone, and gravel. Farmers Inv. Co. v. Pima Mining Co., 111 Ariz. 56, 523 P.2d 487 (1974), *discussed in* ROCKY MTN. MIN. L. NEWSLETTER, Nov. 1974, at 2.

statement (Second) of Torts[67] for determining what is a reasonable use do not offer ready answers. Similarly, the Restatement's proposed rule of nonliability for *ground* water withdrawals offers no ready framework for resolving disputes over liability for overdrafts. Moreover, it incorporates the dubious category of underground streams.[68] Thus, these vague standards and the chameleon character of reasonable use are combined in Arizona water law.

Developments in Other Western States

A review of ground water law developments in other Western states gives some insight into their handling of water resources problems. Decisions of the highest court of New Mexico interpreting the Desert Land Act have produced ground water doctrines which differ from those of Arizona,[69] although both states were admitted to the Union under the same enabling legislation.[70] New Mexico has always applied the appropriation doctrine to surface waters, and, in contrast to Arizona, the court extended it to ground water in 1927.[71] Since that time the doctrine has been modified by administrative regu-

67. The determination of the reasonableness of a use of water depends upon a consideration of the interests of the riparian proprietor making the use, of any riparian proprietor harmed by it and of society. Factors which affect the determination include the following:
(a) The purpose of the respective uses,
(b) The suitability of the uses to the watercourse or lake,
(c) The economic value of the uses,
(d) The social value of the uses,
(e) The extent and amount of the harm caused,
(f) The practicality of avoiding the harm by adjusting the use or method of use of one proprietor or the other,
(g) The practicality of adjusting the quantity of water used by each proprietor,
(h) The protection of existing values of land, investments and enterprises, and
(i) The burden of requiring the user causing the harm to bear the loss.
RESTATEMENT (SECOND) OF TORTS § 850B (Tent. Draft No. 17, 1971).

68. 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 withdrawal of water causes unreasonable harm through lowering the water table or reducing artesian pressure,
(b) The ground water forms an underground stream, in which case the rules stated in § 850A to 857 are applicable, or
(c) The withdrawal of water has a direct and substantial effect upon the water of a watercourse or lake, in which case the rules stated in §§ 850A to 857 are applicable.
Id. § 858A.

69. *Compare* State *ex rel.* Bliss v. Dority, 55 N.M. 12, 225 P.2d 1007 (1950), *with* Bristor v. Cheatham, 75 Ariz. 227, 255 P.2d 173 (1953).

70. Act of June 20, 1910, ch. 310, § 28, 36 Stat. 557.

71. *See* State *ex rel.* Bliss v. Dority, 55 N.M. 12, 225 P.2d 1007 (1950); Yeo v. Tweedy, 34 N.M. 611, 286 P. 970 (1929). *See generally* City of Albuquerque v. Reynolds, 71 N.M. 428, 379 P.2d 73 (1962); Spencer v. Bliss, 60 N.M. 16, 287 P.2d 221 (1955).

lations requiring retirement of surface water rights as a condition to new appropriations of ground water.

In the other Four Corners states there also have been divergent views on the allocation of ground water. Utah, for example, followed a winding doctrinal path from the English rule, under which percolating waters are part of the soil, toward correlative rights,[72] and, finally, approval of the appropriation doctrine.[73] Recently, in litigation over declining artesian well pressure, Utah added a "rule of reasonableness"[74] to govern the method of diversion. Resolving a dispute between householders and an incorporated city, the Utah court modified its earlier stand toward a property right in hydrostatic pressure.[75] Colorado, which never accepted the permit system for surface waters that was adopted 50 or more years ago in most of the other Western states, had no ground water legislation until 1965.[76] During a brief interval in the 1960's, "designated" or nontributary sources were thought to be governed by reasonable use or a common law rule.[77] More recently, Colorado has adopted a doctrine of maximum use[78]

72. Under the doctrine of correlative rights, adopted by the California supreme court in Kate v. Walkinshaw, 141 Cal. 116, 74 P. 766 (1903), owners of land overlying an aquifer must share the water, "giving to each a fair and just proportion." Persons removing the water for use on distant lands are subject to the doctrine of prior appropriation as among themselves; their rights must yield to those of an overlying landowner who had made a prior use of the water, but they can acquire prescriptive rights against overlying landowners who have not made such use.

73. *See* Current Creek Irrigation Co. v. Andrews, 9 Utah 2d 324, 344 P.2d 528 (1959).

74. Wayman v. Murray City Corp., 23 Utah 2d 97, 458 P.2d 861 (1969).

75. Hydrostatic pressure occurs in a geologically-confined aquifer having a pressure surface at a higher level than the main body of confined water. It is this pressure which causes water to flow without pumping from artesian wells. When the pressure surface drops below the level of the main body of water, as can result when the aquifer is pumped, the artesian well ceases to flow. Hence, the dispute between artesian well owners and other users of underground water. *See generally* Crosby, *A Layman's Guide to Groundwater Hydrology*, in C. CORKER, *supra* note 7, at 66-79.

76. *See* The 1965 Ground Water Management Act, COLO. REV. STAT. ANN. §§ 148-18-1 to -36 (Cum. Supp. 1971).

77. In Whitten v. Coit, 153 Colo. 157, 385 P.2d 131 (1963), the Colorado supreme court held nontributary groundwater to be beyond the court administered prior appropriation law applicable to tributary ground water. The nontributary source was said to be the property of the overlying landowner and subject to reasonable use.

78. COLO. REV. STAT. ANN. §§ 148-18-1 to -38 (Cum. Supp. 1971). The 1965 legislation attempts to preserve the distinction created in Whitten v. Coit, 153 Colo. 157, 385 P.2d 131 (1963), by applying a permit system to "designated ground water."

The 1969 Water Right Determination and Adjudication Act, COLO. REV. STAT. ANN. §§ 148-21-1 to 148-21-45 (Cum. Supp. 1969), applies surface water appropriation rules to tributary ground water. This has long been the law of Colorado. *See* Safranek v. Town of Limon, 123 Colo. 330, 228 P.2d 975 (1951). The 1969 legislation declares a state policy "to integrate the appropriation, use and administration of underground water tributary to a stream with the use of surface water, in such a way as to maximize the beneficial use of all of the waters of this state." COLO. REV. STAT. ANN. §§ 148-21-1 to -45 (Cum. Supp. 1969). Problems of classification are resolved by the Ground Water Commission's designation of the area or source. *See In re* Water Rights in Irrigation Div. No. 1, Irrigation Dist. No. 1, — Colo. —, 510 P.2d 323 (1973), *discussed in* Note, *Tributary Ground Water and Change-of-Place-of-Use Rules in Designated Ground Water Basins in Colorado*, 45 U. COLO. L. REV. 229 (1973).

In Kuiper v. Lundvall, —Colo. —, 529 P.2d 1328 (1974), the Colorado supreme

based on appropriation law, "modified to permit the full economic development of designated ground water resources."[79]

Other Western states, such as Idaho, have also restricted the exploitation of ground water resources.[80] Montana, for years a laggard in this field of law, has modernized its legislation so as to limit private property interests in ground water.[81] Kansas, a dual system riparian-appropriation state, did this 25 years ago without depriving anyone of property rights, as measured by the empirical test of actual use.[82] Kansas is a strong example of the clear trend to enact ground water controls, even in states that recognized riparian surface water rights. In these and other states,[83] the legislatures have been moved to recognize the legal as well as the physical and hydrological interrelationships between most ground and surface water sources by providing regulations, such as the permit systems, which govern withdrawals from both sources.[84]

Controls over Water Use in Arizona

Although Arizona adopted the appropriation doctrine long before statehood in 1912, it was not until 1919 that a permit system was enacted.[85] This legislation, patterned after Oregon's 1909 law,[86] was generally similar to the type passed over 50 years ago in all of the Western states except Colorado and Montana.[87] Arizona's 1919 sur-

court reversed a lower court's holding that the 1965 legislation was unconstitutional and held, inter alia, that ground water which moved at an assumed rate of 237.5 feet per year and would require 178 years to reach one river and 356 years to reach another was not tributary in character. The lower court opinion, dated July 10, 1973, is reported in 4 ENVIRONMENTAL L. REP. 20653. *See* Harrison & Sandstrom, *The Ground-Water-Surface Water Conflict and Recent Colorado Legislation*, 43 U. COLO. L. REV. 1 (1971).

79. COLO. REV. STAT. ANN. § 148-18-1 (Cum. Supp. 1971)

80. For developments in Idaho ground water law since 1951, see Baker v. Ore-Ida Foods, Inc., 95 Idaho 525, 513 P.2d 627 (1973). IDAHO CODE § 42-237a(g) (Supp. 1974), empowers the department of water resources to supervise and control pumping levels and prohibit withdrawals from wells that affect prior surface or ground water rights and to adjust withdrawal rates to conform to "future natural recharge."

81. *See* MONT. REV. CODES ANN. §§ 89-2914 to -2918, -2926 to -2936 (Supp. 1974), enacted as a result of the new Montana constitution. MONT. CONST. art. 9, § 3(3) provides: "All surface, underground, flood, and atmospheric waters within the boundaries of the state are the property of the state for the use of its people and are subject to appropriation for beneficial uses as provided by law." *See* Stone, *supra* note 49, at 57. For earlier legislation, see Clark, *supra* note 57, at 42.

82. *See* discussion note 57 *supra*.

83. *See* Legislative Bill 975, [1974] Neb. Sess. Laws 937; N.D. CENT. CODE § 61-01-26 (Supp. 1973); S.D. COMPILED LAWS ANN. § 46-17A-1 (Supp. 1974); 5 WATERS AND WATER RIGHTS ch. 25 (R. Clark ed. 1972).

84. Ten years ago these developments were examined in Clark, *Groundwater Management: Law and Local Response*, 6 ARIZ. L. REV. 178 (1965). Changes during the next 5 years are found in 5 WATERS AND WATER RIGHTS ch. 25 (R. Clark ed. 1972).

85. Ch. 164, [1919] Ariz. Sess. Laws 278, *as amended*, ARIZ. REV. STAT. ANN. §§ 45-101 to -109 (1956), *as amended* (Supp. 1974-75).

86. *See generally* ORE. REV. STAT. §§ 537.110 to -.990 (1974).

87. Wyoming enacted the first such legislation in 1890. *See* Farm Inv. Co. v. Carpenter, 9 Wyo. 110, 61 P. 258 (1900) (reviewing and upholding the legislation).

face water legislation, which also applied to water in "definite underground channels,"[88] remains, with some modification, the law today. It provides that these categories of water are subject to appropriation and vests control over their administration in the State Land Department.[89]

General controls over ground water withdrawals were not enacted as part of the original permit systems in Western states. Oregon and New Mexico, in 1927, were the first states to adopt such legislation.[90] In more recent times, ground water legislation of various kinds has been adopted in all of the Western states, including Colorado[91] and Montana,[92] although neither of these states had adopted a permit system originally. California has only limited controls over ground water and is without administrative control over percolating ground water.[93] The necessity for controls over ground water as well as surface water has been recognized by the National Water Commission which has strongly recommended the adoption of permit systems in all states, even those in humid regions.[94]

Before Arizona's permit system was adopted in 1919, during a time when there were few large ground water withdrawals due to the undeveloped technology, the state's courts dealt with disputes over ground waters on the public lands.[95] The situation changed sharply during the 1930's and 1940's, however, and ground water withdrawals increased rapidly. During this period there were no controls over the withdrawals of percolating ground waters. The first ground water legislation was passed in 1945[96] after considerable struggle and compromise which produced wholly inadequate controls. In 1948, the current ground water legislation was enacted.[97] Its principal feature is the authority granted to the State Land Department to designate critical

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The permit system is an original contribution to American administrative law by an engineer, Elwood Mead, who was also a teacher, author, and Commissioner of Reclamation.

88. ARIZ. REV. STAT. ANN. § 45-101(A) (1956).

89. ARIZ. REV. STAT. ANN. § 45-102 (1956) (surface waters); *Id.* § 45-302 (ground waters in designated areas).

90. *See* Gen. Laws of Ore., ch. 410, §§ 1-10 (1927) (codified at ORE. REV. STAT. §§ 537.505 to -.795 (1974)); Laws of New Mexico 1927, ch. 182 (codified at N.M. STAT. ANN. 75-11-1 to -36 (1953)).

91. COLO. REV. STAT. ANN. §§ 148-18-1 to -38, 148-21-1 to -45 (Cum. Supp. 1971).

92. MONT. REV. CODES ANN. §§ 89-2911 to -2918, -2926 to -2936 (Supp. 1974).

93. *See* CAL. WATER CODE §§ 1200-1271 (West 1971). Section 1200 refers to "subterranean stream flowing through known and definite channels." There are no administrative controls over percolating ground waters. *See* 1 H. ROGERS & A. NICHOLS, WATER FOR CALIFORNIA § 250, at 359 (1967), *citing* Katz v. Walkinshaw, 141 Cal. 116, 74 P. 766 (1903).

94. NATIONAL WATER COMM'N, *supra* note 37, ch. 7.

95. *See* McKenzie v. Moore, 20 Ariz. 1, 176 P. 568 (1918); Howard v. Perrin, 8 Ariz. 347, 76 P. 460 (1904), *aff'd*, 200 U.S. 71 (1905).

96. Ch. 12, [1945] Ariz. Sess. Laws 1st Spec. Sess. 508 (1947).

97. Ch. 5, § 1, [1948] Ariz. Sess. Laws 6th Spec. Sess. 600 (1949), *as amended* ARIZ. REV. STAT. ANN. §§ 45-301 to -324 (1956), *as amended*, (Supp. 1974-75).

ground water areas in which new withdrawals are restricted. Nine areas were designated between 1949 and 1965, and the boundaries of some of the areas have been extended.[98] More recently, in December 1974, a tenth critical area was designated.[99] Although the advent of the permit systems improved controls over water use, uncertainty has prevailed over the status of various claims and water uses.

The Water Rights Registration Act of 1974 is a step in the direction of clarification of claims and recordkeeping. The Act provides for notice in writing of all claims and contemplates that one claiming an appropriative right has the burden of proving his use.[100] Further, no rights established by adverse use or possession are to be recognized. The validity of claims originating before the 1919 water laws, however, is not affected by the new registration requirements.[101] Unfortunately, the new Act relates only to surface waters and waters in definite underground channels[102] and does not include Arizona's largest ground water source—percolating waters. This is unquestionably the major weakness in the legislation and will limit its effectiveness.[103]

The "definite underground channels" provision in Arizona, which recognizes that category of water as a public resource, portends some conflicts under the Water Rights Registration Act. These conflicts are imminent along streams such as the Santa Cruz and the San Pedro, where the underflow is being tapped. Whether such a source is in fact a definite underground channel, a conclusion assumed in litigation about 50 years ago,[104] and, therefore, governed by the rule of priority, will have to be reexamined. Proof of the category of underground water will be difficult, and the problem will be increased as well owners along such streams register their wells and claim priorities in a source of water that, in hydrological terms, is the subflow of a stream. The Arizona categorization of ground waters will present other difficulties. For example, claimants without adjudicated rights will want to know

98. *See* Maps of critical ground water areas, Ground Water Div., Ariz. State Land Dep't, Phoenix, Ariz.

99. Letter from G.R. Walsh, Hearing Officer, Water Rights Div., Ariz. State Land Dep't to Robert Emmet Clark, Feb. 7, 1975.

100. ARIZ. REV. STAT. ANN. § 45-190 (Supp. 1974-75).

101. *Id.* § 45-181.

102. *See id.* § 45-180(3).

103. One could make minor corrections in the statute such as adding a comma after "predecessors" in section 45-181(B), and one could wish to change the phrase in section 45-189 to read "to use beneficially all or any part . . . ."

104. *See* Pima Farms Co. v. Proctor, 30 Ariz. 96, 245 P. 369 (1926). *But see* Maricopa County Municipal Water Conservation Dist. No. 1 v. Southwest Cotton Co., 39 Ariz. 65, 4 P.2d 369, *modified*, 39 Ariz. 367, 7 P.2d 254 (1931). *See also* Parker v. McIntyre, 47 Ariz. 484, 56 P.2d 1337 (1936) (undeveloped springs appropriable); Fourzan v. Curtis, 43 Ariz. 140, 29 P.2d 722 (1934) (developed springs not subject to appropriation); Brewster v. Salt River Valley Water Users' Ass'n, 27 Ariz. 23, 229 P. 929 (1924) (drainage water from irrigation not subject to appropriation).

whether to claim prior rights by appropriating a specified quantity or flow beneficially used. Alternatively, they could simply refrain from registering their wells, relying on the source being classified as percolating ground water which would be subject only to the limitation of reasonable use.

A totally distinct problem has been created by Arizona's nonmanagement approach to water resources. Reference has been made to the extensive public land holdings of the United States and the State of Arizona. The importance of the ownership of the overlying land, however, was largely ignored until the Arizona supreme court invalidated a state lease on land from which ground water was being withdrawn.[105] The decision emphasized the potential impact of ground water law on these different types of overlying lands.

Overlying the ground water aquifers of Arizona are various types of private and public lands, Indian lands, national parks and forests, and state lands. If the reasonable use rule of *Bristor* is to continue to be the law for private farmers and lessees of state lands, it also must be made applicable to other lands, including military reservations and lands of the United States[106] and the State of Arizona. Ground water is currently being withdrawn from beneath these lands, and little or no compensation[107] is being paid into the state or federal treasuries for the use and depletion of this public resource. Under Arizona law, it seems clear that the United States and the state can and should participate in litigation that involves proposed allocations of water resources in a ground water aquifer over which either sovereign is an overlying owner. It is equally clear that piecemeal litigation over diminishing ground water supplies cannot result in a reasonable allocation, or any allocation at all, among all of the overlying owners, many of whom are private landowners who are not parties to the litigation and who, under *Bristor*, have a property right in the stored resource. While solutions to this aspect of the problem are not readily available, it is obvious that comprehensive legislation and the state water plan must consider the character of the overlying land.

TWO PROPOSALS FOR IMPROVING ARIZONA GROUND WATER LAW

Arizona's ground water aquifers are being mined.[108] Stated simply, this means that the recharge rates do not and cannot equal present

105. See text & note 64-65 *supra.*
106. See discussion note 56 *supra.*
107. *See generally* Weatherspoon, *supra* note 28.
108. *See* ARIZONA WATER COMM'N, ANNUAL REPORT ON GROUND WATER IN ARIZONA, SPRING 1972 TO SPRING 1973, bulletin 7 (1974).

and projected withdrawals. Arizona's experience with surface water shortages and the state's 50-year struggle over the resources of the Colorado River, culminating in the 1968 legislation authorizing the CAP,[109] should make it plain why ground water conditions in the state call for legislative action and long-range management plans and *not* more piecemeal confrontations in the courts. The two proposals outlined below are intended to provide a basis for complementary legislation and a statewide water management plan.

Registration Program for All Wells

Legislation should be enacted requiring the registration of all wells except those certified to withdraw minimum quantities of water for domestic and stockwatering purposes.[110] Wells above a specified capacity should be subject to a compulsory metering and testing program to continue for 3 to 5 years, or longer. During this period all wells should be registered. The drilling of any new wells or the deepening or enlarging of old wells should be prohibited for the test period, with provision for carefully supervised exceptions in hardship situations or where new wells are part of the testing program and will provide needed data. Wells currently under construction or in a specified planning stage should be registered and allowed to operate during the testing period.

The new law should anticipate and establish procedures for settling claims in areas where no wells exist and where none were in the planning stage before the moratorium was declared. The legislation can provide for a method to evaluate these claims, many of which will be for nominal sums where landowners claim water rights but in fact have no wells and are not using ground waters. There should be an appropriation by the legislature to purchase these claims.

At the end of the statutory test period, all registered wells should be certified by date, volume, and location. The well owner should be issued a certificate establishing his claimed right based on existing uses. These rights would be subject to withdrawal reductions in case of declining water levels or to stabilize recharge and ensure a continued long term user supply.[111]

109. *See* Colorado River Basin Project Act, 43 U.S.C. §§ 620, 1501-56 (1970).

110. ARIZ. REV. STAT. ANN. § 45-301 (1956), paragraph 3, should be amended to limit or eliminate certain classes of uses and utility withdrawals from the exempted well and favored treatment class. An example would be schools and institutions teaching the science of agriculture. The statute provides that if they cease to teach the subject, "the right to produce water from such well for irrigation purposes shall terminate."

111. *See* City of Albuquerque v. Reynolds, 71 N.M. 428, 379 P.2d 73 (1962) (ground water permit conditioned on the retirement of surface rights); Spencer v. Bliss, 60 N.M. 16, 287 P.2d 221 (1955); Bliss, *Administration of Ground Water in New Mexico*, 43 J. AM. WATER WORKS ASS'N 435 (1951).

Procedures also should be established requiring the attorney general to adjudicate all conflicting water rights appearing in the records of the State Land Department. After a complete hydrogeological study, the attorney general should proceed with the adjudication, basin by basin, by geographical townships, or by areas specified by the legislature. The certificate of claimed right and the later adjudicated water right of each well owner would then be a vested, valuable, and transferrable property right.

At the expiration of the moratorium period, the legislature should declare all ground water resources which have not been placed on record through registration, decrees, or by contract to be a *public* resource, subject to prior vested rights and available for use only upon application under the licensing system. Permits should thereafter be issued for a term varying with the use, with full attention to the relative value of various uses to the public, as set forth in the existing laws governing surface waters.[112] All new applications and transfers of rights thereafter would be subject to aquifer conditions and long-range needs as planned for each area or as approved by the legislature or appropriate local government bodies.

The State as a Critical Area

The second general proposal for improving the ground water situation in Arizona can be realized immediately. The legislature should declare the entire state a critical ground water unit and prohibit new withdrawals, with exceptions for minimum withdrawals as suggested in the first proposal.[113] The legislation should provide for prompt hearings and procedures that would determine, through physical evidence, available hydrological studies, and other data, which basins, aquifers, or areas should be exempt from the withdrawal prohibition and under what conditions. As the physical resources of each area became more fully understood, and a "safe yield" can be projected or a calculated program of mining the water supply developed, new wells should be permitted under the licensing program outlined above, taking into account what is "economically feasible" for given areas, or what is most desirable in terms of an overall, long-range state water plan.[114] This program could be accomplished within the police power of the state

112. *See* ARIZ. REV. STAT. ANN. § 45-147 (Supp. 1974-75).
113. *See* text accompanying note 110 *supra*.
114. *See* ARIZ. REV. STAT. ANN. § 45-2501 (Supp. 1974-75) (state water plan); CAL. WATER CODE §§ 4999-5008 (West 1971) (Ground Water Recordation Act). Groundwater pumpers in four southern California counties are required to file notices for quantities extracted over 25 acre feet per year. The notice is prima facie evidence of the quantities withdrawn. *Id.* § 5007. *See also* Reis, *Legal Planning for Ground Water Production*, 38 S. CAL. L. REV. 484 (1965).

and would afford protection to existing property interests.[115] The burden of proof should be placed on ground water users to produce evidence to support their continued uses where known or estimated withdrawal rates are depleting an aquifer. A plan should be developed to control future uses, irrespective of whether the aquifer is stabilized or must of necessity be mined.[116] In addition, the legislature should appropriate funds for hydrologic studies and other surveys which would complement the work of the United States Geological Survey and other federal agencies and provide maximum information for decisionmaking.

There are at least two pressing reasons that support this proposal. First, although the 1948 ground water legislation provided authority for establishing critical ground water areas, it gave special preference to agriculture and did not anticipate the modern urban growth rate. The law has left the State Land Department practically helpless in its attempts to control nonagricultural uses in critical areas. Currently, before any area can be declared critical, it must be shown that the area does not have "sufficient ground water to provide a reasonably safe supply for irrigation of the cultivated lands in the basin at the then current rates of withdrawal."[117] There is nothing in the present law, however, to prevent a landowner in a critical area from developing a water supply for municipal or domestic uses, or to prevent a water utility from withdrawing water to supply its industrial and manufacturing users. As a result, total withdrawals may well exceed agricultural uses.[118]

Second, controls over the drilling of new wells are necessary. The present law requires only that anyone proposing to drill a well of any kind file a Notice of Intent to Drill.[119] During fiscal year 1974, 1,489 notices of intent were filed with the State Land Department.[120] My review of earlier Land Department reports shows the following:[121] in 1972-73 there were between 1,100 and 1,200 intentions filed, and in

115. Southwest Eng'r Co. v. Ernst, 79 Ariz. 403, 291 P.2d 764 (1955) (critical ground water legislation held not to constitute a taking of property without due process of law).

116. Mining of ground water is common in Texas, where the overlying owner is considered to have an absolute right to waters under the land. *See Groundwater Management-Current Issues*, THE CROSS SECTION, Sept. 1974, at 1, col. 4. In other states, such as Idaho, ground water mining is forbidden by law, *see* Baker v. Ore-Ida Foods Inc., 95 Idaho 575, 513 P.2d 627 (1973), or, as in Colorado, is administratively regulated. *See* Kuiper v. Lundvall, —Colo. —, 529 P.2d 1328 (1975).

117. ARIZ. REV. STAT. ANN. § 45-301(1) (Supp. 1974-75).

118. STATE LAND DEP'T, ARIZONA LANDMARKS, 61ST ANN. REP. 1972-73, 23 (1973).

119. "No person shall drill or cause to be drilled any well for the development and use of ground water without first filing notice of intention to drill with the department . . . ." ARIZ. REV. STAT. ANN. § 45-305(A) (1956).

120. STATE LAND DEP'T, ARIZONA LANDMARKS, 62D ANN. REP. 1973-74, 14 (1975).

121. These figures are from previous annual reports of the State Land Department for the years indicated.

1971-72 there were 826 intentions filed. For the period 1970-71 there were 611 notices filed and 56 applications for permits to drill irrigation wells in critical areas. During 1969-70 there were 490 intentions and 48 permits issued. In addition to the obvious increase in legal drilling demands, the notice requirement is unknown to some drillers and may be openly violated by others, undoubtedly resulting in additional drilling activity.

The Arizona legislature should follow the lead of other states[122] and enact legislation to control well drilling. Well drillers could be licensed and required to supply accurate data on all new wells. This would result in better controls and would also aid the research in particular areas. The State Land Department does not have the staff to enforce compliance with the present Intention to Drill requirement. Current reliance, it seems, is placed chiefly on good faith, voluntary compliance with the statute.

CONCLUSION

As a result of Arizona's nonmanagement approach to ground water, this state, with one of the fastest growing population rates in the nation,[123] is late, very late, in recognizing the unique and long term importance of ground water for all types of uses. The rate of increase in numbers of wells and ground water withdrawals and the existing conditions in the central valleys of the state into which Colorado River water is to be imported make it essential that legislation be enacted which will provide a statewide approach to ground water management.

122. *See, e.g.*, State v. Myers, 64 N.M. 186, 326 P.2d 1075 (1958); 11 N.M. STAT. ANN. §§ 75-11-13 to -18 (1953); N.D. CENT. CODE §§ 43-35-01 to -22 (Supp. 1973).
123. *See* Comment, *supra* note 11, at 357-58.