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THE LEGAL FRAMEWORK FOR AQUIFER ISSUES

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Uncovering the Hidden Resource:
Groundwater Law, Hydrology and Policy in the 1990s

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THE LEGAL FRAMEWORK FOR AQUIFER ISSUES

I. Introduction

A. Summary

The law of aquifer-stream relationships got off on the wrong track. The standard pattern at first was for states to adopt one legal doctrine for water in streams and a different one for what was usually called percolating groundwater. The problem with using two doctrines is that if a stream and groundwater are sufficiently connected to constitute a single water supply, serious coordination problems are unavoidable as water demands increase. Many states still use two doctrines for physically connected streams and aquifers, but most western states have now opted for a single doctrine -- the appropriation doctrine. Although a single doctrine is a major step forward, some complex legal issues remain. These issues arise mainly from physical differences between streamflow and groundwater -- specifically, the slower, more diffuse, and less readily ascertainable movement of groundwater.

Apart from aquifer-stream relationships, the recharge of aquifers raises some interesting legal issues centering around property rights. In most states, the courts and legislatures have barely begun to address these issues.

This paper examines the major legal issues associated with aquifer-stream relationships and with aquifer recharge.

B. General References

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Norman W. Thorson, Storing Water Underground: What's the Aqui-Fer?, 57 Neb. L. Rev. 581 (1978).

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II. Aquifer/Stream Relationships

A. States With Separate Legal Doctrines

1. When one water law doctrine governs an aquifer and a different one governs a physically connected stream, the question arises of whether -- and if so, on what basis -- a water right in "one" source will be protected against interference by the exercise of a water right in the "other" source.

2. Many dual-doctrine states have no law on this question. Where the question has been litigated, some courts have applied the law of streams, which usually protects stream users over groundwater users. Most of these cases involved high capacity wells or wells located close to the stream. Other courts have applied the law of percolating groundwater, which usually benefits groundwater users at the expense of stream users. See Davis, supra.

B. States With a Single Legal Doctrine: Prior Appropriation

1. The basic rule of the appropriation doctrine is that first in time is first in right. This rule has long been applied to allocate water among stream users, so a substantial body of law exists on how the rule should operate in that setting. The rule has been extended to aquifer-stream relationships more recently, and there is less certainty about how it should apply to some issues that have arisen occasionally between competing stream users but are likely to arise more often or more dramatically in aquifer-stream disputes. The focus below is on those issues.

2. Delayed impact of pumping. Among appropriators located on a stream, a junior appropriator's upstream diversion (or cessation of diversion) typically will affect senior appropriators downstream fairly quickly. In contrast, when a junior appropriator pumps (or quits pumping) groundwater, the impact on a connected stream that serves senior appropriators will be delayed for some time unless the well is close to the stream. How should the priority rule be applied when the impact of pumping (or ceasing to pump) is long delayed?

a. Anticipatory closure of junior wells. One of the few

cases on time lag is an early Nebraska case that involved stream appropriators. In State ex rel. Cary v. Cochran, 138 Neb. 163, 292 N.W. 239 (1940), the senior appropriators were located about 250 miles downstream from junior appropriators. Ten days would elapse between diversion by the juniors and a reduction in the flow downstream for the seniors. The seniors wanted the juniors shut down whenever the flow upstream at the junior points of diversion dropped so that the seniors expected a shortage to develop downstream 10 days later. The court ruled, however, that the seniors could not have the juniors shut down until there was an actual shortage downstream. The court said a shortage that the seniors merely anticipated might in fact never occur because streamflow data used to make the projection were not very good or because weather changes in the next 10 days, such as cooler temperatures or rainstorms, might decrease the need to divert water or increase the water supply. And the court said that if an expected shortage should not materialize, anticipatory closure of upstream junior diversions would turn out to be a waste of public waters.

Cochran involved competing appropriators on a stream and a time lag of 10 days. In aquifer-stream cases, the time lag is often much longer, measured not in days or perhaps even in weeks but in years. Another difference with aquifer-stream cases is that if junior wells are shut off, groundwater storage will not always go to waste as the streamflow in Cochran would have.

A Colorado case deals with anticipatory closure of juniors in the stream-aquifer context. The case arose when the state engineer adopted rules limiting withdrawals from junior wells "in time of shortage or projected shortage" for senior stream appropriators. The rules dealt with time lag of up to 75 days and authorized closure of junior wells for up to 3 days per week. The rules were to be effective only for a defined period that expired before the court decided the case. Nonetheless, the Colorado Supreme Court reviewed the rules and upheld them, rejecting an argument by junior well owners that an intervening storm might cure streamflow shortage. Kuiper v. Well Owners Conservation Association, 176 Colo. 119, 490 P.2d 268, 280-81

(1971), overruled as to another point by Alamosa-LaJara Water Users Protective Association, 674 P.2d 914 (Colo. 1983). Arguably, the decision is limited by the court's statement that even if a storm should occur and relieve the streamflow shortage, water left in the aquifer by wells that were shut down would not go to waste because it could be pumped by other wells or be taken by junior stream appropriators who would otherwise go without.

b. Selecting juniors to shut down. Water administrators have not always applied the priority rule mechanically even on streams. Elwood Mead (Irrigation Institutions 166 (1903)) described the early administration of streams as follows:

> In theory the last appropriator should be the first to be cut off, but in practice it often happens that this appropriator is fifty or one hundred miles away, while another appropriator, inferior to the one seeking relief, is near at hand. To wait for water to come from turning off the last appropriator might cause the loss of crops, and in practice it is often the junior appropriator who can be first reached whose water-supply is curtailed.

In 1969, the Colorado Supreme Court held that a water administrator who shut down 39 wells out of 1600 to satisfy senior surface rights acted arbitrarily in selecting wells for closure and thus violated equal protection of the laws. Fellhauer v. People, 167 Colo. 320, 447 P.2d 986 (1969). The court ruled that administrative closure of wells must proceed under reasonable regulations adopted prior to issuance of closure orders. The Colorado legislature then authorized the state engineer to adopt such regulations "to assist in, but not as a prerequisite to" the administration of water rights. Colo. Rev. Stat. Ann. § 37-92-501(1) (Supp. 1991).

c. Overlong delay. Can the time lag between groundwater pumping and a reduced streamflow ever become so long that the law will ignore the physical connection? The Colorado Supreme Court took up this question in a series of cases decided in the 1970s. District 10 Water Users Ass'n v. Barnett, 198 Colo. 291, 599 P.2d 894 (1979); Kuiper v. Lundvall, 187 Colo. 40, 529 P.2d 1328 (1974); Hall v. Kuiper, 181 Colo. 130, 510 P.2d 329 (1973). The court ruled that groundwater is tributary to a stream, and thus

is subject to stream priorities, though the time lag is 40 years. But the court also said that groundwater is not subject to senior stream priorities when the time lag exceeds 100 years because then the tributary connection is de minimis. The court left open how to treat time lag of 40 to 100 years.

Later, the Colorado legislature adopted the 100-year cutoff but modified it with a further de minimis limitation. The legislature declared that groundwater located outside designated basins should be treated as nontributary if pumping it will not deplete streamflow in 100 years at an annual rate greater than one-tenth of one percent of the annual rate of withdrawal. And in four named aquifers, the legislature required this depletion test to be applied under an assumed hydrostatic pressure level that meant more groundwater was deemed nontributary than if the test were applied under the actual pressure level. Colo. Rev. Stat. Ann. § 37-90-103(10.5) (1990); see also id. § 37-90-137(9)(c) (1990) (new withdrawals of "not nontributary" water in the four aquifers require a judicially approved plan for streamflow augmentation).

3. Attenuated impact of pumping. The pumping of groundwater tributary to a stream does not necessarily reduce the streamflow by an equal amount. Some of the water pumped might have been lost to the system even if it were not pumped, e.g., losses through springs or evapotranspiration. Also, if groundwater is pumped only during summer months, any reduction of streamflow might be spread throughout the year so that the reduction is less per month than the monthly withdrawals of groundwater. Thus, the effect of groundwater pumping on streamflow might be either inconsequential or incommensurate to the groundwater pumped.

a. Inconsequential impact. In disputes between stream appropriators, the courts have long held that a senior appropriator can prevent a junior appropriator from taking water only if the junior's diversion materially interferes with the senior's right. See W. Hutchins, Selected Problems in the Law of Water rights in the West 335 (1942). One can expect the same rule to apply to aquifer-stream cases.

Colorado has codified the material-injury rule. Colo. Rev. Stat. Ann. §§ 37-90-137(2) (permit applications for wells outside designated basins), 37-92-501(1), -502(2) (administration of priorities) (1990). Colorado cases provide some examples of what might constitute material injury. In Danielson v. Jones, 698 P.2d 240 (Colo. 1985), a well owner wanted to pump an additional 12.5 gallons per minute from a well that tapped an aquifer tributary to an overappropriated stream system. The court ruled that the new pumping would materially interfere with senior rights, noting that with continuous pumping the depletion would total 20 acre-feet annually. In Giffen v. Jones, 690 P.2d 1244, 1246 n.3 (Colo. 1984), the court noted but did not rule on a finding by the state engineer that a groundwater withdrawal of 2 acre-feet per year proposed by Giffen would materially injure senior appropriators, and it mentioned that Giffen apparently assumed that even a withdrawal of 0.2 acre-feet per year would cause material injury. See also Pueblo West Metropolitan District v. Southeastern Colorado Water Conservancy District, 717 P.2d 955 (Colo. 1986) (material injury must be determined on a case-by-case basis); Danielson v. Kerbs, Inc., 646 P.2d 362 (Colo. 1982) (arguably equating the concepts of material injury and unreasonable impairment).

b. Incommensurate impact. The traditional rule on streams has been that despite incommensurate impact, a senior appropriator can close a junior diversion if that will make water available to the senior in usable quantities when the senior needs it. E.g., State ex rel. Cary v. Cochran, supra. A few states have modified this rule by statute for groundwater. E.g., Wyo. Stat. § 41-3-915(a)(iv) (1977) (state engineer may impose a rotation system in groundwater control areas rather than strictly enforcing priorities if such enforcement would "not result in proportionate benefits to senior appropriators"); see also Colo. Rev. Stat. Ann. § 37-90-103(10.5) (treatment of groundwater as nontributary), supra p. 5.

4. Inadequate data and the burden of proof

a. New appropriations. Most appropriation doctrine states require a permit to appropriate water and allow a permit

to issue only if unappropriated water exists. A permit applicant usually is said to have the burden of proving that unappropriated water exists. Even so, agencies and courts interested in promoting new water development often have resolved factual doubts in the applicant's favor. See, e.g., Little Cottonwood Water Co. v. Sandy City, 123 Utah 242, 258 P.2d 440 (1953). Their reasoning has been that no harm will result if too many permits are issued because the priority rule will still protect senior appropriators if the water supply turns out to be inadequate.

This reasoning is inappropriate with permit applications to appropriate groundwater. As a result of time lag between new pumping and impact on streamflow, overuse of the water supply might not become apparent for years and then closing the junior wells might not restore the supply to senior stream appropriators for years after that.

In a departure from the traditional approach to issuing permits, the Idaho Supreme Court upheld the state engineer's decision to close much of a groundwater basin to new appropriations for lack of unappropriated water. There were conflicting studies on the groundwater supply, some of which indicated that unappropriated water was available. But the court accepted the state engineer's decision to take a cautious view and rely instead on those studies indicating that no unappropriated water was available. State ex rel. Tappan v. Smith, 92 Idaho 451, 444 P.2d 412 (1968).

b. Enforcement of priorities between existing appropriators. According to a 1970 report, state water administrators often have been reluctant to enforce the priority rule against junior groundwater users. Their reluctance was said to stem from "either of two reasonable doubts: that the available facts would suffice to sustain them against any appeal from an order for reduction, or that the statutory procedure would in fact recapture the status of the earlier appropriators." William C. Walton, Groundwater Resource Evaluation 622 (1970). See also Wyoming State Engineer v. Willadsen, 792 P.2d 1376 (Wyo. 1990) (owners of a stream appropriation had the burden of proving by a preponderance of the evidence that a junior well interfered with

their right, and they failed to carry this burden).

Colorado took a different approach in Alamosa-La Jara Water Users Protection Association v. Gould, 674 P.2d 914 (Colo. 1983). The court approved regulations designed to curtail groundwater diversions in the San Luis Valley unless well owners individually could prove their wells did not materially injure senior rights or could provide substitute supplies to seniors. The record showed that streams in the valley were overappropriated and that groundwater diversions significantly affected streamflow. In these circumstances, the court said "it may be presumed that each underground diversion materially injures senior appropriators. The state engineer, therefore, will not be required to repeat for every well curtailed the painstaking analysis which led to the aquifer-wide determination of material injury." 674 P.2d at 931.

5. Coping with enforcement of priorities. When there is long time lag between groundwater pumping and impact on a stream, overuse of the water supply might continue for years before its full extent is realized. When the problem finally becomes acute, enforcement of the priority rule will operate mainly against aquifer appropriators because stream appropriations generally predate aquifer appropriations. The closing of numerous wells under the priority rule can seriously harm communities with economies based on agricultural use of aquifer water.

Colorado has been a leader in trying to find ways to avoid or reduce that harm. In Gould, supra, the Colorado Supreme Court relied on a state policy of promoting maximum water utilization to suggest that in some instances, which the court did not define, senior appropriators might have to drill wells to supplement or replace their surface diversions before being able to shut down junior wells. The court left open whether junior well owners should have to pay for the changes in the seniors' diversion methods. In addition, Colorado has a statute declaring that "[i]f a well has been approved as an alternate means of diversion for a water right for which a surface means of diversion is decreed, such well and such surface means must be utilized to the extent feasible and permissible . . . to satisfy said water right before diversions under junior water rights are

ordered discontinued." Colo. Rev. Stat. Ann. § 37-92-502 (1990). Finally, some agricultural communities in Colorado dependent on aquifer water have devised imaginative streamflow augmentation, water supply substitution, or groundwater recharge programs that enable continued pumping without depriving senior appropriators of water. See MacDonnell, supra.

III. Aquifer Recharge

A. Protection of Natural Recharge Areas

1. Urbanization can reduce natural recharge due to the covering of permeable soil with buildings, roads, and parking lots; the building of sewers that accelerate storm water runoff; and the filling of wetlands.

2. Some states and local governments have land use planning programs specifically designed to protect natural recharge areas. See, e.g., Fla. Stat. Ann. §§ 163.3177(6)(c) (requiring local land use plans to indicate ways to provide for aquifer recharge protection needs), 259.101 (authorizing a state land-acquisition program to protect water recharge areas) (West 1990, 1991 & Supp. 1992); see also Ketchel v. Bainbridge Township, 52 Ohio St.3d 239, 557 N.E.2d 779 (1990) (protecting recharge areas is a legitimate objective of minimum lot size zoning), cert. denied, 111 S.Ct. 1073 (1991). The federal wetlands regulations under the Clean Water Act are well known, but there may even be municipal regulations protecting wetlands for various purposes, including aquifer recharge. See, e.g., Manatuck Associates v. Town of Fairfield Conservation Commission, No. 26-52-92, 1991 WL 154240 (Conn.Super. July 31, 1991).

B. Artificial Recharge

1. Recharger liability for use of empty underground storage space. When artificial recharge fills empty underground storage space with water, is the recharger liable to overlying landowners for a trespass or a taking of their property?

a. The public-servitude approach. A California court has ruled that a county water district's recharge program did not take the property of an overlying landowner, a gravel company, so

long as the recharge did not raise the water table above its natural level. The court defined the natural water table as the level that would have existed without diversions from the watershed or extractions from the basin. Alameda County Water District v. Niles Sand and Gravel Co., 37 Cal.App.3d 924, 112 Cal.Rptr. 846 (1974), cert. denied, 419 U.S. 869 (1974).

Although the district's recharge program did not raise the water table above its natural level, the recharge flooded or contributed to flooding of the gravel company's deep pits. The gravel company pumped the water from the pits and disposed of it into the San Francisco Bay. After several years of this, the gravel company sued the water district, claiming that its property had been taken. The court rejected the claim on alternative grounds that both were based on state water law. The more interesting ground for present purposes relied on the correlative rights doctrine, which governs percolating groundwater in California. The court said that this doctrine barred the gravel company from pumping and wasting the recharge water. Moreover, the court ruled that the pumping restriction of the correlative rights doctrine imposed a public servitude on overlying land, a servitude allowing the water to be under the land. And since the land was subject to this public servitude, the gravel pit flooding was not a taking.

The correlative rights doctrine is not widely followed outside California. It is worth examining whether appropriation doctrine states could use the public-servitude approach. These states generally allow a person to add imported water to a stream, use the channel to carry the water closer to the intended place of use, and then divert an equivalent amount downstream after allowance for any carriage losses. If the imported water does not raise the streamflow above the ordinary high water mark or cause physical damage, such as erosion or siltation of the channel, the importer violates no right of riparian landowners even if those persons own the stream bed. Pleasant Valley Irrigation & Power Co. v. Barker, 98 Wash. 459, 462-63, 167 P. 1092, 1093 (1917); see also Blaine County Investment Co. v. Mays, 49 Idaho 766, 774-76, 291 P. 1055, 1058-59 (1930) (stream bed

ownership not discussed but probably bed was owned by riparian landowners). In effect, the privately owned stream channel is subject to a servitude for water flow in the channel, including the imported water. It would be but a small step for an appropriation doctrine state to recognize a similar servitude on the underground storage capacity of land up to the natural water table, so that a recharger's use of empty storage space up to that level violates no right of overlying landowners.

b. The no-harm approach. In Nebraska, owners of land overlying an aquifer argued unsuccessfully that a statute allowing artificial recharge by third persons unconstitutionally took their exclusive right to the empty storage space under their lands. They challenged the statute on its face without showing any harm to their lands. The Nebraska Supreme Court ruled that a statute cannot unconstitutionally take property unless it prevents the owner from using the property in a way that the owner desires or deprives the owner of profit otherwise derivable from the property. Central Nebraska Public Power and Irrigation District v. Abrahamson, 226 Neb. 594, 413 N.W.2d 290 (1987).

The challenged statute dealt with incidental recharge from irrigation, rather than purposeful recharge. Nothing in the court's opinion, however, suggests that the no-harm rationale would be inapplicable to purposeful recharge. Moreover, unlike the public-servitude approach in California, the no-harm approach would seem to allow recharge that raises the water table higher than its natural level if no physical damage results. The water table in Abrahamson, after recharge from the imported irrigation water, probably was higher than its natural level. The court spoke of a "large mound" of groundwater created by seepage from the irrigation project.

The Nebraska court's no-harm rationale has been criticized, however, for inconsistency with broader "takings" law. Generally, a statute authorizing the physical invasion of a person's property, such as a statute requisitioning an empty warehouse, is a taking of property though the owner is making no use of it. Joseph L. Sax, Robert H. Abrams, Barton H. Thompson, Jr., Teacher's Manual for Legal Control of Water Resources: Cases

and Materials, Second Edition 134 (1991).

c. The no-right approach. Appropriation doctrine states typically assert public ownership of unappropriated water and allow people to acquire private rights in it only by obtaining a permit to appropriate from the state. Since an overlying landowner has no right except by state permit to capture water under the land, it has been argued that the overlying owner similarly has no right to exclusive use of underground water storage space without a permit. And without an exclusive right to the empty space, the overlying owner should have no claim for a taking or trespass when a recharger uses the space. Thorson, supra, at 596, 608-09.

2. Recharger liability for physical damage. Recharge can cause physical damage such as impairment of water quality, impedance of surface drainage, and flooding of mines or lowlands. A few states have regulatory statutes intended to avoid such damage. E.g., Utah Code Ann. § 73-3b-202 (Supp. 1991). But if physical damage occurs, what legal theories will govern recharger liability? In some circumstances, statutes may impose liability. E.g., Neb. Rev. Stat. § 46-241 (1988) (apparently imposing strict liability for "leakage or overflow" from either surface or underground storage).

Often, however, it will be necessary to turn to the common law. California's public-servitude approach would seem to relieve a recharger from common law liability, except perhaps for water quality impairment, if the water table is not raised above its natural level. Aside from whatever immunity exists under that approach, the potential common law theories for determining recharger liability might include negligence, trespass, nuisance, or strict liability. These theories have been used to determine liability for the escape of water stored on the surface. One can expect courts to look to cases on escaping surface water as possible analogies. There is a difference, however, between damage from the escape of stored surface water and damage from artificial recharge. Recharge that causes damage might not be escaping. Thorson, supra, at 625-29.

Another complexity can arise in looking to cases on escaping

surface water. The cases in a given state might take different approaches to different escaping water situations. For example, in Idaho one line of cases says that when water escapes from an artificial channel, such as an irrigation canal, liability for damage requires a showing of negligence; the non-negligence theories of trespass, nuisance, and strict liability do not apply. Another line of cases says that when water overflows (in effect, escapes from) a natural channel because the defendant altered or obstructed it, liability is not limited to negligence but can be based on a non-negligence theory. The two lines of cases came into seeming conflict in a recent federal court suit for the flooding of land. A power company had imported water and stored it in a lake for use in generating electricity and supplying irrigators. During unusually heavy spring run off, the power company intentionally discharged some of the artificial storage into a natural stream channel and thereby flooded downstream land. On appeal from dismissal of the suit, the Ninth Circuit was unsure about which line of Idaho cases to apply. Should it apply the first line because the water was artificially stored, or the second line because the overflow was from a natural channel?

The Ninth Circuit referred the question to the Idaho Supreme Court. The Idaho court reasoned that canal operators are liable for escaping water only if they are negligent because of the importance of irrigation to the state and the need to promote it. The court decided that the same policy should extend to the operators of "artificial water diversion and storage systems, i.e., dams and reservoirs which supply the water to the irrigation canals." Kunz v. Utah Power & Light Co., 117 Idaho 901, 904, 792 p.2d 926, 929 (1990). Thus, the court found that the line of cases using non-negligence liability theories for water overflowing natural channels was not analogous.

Besides showing that the proper analogy might not always be apparent (at least it was not apparent to the Ninth Circuit), Kunz is interesting for another reason. It would support an argument in Idaho that liability for damage from artificial groundwater storage requires a showing of negligence, at least if

some of the recharge water will supply irrigators.

3. Competing rechargers. If several persons want to use the same empty storage space for recharge, which one prevails?

a. Legislatures have seldom authorized specific recharge projects. But where a legislature does so, as in Idaho Code § 42-4201 (1990), the authorized project presumably should prevail over any competing project that someone might propose.

b. Statutes in some states require a permit to obtain a water right for recharge use and allow a permit to issue only if a state agency determines that the proposed project will be in the public interest. E.g., Ariz. Rev. Stat. §§ 45-151 to -153 (1987); Idaho Code § 42-4201A (1990); Or. Rev. Stat. Ann. § 537.135 (1988). These statutes establish machinery for resolving some cases of competition over the use of empty storage space. The state agency, however, still must give specific substantive content to the public interest concept.

c. Commentators have suggested ways to resolve conflict over the use of storage space, e.g., priority in time should give priority in right, or public recharge projects should have priority over private projects. Corker, supra, at 184-85; Thorson, supra at 621-24.

4. Recharger's right to control stored water. Can a recharger withdraw the stored water for use or at least decide who gets to withdraw it and on what terms?

a. The San Fernando Valley cases. Los Angeles has long imported water into the San Fernando Valley. The city has put part of the imported water on porous spreading grounds so that it sinks and flows underground down the valley until it reaches the city's diversion works. Before urbanization took over the valley, the city sold the rest of the imported water to farmers for irrigation; and as the city expected, 27 1/2 percent of that water sank beneath the surface and flowed down the basin to the city's diversion works. In 1943, the California Supreme Court ruled that Los Angeles had the exclusive right to withdraw the water. City of Los Angeles v. City of Glendale, 23 Cal.2d 68, 142 P.2d 289 (1943).

The court said that the city did not abandon its right to

the imported water when it used the underground basin to transport and store the water. The court drew an analogy to state law allowing a water importer to use a stream bed to transport the water economically to the place of use, rather than have to build a canal system. The court stated:

> It would be as harsh to compel plaintiff [Los Angeles] to build reservoirs when natural ones were available as to compel the construction of an artificial ditch beside a stream bed. . . . [I]n selling water to the farmers, as in spreading water, plaintiff was interested in its economical transportation and storage. . . . The use by others of this water as it flowed to the subterranean basin does not cut off plaintiff's rights. . . .Once within the basin, en route to plaintiff's diversion works, [the water] was in effect within plaintiff's reservoir.

Id. 23 Cal.2d at 76-78, 142 P.2d at 294-95 (1943).

The California Supreme Court revisited the recharge issue three decades later. By then, the valley farmland had become largely urbanized, and indirect recharge from Los Angeles' sale of imported water to farmers had declined. But return flow from water that the city delivered to urban customers had become a major new source of indirect recharge. The court reaffirmed the city's exclusive right to withdraw and use water that its recharge activities added to the underground basin. As for the new indirect recharge, the court said that the city was entitled to it without having to show intent to recapture prior to importation. No showing of intent prior to importation was needed because both the city's water deliveries to customers and its later withdrawals happened within the city limits, so that both were, in the language of Glendale, "within plaintiff's reservoir." City of Los Angeles v. City of San Fernando, 14 Cal.3d 199, 537 P.2d 1250, 1294, 123 Cal.Rptr. 1, 45 (1975).

The court seemed to base some details of the recapture right on the city's status as a public entity. See Gleason, supra, at 647. But the court also relied partly on the desirability of giving an importer the fruits of its efforts and enabling economical storage and transportation of water. This rationale should support an extensive recapture right in a private importer/recharger. See Thorson, supra, at 620.

b. Statutes on control of stored water. Some western states have statutes that deal explicitly with rights to recharge water after it has been introduced into the ground. A sampling of different approaches follows.

In Washington, one who creates artificial storage in a designated groundwater area or subarea can file a declaration of ownership with a state agency. Wash. Rev. Code Ann. § 90.44.130 (Supp. 1992). Once the agency accepts the declaration, the artificial storage is not treated as public water available for use by others under the regular appropriation doctrine rules.

Using this procedure, the Bureau of Reclamation established its right to artificial storage in the Quincy groundwater subarea. The storage came from downward percolation of water that the Bureau imported and distributed on the surface to irrigators. State regulations require that anyone wishing to pump artificial storage from the Quincy shallow management unit must have both a withdrawal permit from the state and a contract with the Bureau. Wash. Admin. Code § 173-143A-080 (1990). The Bureau charges a fee to contract users. In Jensen v. Department of Ecology, 102 Wash.2d 109, 685 P.2d 1068 (1984), a person sought to appropriate artificial storage without the Bureau's consent. He argued the Bureau had abandoned the water. The court ruled that there was no abandonment because the Bureau intended to recapture the water from the outset of the irrigation water supply project. The court also rejected the notion that when artificial recharge is commingled with naturally occurring groundwater, it loses its identity and becomes public water. See also Flint v. United States, 906 F.2d 471 (9th Cir. 1990) (upholding charges assessed by the Bureau on farmers using artificially stored groundwater under contract).

Idaho authorizes recharge districts and irrigation districts to build recharge facilities and appropriate water for recharge. Idaho Code §§ 42-4201 to -4231 (1990). By statutory declaration, the underground storage is treated as a beneficial use that will support an appropriation by a district. The district does not control the later withdrawal of recharge water. Anyone can appropriate it within district boundaries under regular state

water law. But the district can levy assessments on district members to pay operation and maintenance expenses and to repay debt incurred to build recharge facilities.

In Nebraska, legislation allows an intentional recharger to obtain a permit for storage and recovery. The legislation, which is hardly a model of clarity, states also that a recovery permit can issue to a person who is "an appropriator of record . . . [with] sufficient interest in the underground water storage facility to entitle the applicant to the water requested." The statute does not define what is a "sufficient interest," but apparently persons other than the recharger might be able to obtain recovery permits. The recharger can levy a reasonable fee for withdrawals. Neb. Rev. Stat. §§ 46-233, -240, -241, -242, -295, -296, -299 to -2,106 (1988 & Supp. 1990, 1991).

Nebraska also has legislation on incidental, as distinguished from intentional, recharge. Incidental recharge is defined as storage that occurs indirectly as a result of other water use, such as storage due to canal seepage and downward percolation from irrigated lands. The provisions on incidental recharge seem strange until one understands a problem they were intended to solve. Increasingly, irrigators who had received water under contract from irrigation districts were abandoning their surface water contracts and installing wells. They were able to pump groundwater economically because recharge to the aquifer from surface irrigation raised the water table. But the decreasing use of surface water for irrigation put the irrigation districts at risk of partial cancellation of their surface water rights for nonuse. See Leroy W. Orton, Legal Recognition of Rights to Ground Water Stored Incidently Beneath a Surface Irrigation Project - Nebraska's Legal Experiment in Water Resources Law 84, 85-86 (Proceedings of the National Symposium on Water Resources Law, American Society of Civil Engineers, 1986).

The legislation addressing this situation allows a surface water appropriator, like an irrigation district, to apply for and obtain recognition from the state of incidental underground water storage arising from its appropriation. Neb. Rev. Stat. §§ 46-226.01, -.02, -295, -296 (1988 & Supp. 1990). The legislation

says nothing about the surface water appropriator having any right to recover the incidental storage. Apparently, overlying landowners can withdraw the storage pursuant to regular state groundwater law. Orton, supra, at 89-91; see Central Nebraska Public Power and Irrigation District, 226 Neb. 594, 413 N.W.2d 290, 301 (1987). But incidental storage is declared by statute to be a beneficial use, and the state's recognition of incidental storage benefits associated with a particular surface water appropriation should avoid partial cancellation of that appropriation for nonuse.