

The Western Common Law of Tributary Groundwater: Implications for Nebraska¹

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I. INTRODUCTION

First, all water is interrelated and interdependent. If groundwater were red, most streams would be various shades of pink; if groundwater were poisoned, the streams would also be poisoned.²

I find it curious that although regulation of surface waters is properly a responsibility of the State, groundwater regulation is somehow viewed as a "local" concern. . . . The result is uncoordinated administration of interrelated resources.³

Nebraska water law is on a collision course with reality. For decades Nebraska judges and water policy makers have ignored the hydrologic connection between surface water and tributary groundwater, the groundwater that provides the stream's base flow. External events, including federal endangered species requirements and the Republican River Basin Compact litigation, are forcing Nebraska water policymakers to acknowledge and begin dealing with interrelated surface water and groundwater. Pending litigation between competing surface water and groundwater irrigators in the North Platte River basin will also force the Nebraska Supreme Court to reconsider its 1966 decision that hydrologically interrelated surface water and groundwater supplies need not be legally interrelated. The plaintiff asserts that groundwater irrigators are pumping tributary groundwater, preventing it from reaching the stream, and drying up his surface water irrigation rights.

The basic premise of this Article is that the use of tributary groundwater must be integrated into surface water law. Tributary groundwater is a major contributor to the flow of most Nebraska streams. Tributary groundwater withdrawals will, in the long run, deplete streamflow on an almost gallon-per-gallon basis.⁴ Ultimately, Nebraska must completely integrate and coordinate the law governing

2. Richard S. Harnsberger, Jarrett C. Oeltjen & Ralph J. Fischer, *Groundwater: From Windmills to Comprehensive Public Management*, 52 NEB. L. REV. 179, 183 (1973).

3. Joseph L. Sax, *We Don't Do Groundwater: A Morsel of California Legal History*, 6 U. DENV. WATER L. REV. 269, 301 (2003) (quoting Ronald B. Robie, *Carley v. Porter Memorial Luncheon Address*, in PROCEEDINGS OF THE NINTH BIENNIAL CONFERENCE ON GROUND WATER 137, 146 (Frank T. Bragg ed., 1973)). Mr. Robie is a California appellate judge and former director of the California Department of Water Resources.

4. Further:

tributary groundwater withdrawals with surface water law. Where tributary groundwater withdrawals are significantly depleting streamflows, tributary groundwater withdrawals must be reduced, or appropriations to the depleted streams may need to be purchased or retired, or both. Fortunately, in response to federal and interstate requirements, much of the needed legislative action has been taken. But judicial steps must also be taken to complete the legal framework for integrating tributary groundwater into the appropriation system.

This Article focuses on how western courts have dealt with disputes over interrelated surface water and groundwater. Part II deals with hydrologic dimensions and related water uses. Parts III and IV deal with early groundwater and tributary groundwater decisions of English courts and American courts in eastern states. Part V deals with selected groundwater and tributary groundwater decisions from western states. Part VI deals with the evolving Nebraska law which regulates conflicts over the use of interrelated surface water and groundwater.

II. HYDROLOGIC AND WATER USE FUNDAMENTALS

A. Surface Water Law Fundamentals

Because it is impossible to escape legal concepts even when discussing hydrologic principles, a brief lesson in surface water law terminology is needed. At common law, surface water rights are based on the riparian rights doctrine: only owners of land bordering the stream (riparian land) are entitled to use streamflow. Under the older natural flow doctrine, water could be diverted only for domestic purposes, so that downstream riparians would have the benefit of the streamflow to turn their mill wheels. The natural flow doctrine was replaced by the reasonable use doctrine, which allows significant diversions and requires a comparison of the competing riparian uses when shortages occur.⁵ The major surface water law doctrine in the West is prior appropriation. Under the prior appropriation doctrine,

This hypothetical withdrawal of water from a shallow aquifer that discharges into a nearby surface-water body is a simplified but compelling illustration of the concept that ground water and surface water are one resource. *In the long term, the quantity of ground water withdrawn is approximately equal to the reduction in streamflow that is potentially available to downstream users.*

Thomas C. Winter et al., *Ground Water and Surface Water: A Single Resource*, U.S. GEOLOGICAL SURVEY CIRCULAR NO. 1139, 14 (1988) (emphasis added), available at <http://water.usgs.gov/pub/circ/circ1139.pdf>.

5. See generally RICHARD S. HAINSHINGER & NORMAN W. THORSON, *NEBRASKA WATER LAW AND ADMINISTRATION* ch. 2 (1984) (discussing historical and modern riparian water rights); A. DAN FARLOCK, *LAW OF WATER RIGHTS AND RESOURCES* ch. 3 (Marie-Joy Paredes & John J. Sullivan eds., Release No. 15 2003) (discussing the common law of riparian water rights).

water rights are acquired, not as an incident of land ownership, but by diverting water from a stream for beneficial use. Conflicts are generally resolved on the basis of priority: the earliest or senior appropriator has a better right over subsequent or junior appropriators. In its modern version, appropriative water rights are acquired by applying to the state water administrator, traditionally referred to as the State Engineer. Priority is established when the application is received by the State Engineer, and is "perfected" (completed) when water is ultimately used. In some western states, senior appropriators may request priority administration from the State Engineer by placing a priority call. The State Engineer's office will shut off diversions by sufficient upstream junior appropriators until there is sufficient streamflow for the senior.⁶

B. The Nature of the Groundwater Resource⁷

Both surface water (the water in lakes, rivers and streams) and groundwater (the water stored in groundwater reservoirs called aquifers) are ultimately derived from precipitation. Rainfall and melting snow form overland runoff, a significant source of streamflow. Some precipitation soaks into the ground, slowly moving laterally until it either drains into a stream, or percolates downward, where it becomes part of the groundwater aquifer. The process of groundwater storage is slow, since, in the West, natural recharge is only a few acre-inches⁸ per year. When the storage capacity of an aquifer is reached, ground-

6. Regarding prior appropriation, see generally HARNBERGER & THORSON, *supra* note 5, ch. 3; TARLOCK, *supra* note 5, ch. 5.

7. This section is adapted from J. David Aiken, *Nebraska Ground Water Law and Administration*, 59 NEB. L. REV. 917, 921-22 (1980). See also TARLOCK, *supra* note 5, ch. 2, §§ 4:2-4:5 (examining the hydrologic cycle in relation to water use); Peter N. Davis, *Wells and Streams: Relationship at Law*, 37 MO. L. REV. 189, 193-98 (1972) (comparing the hydrologic relationship between groundwater and surface water); Robert Jerome Glennon & Thomas Maddock, III, *In Search of Subflow: Arizona's Futile Effort to Separate Groundwater from Surface Water*, 36 ARIZ. L. REV. 567, 574-84 (1994) [hereinafter Glennon & Maddock, *Subflow*] (discussing general principles in hydrogeology); Robert Jerome Glennon & Thomas Maddock, III, *The Concept of Capture: The Hydrology and Law of Stream/Aquifer Interactions*, 43 ROCKY MTN. MIN. L. INST. 22-1, § 22.02 (1997) [hereinafter Glennon & Maddock, *Stream/Aquifer Interactions*] (discussing the hydrologic interaction between groundwater and surface water); Richard S. Harnsberger, *Nebraska Ground Water Problems*, 42 NEB. L. REV. 721, 722-25 (1963) (discussing the hydrologic cycle); John D. Leshy & James Belanger, *Arizona Law Where Ground and Surface Water Meet*, 20 ARIZ. ST. L.J. 657, 660-66 (1988) (discussing the interaction between groundwater and surface water).

8. An acre-inch is 27,154 gallons of water, enough to cover an acre of land one inch deep. NEB. REV. STAT. § 46-706(11) (Cum. Supp. 2004). An acre-foot is 325,851 gallons. See, e.g., HARNBERGER & THORSON, *supra* note 5, at 7.

water may be discharged into a stream.⁹ This equilibrium condition may be changed by groundwater development. When groundwater withdrawals exceed recharge the balance is taken from the groundwater stored in the aquifer, reducing aquifer discharge.

Groundwater and surface water are often hydrologically inter-related. Streamflow may recharge alluvial aquifers. These streams are called losing streams, because they lose water to the aquifer. Similarly, groundwater discharge forms the base flow of a stream, i.e., a stream's flow when overland runoff is negligible. These streams are called gaining streams because they gain water from the aquifer. Intermittent streams, those that have little or no base flow, have streamflow only after it has rained or snow has melted. Perennial streams have significant base flow, and usually have streamflow most if not all of the year.¹⁰

Groundwater and surface water have significantly different physical characteristics. One difference that is important in dealing with interconnected surface water and groundwater supplies is the differences in surface water flow and tributary groundwater flow. In Nebraska, for example, streamflow may be twenty-five miles a day or more, whereas groundwater flow may be 300 feet per year.¹¹ This difference is significant in resolving water user conflicts. Closing a junior surface appropriator's headgate will usually increase the water supply of a downstream senior appropriator, but stopping a junior appropriator's well-pumping will not necessarily improve the supply to the senior well in a timely fashion.¹²

The fundamental issue is that much of the groundwater pumping in Nebraska (and in the West) involves the pumping of tributary

9. In some groundwater reservoirs, little or no discharge occurs. In these closed basins, the pressure increases as groundwater storage occurs. When wells are drilled into these closed aquifers (artesian aquifers), the artesian pressure forces the water to rise in the well. If the artesian pressure is great enough, the well will be a flowing well. If enough groundwater is withdrawn from an artesian basin, artesian pressure will decline ultimately to atmospheric pressure. Regarding special legal rules applying to artesian groundwater basins, see generally 2 WELLS A. HUTCHINS ET AL., WATER RIGHTS LAWS IN THE NINETEEN WESTERN STATES 653-59 (U.S. Dep't of Agric., Misc. Publ'n No. 1206 1974).
10. NATURAL RES. COMM'N, STATE OF NEB., POLICY ISSUE STUDY ON INTEGRATED MANAGEMENT OF SURFACE WATER AND GROUNDWATER 11 (1986). This report has a Nebraska map identifying which streams are intermittent and which are perennial. *Id.* at 13.
11. See Willis H. Ellis, *Water Rights: What They Are and How They Are Created*, 13 ROCKY MTN. MIN. L. INST. 451, 470 (1967); Harnsberger, Oeltjen & Fischer, *supra* note 2, at 183.
12. Douglas L. Grant, *The Complexities of Managing Hydrologically Connected Surface Water and Groundwater Under the Appropriation Doctrine*, 22 LAND & WATER L. REV. 63, 74-80 (1987).

groundwater without regard to its future impact on streamflow.¹³ The long-term impact of this will be to turn gaining streams into losing streams, and perennial streams into intermittent streams.¹⁴

C. Groundwater Law Fundamentals¹⁵

In the West, groundwater rights are either appropriative (usually statutory) or based on the common law. The common law groundwater theories are collectively referred to as overlying rights theories, because they are all based on owning land overlying the groundwater supply. The common law theories are absolute ownership, reasonable use and correlative rights. Texas follows the absolute ownership rule, where overlying owners have essentially no liability for any harm resulting from their groundwater withdrawals.¹⁶ The American rule of reasonable use, followed in Nebraska and for many years in Arizona, establishes very limited liability for groundwater uses that are either wasteful or are unrelated to the use of the overlying land.¹⁷ A major feature of the California doctrine of correlative rights is that as the groundwater supply is being depleted, courts will proportionally reduce all uses to the groundwater supply's safe yield.¹⁸ Where appropriation applies to both surface water and groundwater, any surface water-groundwater conflicts will be resolved on the basis of priority. Where groundwater rights are overlying rather than appropriative, the legal categories of groundwater which are recognized will determine how surface water-groundwater conflicts are legally resolved. If only subflow is recognized, then tributary groundwater withdrawals are not integrated into the framework of surface water law. If the tributary groundwater doctrine is recognized, judges and policy makers will have a better chance at achieving sustainable water management outcomes.

13. NATURAL RES. COMM'N, *supra* note 10, at 65-66; Glennon & Maddock, *Stream/Aquifer Interactions*, *supra* note 7, § 22.03.

14. See Glennon & Maddock, *Stream/Aquifer Interactions*, *supra* note 7, at 22-8 to -9, -22.

15. This discussion is adapted from Arken, *supra* note 7, at 936-40. See also WILLIS A. HUTCHINS, *SELECTED PROBLEMS IN THE LAW OF WATER RIGHTS IN THE WEST* 146-65 (U.S. Dep't of Agric., Misc. Publ'n No. 418 1942) (discussing the nature of groundwater and underground streams); TARLOCK, *supra* note 5, ch. 4, 6 (discussing the law of groundwater allocation and appropriation); HARRISBERGER, *supra* note 7, at 726-30, 735-36 (discussing different rules governing the use of groundwater).

16. See TARLOCK, *supra* note 5, § 4:6.

17. See *id.* § 4:7.

18. See *id.* § 4:13.

1. *Legal Classifications of Groundwater*¹⁹

The major distinction between categories of groundwater is percolating groundwater versus water in an underground stream.²⁰ Percolating groundwater is defined as groundwater not in an underground stream. An underground stream is a stream flowing underground with a bed and banks, the channel of which is reasonably ascertainable from the surface without excavation.²¹ Although underground streams rarely occur in the physical world, they occur frequently in legal decisions, probably because the concept can include the subflow of the surface stream. The legal significance of the underground stream doctrine is that surface water allocation rules apply to underground streams. The underground stream doctrine is significant in that where the doctrine includes subflow, surface water rights are appropriate and groundwater rights are overlying. The effect of following the underground stream doctrine is that groundwater-surface water conflicts involving underground streams are resolved on the basis of priority, just as if appropriation applied to both groundwater as well as to surface water. However, the categories of groundwater covered by the underground stream doctrine vary widely, in some cases limiting its usefulness. Because most western states now apply prior appropriation to both surface water and groundwater, the distinction has lost much of its significance.²² However, the underground stream doctrine is still followed in California²³ and Arizona,²⁴ where rights to use water from an underground stream are correlated with surface water rights.

For decades there has been widespread agreement within the legal community that the legal concept of underground streams bears little resemblance to hydrologic fact.²⁵ Much of this criticism is based on the notion that underground streams are subterranean limestone caverns or underground tunnels, which admittedly are rare. Interestingly, the first intimation of the underground stream doctrine dealt not with underground caverns but with conventional surface streams

19. See HUTCHINS, *supra* note 15, at 146-55; TARLOCK, *supra* note 5, § 4-35.

20. See HUTCHINS, *supra* note 15, at 151-55; Harnsberger, *supra* note 7, at 731; Wells A. Hutchins, *Trends in the Statutory Law of Ground Water in the Western States*, 34 TEX. L. REV. 157, 157-80 (1955) [hereinafter Hutchins, *Statutory Trends*].

21. HARNBERGER & THOMSON, *supra* note 5, at 13-14.

22. See 2 HUTCHINS ET AL., *supra* note 9, at 631-33.

23. *See id.* at 690-96.

24. See Glennon & Maddeck, *Subflow*, *supra* note 7, at 570-74; Lashy & Belanger, *supra* note 7, at 666-704.

25. *See, e.g.*, C. F. Tolman & Amy C. Stipp, *Analysis of the Legal Concepts of Subflow and Percolating Waters*, 21 OR. L. REV. 113 (1942); Frank J. Trelease, *Conjunctive Use of Groundwater and Surface Water*, 27 ROCKY MTS. MIN. L. INST. 1853 (1982); Samuel C. Wiel, *Need of Unified Law for Surface and Underground Water*, 2 S. CAL. L. REV. 358 (1929).

that flow, disappear for some distance, then reappear.²⁶ This stream disappearance phenomenon may be the result of drought or may be a more or less permanent condition. But it is certainly a familiar circumstance in Nebraska, where portions of the Platte River routinely go dry almost every summer, and certainly during a dry one. The limestone cavern dimension is an American modification of the original English expression of the concept.²⁷ So, if the underground stream doctrine stretches credulity, we have only ourselves to blame.

Furthermore, the underground stream doctrine was used by western courts to extend surface water law to the subflow of a stream. Some western courts stretched the strict legal definitions of the underground stream doctrine to include the subflow or underflow of a stream. The underflow or subflow of a surface stream is the subsurface flow associated with a stream or river.²⁸ The groundwater may be leaving or entering the stream. In many western states, subflow is considered to be part of the stream and subject to the same rights of use. In those states, the subflow doctrine provides a basis for correlating surface water and groundwater rights in a common source, particularly if prior appropriation is not uniformly applied to surface water and groundwater.

The underflow or subflow doctrine in turn was expanded by some western courts to include tributary groundwater, groundwater which otherwise will reach a stream if not first intercepted by a well.²⁹ Tributary groundwater is treated as being part of the surface stream and is subject to the same rights of use. The tributary groundwater doctrine is the basis for interrelating surface water and groundwater rights in a common water source in Colorado³⁰ and in California.³¹ So, even though the underground stream doctrine may seem silly at first blush, it has played an important legal role in allowing courts to extend surface water law to interconnected groundwater, although, of course, not in every case.

2. *Overlying Rights Theories*

Under the absolute ownership doctrine, a groundwater user may withdraw groundwater without liability to other water users.³² This implies that groundwater users would not be liable for interfering

26. See *infra* notes 56-57, 125-26, 169, 171-72 and accompanying text.

27. See text *infra* accompanying notes 76-83.

28. HARNSBERGER & THORSON, *supra* note 5, at 12-13; HUTCHINS, *supra* note 15, at 152.

29. HUTCHINS, *supra* note 15, at 158, 161, 165.

30. See William H. Hillhouse II, *Integrating Ground and Surface Water Use in an Appropriation State*, 20 ROCKY MTN. MIN. L. INST. 691 (1975).

31. See 2 HUTCHINS ET AL., *supra* note 9, at 690-96.

32. HUTCHINS, *supra* note 15, at 155-56; TARLOCK, *supra* note 5, § 4.6.

with surface water uses. However, because Texas has adopted the subflow doctrine, the rights to use the subflow of a surface stream in that state are subject to prior appropriation.³³ Wells pumping subflow will be treated as surface water diversions, but wells pumping tributary groundwater are still outside the surface water law system.³⁴

Under the reasonable use theory, groundwater withdrawals could not be enjoined from interfering with surface water uses, unless the groundwater use was wasteful or nonoverlying.³⁵ Because Arizona has adopted the subflow doctrine, a limited but significant range of surface water-groundwater conflicts—those involving subflow—will be resolved on the basis of prior appropriation. So, wells pumping subflow will be treated as surface water diversions, but wells pumping tributary groundwater are outside the surface water law system.³⁶

Under the correlative rights doctrine, groundwater users share the available supply when shortages occur. California courts have correlated the rights to use surface water and groundwater from a common source. How each conflict is resolved depends on the facts and circumstances of each case.³⁷

3. *Prior Appropriation*

Where prior appropriation applies to both surface water and groundwater law, the doctrine of priority is the basis for resolving surface water-groundwater disputes and may be enforced through private litigation or administrative proceedings.³⁸ Groundwater users may be placed at a legal disadvantage if prior appropriation is applied to interrelated groundwater and surface water. Since technological developments in well design, pumps, and irrigation water distribution systems have been relatively recent, groundwater users will typically be junior appropriators relative to surface water users. Thus, the doctrine of priority means that junior groundwater development and use will be restricted in order to protect senior surface water appropriators.

The fundamental issue is whether tributary groundwater will be integrated into the surface water appropriation system. Clearly, the underground stream and subflow doctrines stop short of this objective in states that do not apply appropriation to groundwater. But even in states that do apply appropriation to percolating groundwater, or at

33. 2 HUTCHINS ET AL., *supra* note 9, at 742-44.

34. See Eric Behrens & Matthew G. Dore, *Rights of Landowners to Percolating Groundwater in Texas*, 32 S. TEX. L. REV. 185 (1991).

35. TARLOCK, *supra* note 5, §§ 4:7-4:9.

36. See Glennon & Maddock, *Subflow*, *supra* note 7; Lesly & Belanger, *supra* note 7.

37. 2 HUTCHINS ET AL., *supra* note 9, at 690-96.

38. Glennon & Maddock, *Stream/Aquifer Interactions*, *supra* note 7, § 22.03[3]-[6].

least to tributary groundwater, making groundwater appropriative is in itself no guarantee that the coordination and integration of surface water and groundwater rights is effective.³⁹

III. EARLY ENGLISH DECISIONS

A. *Acton v. Blundell*

The leading decision for the absolute ownership rule is *Acton v. Blundell*.⁴⁰ Many of the early groundwater decisions deal with conflicts between neighbors rather than specifically between neighboring groundwater users. *Acton* is the first of many groundwater decisions that involve mining operations that disrupt a neighbor's groundwater supply. The defendant's 1837 coal mine intercepted the groundwater that supplied the plaintiff's 1821 well, located three-quarters of a mile away, with an 1838 mine tunnel, developed approximately one-half-mile away.⁴¹ The court declined to apply riparian surface water principles to the groundwater dispute, focusing upon the hidden character of groundwater and how the damage caused by a new well could not be ascertained until after the well was developed and began operation:

But in the case of a well sunk by a proprietor in his own land, the water which feeds it from a neighbouring soil does not flow openly in the sight of the neighbouring proprietor, but through the hidden veins of the earth beneath its surface; no man can tell what changes these underground sources have undergone in the progress of time: it may well be, that it is only yesterday's date, that they first took the course and direction which enabled them to supply the well: again, no proprietor knows what portion of water is taken from beneath his own soil: how much he gives ordinarily, or how much he transmits [*sic*] only, or how much he receives: on the contrary, until the well is sunk, and the water collected by draining into it, there cannot properly be said, with reference to the well, to be any flow of water at all.⁴²

The court noted that allowing landowners to prevent changes in their groundwater supply could significantly constrain important economic development, such as "winning metals and minerals of inestimable value."⁴³ The court further noted that if a neighboring mine could be the subject of a successful lawsuit to protect a prior well, "it is obvious the law must equally apply if there is an interval of many miles,"⁴⁴ leading to more litigation and additional economic development constraints. The court ruled that landowners owned the groundwater

39. *Id.*

40. 152 Eng. Rep. 1223 (Ex. Ch. 1843).

41. *Id.* at 1232-34.

42. *Id.* at 1233.

43. *Id.* at 1234.

44. *Id.* Here the court is anticipating the tributary groundwater doctrine and the "dangers" that it poses to groundwater users.

contained in the soil, and that if its withdrawal and use harmed a neighbor, it constituted harm without injury.⁴⁵

The impact of the *Acton* rule has been significant. It is still the law in Texas and in several eastern states, although its influence in the eastern states may be waning.⁴⁶ *Acton's* absolute ownership rule was also the first rule of groundwater allocation in most western states.⁴⁷ Despite its economic development rationale, the rule has not stood the test of time as a legal theory. The absence of responsibility, reciprocal rights or balancing of interests makes the rule difficult to justify. Its implementation leads to well interference conflicts, groundwater depletion, and streamflow depletion. However, despite being replaced in most western states by appropriation, the spirit of *Acton* thrives. Most western groundwater pumpers, once they obtain their appropriation permit, are unlikely to encounter any additional governmental regulation or restriction of their pumping.⁴⁸ In the states with the most groundwater, California, Arizona, Nebraska, and Texas,⁴⁹ only

45. *Id.* at 1235.

46. TARLOCK, *supra* note 5, § 4:6.

47. The absolute ownership doctrine was adopted at one time in fifteen of the seventeen western states by court decision or statute. N.D. COMP. STAT. § 5341 (1913); TRIM. OKLA. STAT. § 4162 (1890); *Howard v. Perrin*, 76 P. 460 (Ariz. 1904), *aff'd*, 200 U.S. 71 (1906); *Vineland Irrigation Dist. v. Azusa Irrigating Co.*, 58 P. 1057 (Cal. 1899); *Pub. Utils. Comm'n v. Natatorium Co.*, 211 P. 533 (Idaho 1922); *City of Emporia v. Soden*, 25 Kan. 588 (1881); *Ryan v. Quinlan*, 124 P. 512 (Mont. 1912); *Mosier v. Caldwell*, 7 Nev. 363 (1872); *Keeney v. Carillo*, 2 N.M. 480 (1883); *Taylor v. Welch*, 6 Or. 198 (1876); *Metcalf v. Nelson*, 65 N.W. 911 (S.D. 1895); *Houston & Texas Cent. R.R. Co. v. East*, 81 S.W. 279 (Tex. 1904); *Herriman Irrigation Co. v. Keel*, 69 P. 719 (Utah 1902); *Meyer v. Tacoma Light & Water Co.*, 35 P. 601 (Wash. 1894); *Hunt v. City of Laramie*, 181 P. 137 (Wyo. 1919). Only Colorado and Nebraska did not at one time follow the absolute ownership doctrine. See 2 HORTON'S ET AL., *supra* note 9, at 696-710, 736-37.

48. See Glennon & Maddock, *Stream/Aquifer Interactions*, *supra* note 7, § 22.03 (discussing the legal status of tributary groundwater in all the western states except Montana and South Dakota).

49. In 2000, ninety-one percent of the groundwater used for irrigation in the seventeen western states was withdrawn in eight states (MAF = million acre-foot):

California	13.1 MAF
Nebraska	8.3 MAF
Texas	7.8 MAF
Idaho	4.2 MAF
Kansas	3.8 MAF
Arizona	3.1 MAF
Colorado	2.4 MAF
New Mexico	1.4 MAF

Susan S. Hudson et al., *Estimated Use of Water in the United States in 2000*, U.S. GEOLOGICAL SURVEY CIRCULAR NO. 1268 21 (2004). See *id.* at vi for conversion factors. Groundwater withdrawals in California, Nebraska and Texas totaled 28.7 MAF, sixty percent of the total 47.8 MAF withdrawn. See *id.*; see also Aiken, *supra* note 7, at 923 n.16 (discussing comparable 1975 figures). Since 1975, Nebraska overtook Texas to move into second place for groundwater withdrawals for irrigation. Texas withdrawals declined from 10 MAF to 8.3 MAF; Nebraska in-

Arizona historically has imposed any meaningful developmental controls on groundwater.⁵⁰ California is nearly as wide open as Texas with regard to groundwater development,⁵¹ while Nebraska has only this year imposed well drilling bans in overdeveloped areas.⁵² With state groundwater regulations, there is often less than meets the eye.

B. *Dickinson v. Grand Junction Canal Co.*

The next English groundwater case, *Dickinson v. Grand Junction Canal Co.*,⁵³ fleshed out important dimensions of the absolute ownership rule pertaining to the surface water-groundwater interrelationship, and remarkably dealt with fairly refined aspects of that interrelationship. The plaintiff paper mill owners sued the defendant canal company for a steam engine-powered well depleting the flow of the river powering the mills.⁵⁴ The issues before the court included (1) whether the defendant's "drawing off" streamflow was actionable, and (2) whether the defendant's well-pumping was "diverting and preventing from flowing into the river . . . a quantity of underground water, which, in the natural and accustomed course of such water, . . . would have flowed under ground into the river . . ."⁵⁵ Distinguishing the two types of streamflow interference anticipates future western groundwater disputes. In the first instance, the well is inducing aquifer recharge from the stream; i.e., the well forces surface water to leave the stream and flow towards the well. This induced recharge is for all practical purposes synonymous with the subflow of the stream. In the second instance, the well is intercepting what today is referred to as tributary groundwater before it reaches the stream; i.e., the well withdraws groundwater, which, if not withdrawn, would in time reach the stream. While the *Dickinson* court does not use this modern terminology, it does show surprising sophistication regarding groundwater-streamflow interactions, especially given the *Acton* observation

creased from 5.9 MAF to 8.3 MAF. But Nebraska's total is likely to decline in the future as groundwater irrigation is reduced in the Republican and Platte River basins. See text *infra* notes 228-53.

50. See TARLOCK, *supra* note 5, §§ 6:21-6:30 (discussing Arizona groundwater depletion controls); Glennon & Maddock, *Stream/Aquifer Interactions*, *supra* note 7, § 22.03(2)(c) (discussing Arizona tributary groundwater law).
51. See Glennon & Maddock, *Stream/Aquifer Interactions*, *supra* note 7, § 22.03(2)(c) (summarizing California tributary groundwater law); *id.* § 22.03(2)(b) (summarizing Texas tributary groundwater law).
52. See *id.* (summarizing Nebraska tributary groundwater law).
53. 155 Eng. Rep. 953 (Ex. 1852).
54. *Id.* at 953-56. Apparently the steam engine pump made the well a high-capacity well for its day. In contrast, household wells were no more than holes dug into the ground that filled up with water, with no pump. Obviously, such wells penetrating only the top of the aquifer would be vulnerable to any significant drawdown, which a steam engine-powered well pump might be able to generate.
55. *Id.* at 957.

that groundwater movement is secret and unknowable. Apparently, either knowledge of groundwater had advanced significantly from 1843 to 1852, or the *Acton* court was incorrect.

Early in its opinion, the *Dickinson* court introduced a historic and often misunderstood division of groundwater into categories of percolating groundwater and groundwater flowing in a known, definite underground stream. The court reiterated the rights of riparians to the use of streamflow and applied the same doctrine in the instances when surface streams disappear for awhile and then reappear at the surface:

When water is on the surface, the right of the owner of the adjoining land to the usufruct of that water is not a doubtful matter of fact; it is public and notorious, and such a right ought as a matter of course to be respected by every one: and indeed, if the course of a subterranean stream were well known, as is the case with many, which sink under ground, pursue for a short space a subterranean course, and then emerge again, it never could be contended that the owner of the soil under which the stream flowed could not maintain an action for the diversion of it, if it took place under such circumstances as would have enabled him to recover if the stream had been wholly above ground.⁵⁶

Although dicta, in this statement, the court has laid the foundation for the early and often-criticized division of groundwater into two categories: percolating groundwater with no known course or channel, and water in a known definite underground stream, with the same characteristics (flow and banks) as a surface stream. Many critics deride this categorization, contending that underground streams are rare, and occur only in unusual circumstances, such as limestone caverns.⁵⁷ However, the definite underground stream that the *Dickinson* court has in mind (and which we will hereinafter refer to as *Dickinson* streams) is a circumstance quite common in the West—streams that disappear (especially during droughts) and then reappear. This condition is certainly familiar in Nebraska and doubtless elsewhere in the West. It seems to have been a circumstance that was not unusual in England. So, even though future permutations of the underground stream doctrine would strain credulity and well deserve the legal fiction label, note that the original statement of the rule, applied to *Dickinson* surface streams that disappear and then reappear, is a very sensible one.

The legal significance of the underground stream doctrine is the *Dickinson* court's dictum that surface water law would apply to disputes over such streams instead of *Acton*'s absolute ownership rule of non-liability. In addition, the underground stream doctrine would provide a means for subsequent courts (and especially western courts)

56. *Id.* at 960-61.

57. *See infra* note 83.

to extend the scope of surface water law to a wider range of interconnected groundwater, ultimately to tributary groundwater.

In *Dickinson*, the court established liability to the groundwater pumper for both inducing aquifer recharge from the stream, and also for intercepting tributary groundwater.⁵⁸ These exceptions to *Acton* were intended to protect the riparian's right to the natural flow of the stream. Four years later, in *Broadbent v. Ramsbotham*,⁵⁹ liability for groundwater pumping was limited only to inducing recharge from the river, *i.e.*, subflow; there was no liability for intercepting groundwater that had not yet reached the stream, *i.e.*, tributary groundwater, an outcome more consistent with *Acton*. But the suggestion that tributary groundwater should be legally considered to be part of the stream would return.

C. *Chasemore v. Richards*

In *Chasemore v. Richards*,⁶⁰ the *Broadbent* reversal of the *Dickinson* liability for intercepting groundwater tributary to a stream became definite. The defendant city captured percolating groundwater and transported it to a nearby town in quantities so great as to reduce the flow of the stream a quarter-mile from the well. The well pumped between 500,000 and 600,000 gallons per day, a significant amount. The trial court found that the city well intercepted groundwater tributary to the stream, but did not induce recharge from the stream itself.⁶¹ On the basis of *Broadbent*, an intermediate appeals court ruled that the city was not liable for interfering with the streamflow.⁶²

The statement of the case is worth noting for the breadth of its understanding of the tributary groundwater system:

The river Wandle is, and always has been, fed and supplied above the Plaintiff's mill by (among other sources of supply) the water produced by the rainfall on a district of many thousand acres in extent . . .

Large quantities of this of this water sink into the upper ground to various depths, and then flow and percolate through the strata towards and to the river Wandle (if not interfered with), in some instances rising to the surface as springs, and then flowing as little surface streams into the river; in other instances finding their whole way underground into the river. The precise lines and courses in which the underground runlets and particles of water so find their way underground towards and to the river vary continually and infinitely with the shiftings and variations in the soil which occur from natural causes, but the general flow of large quantities of water to the river Wandle is as above described; and if they are not interfered with or intercepted, they

58. 155 Eng. Rep. at 961-62.

59. 156 Eng. Rep. 971 (Ex. 1856).

60. 11 Eng. Rep. 140 (H.L. 1859).

61. The trial court also concluded that the city "had reasonable means of knowing the probable and natural effects of their said acts and works." *Id.* at 142.

62. *Id.*

form considerable sources of supply to the river, as well above as below the Plaintiff's mill.⁶³

The statement of the case then delves into the effect of the pumping of a high-capacity well on the tributary groundwater flow:

It is impossible to know beforehand the precise or complete effect which the sinking of a new well, and pumping from it in any part of the district above described, may have upon springs or streams in the vicinity; the effect may be instantly sensible and considerable, or for a long time no sensible effect may appear; but the natural effect of abstracting a large quantity of water at any spot of the district above described is to diminish the quantity at every other spot throughout the district, though the amount of diminution at particular spots may be infinitesimally small; and the natural effect to be reasonably expected from sinking a new well in such a district, and from continually or almost continually pumping thence large quantities of water for a long time, must be the sensible diminution of the water supply of springs and streams in the vicinity.⁶⁴

For the supposed lack of understanding of groundwater occurrence and movement, the lawyers and judges of the day had a surprisingly sophisticated grasp of the fundamental principles.⁶⁵

The six justices who heard the case gave five separate opinions. The first judge argued that just as landowners are entitled to use diffused surface water, they should similarly be allowed to use percolating groundwater.⁶⁶ The judge started a parade of horrors that would result from making landowners liable for intercepting tributary groundwater:

If the rain which has fallen may not be intercepted whilst it is merely percolating through the soil, no man could safely collect the rain water as it fell into a pond; nor would he have a right to intercept its fall, before it reached the ground, by extensive roofing, from which it might be conveyed to tanks, to the sensible diminution of water which had, before the erection of such impediments, reached the ground, and flowed to the Plaintiff's mill. In the present case the Defendant's well is only a quarter of a mile from the river Wandle; but the question would have been the same if the distance had been ten or twenty or more miles distant, provided the effect had been to prevent underground percolating water from finding its way into the river, and increasing its quantity, to the detriment of Plaintiff's mill. Such a right as is claimed by

63. *Id.* at 141.

64. *Id.*

65. The attorney for the city argued that the large quantity of water should not be a factor in the case, because the same effect could be created if each resident had his or her own well. *Id.* at 145. Counsel suggested that the city's well was more efficient and would have a smaller depletion effect than would be the case with hundreds of individual wells. *Id.* at 145-46. This general argument anticipates the nonoverlying use limitation of the American groundwater rule of reasonable use. See text accompanying notes 100-109, *infra*. The city's attorney also asked, if groundwater pumpers could not pump tributary groundwater, are surface water users then to sue every upstream groundwater pumper in the watershed? *Id.* This is virtually the identical circumstance as in the *Spear T* litigation discussed in section VI.E *infra*.

66. *Id.* at 147.

the Plaintiff is so indefinite and unlimited that, unsupported as it is by any weight of authority, we do not think that it can be well founded⁶⁷

The fourth judge Lord Wensleydale provided a concurrence that is essentially a dissent. He framed the issue as being a choice between the broad *Dickinson* rule of extending the groundwater pumper's liability to intercepting tributary groundwater, and the narrower *Broadbent* rule for limiting the pumper's liability to inducing recharge.⁶⁸ Lord Wensleydale then made an impassioned plea to treat all tributary water the same, whether it flows in a definite channel or not:

If the River Wandle in this case had been supplied by natural streams flowing into the river above ground, or in known definite channels below ground, the cutting off those streams to which the person entitled to the use of the river was entitled *ex natura* as feeders of the river, would be an injury to him, and give a right of action. And if this be true with regard to underground streams finding their way into the river, then comes the difficulty how to distinguish the smaller rivulets, and the drops of water which flow and percolate into and supply the river. They are all equally the gifts of nature for the benefit of the proprietors of the soil through and into which they flow. They are all flowing water, the property in which is not vested in the owner of the soil, any more than the property in the water of a river which flows through it on the surface.⁶⁹

Lord Wensleydale then made what would today be considered a reasonable use argument. After detailing why it would be foolish to prevent all tributary groundwater uses simply because of their possible impact on streamflow, he proposed that overlying groundwater uses be limited to reasonable uses, stating that the city's nonoverlying use of water pumped from a large steam engine-powered well is an unreasonable use.⁷⁰ But despite his impressive arguments, the House of Lords upheld *Broadbent* and disapproved the *Dickinson* rule of liability for intercepting tributary groundwater, affirming the lower

67. *Id.* at 149. The second justice argued that the distinction between percolating groundwater and waters in a known definite underground stream was as sensible as the well-defined drainage law distinction between diffused surface waters and naturally flowing waters. *Id.* at 150-51. The third judge added that if the *Dickinson* rule of liability for intercepting tributary groundwater was imposed, "every well that ever was sunk would have given rise, or might give rise, to an action." *Id.* at 152.

68. *Id.* at 153. Lord Wensleydale participated in both cases, and contended that *Broadbent* had been misread. Lord Wensleydale distinguished *Broadbent* from *Dickinson* on the ground that the percolating groundwater at issue in *Broadbent* wasn't really tributary—"In *Broadbent v. Ramsbotham*, it did not appear that any water which percolated the strata would have reached the brook . . ." *Id.* Consequently, according to Lord Wensleydale, *Broadbent* should not be interpreted as overruling the *Dickinson* rule of making groundwater pumpers liable for intercepting tributary groundwater before it reached the stream.

69. *Id.* at 154.

70. *Id.* at 155-56.

court's ruling for the defendant.⁷¹ In the tradition of other famous dissents, Lord Wensleydale's arguments would ultimately prevail in the adoption of the American rule of reasonable use, and in the modern tendency to dissolve the classification of groundwater as percolating and waters of underground streams in favor of treating all (or virtually all) groundwater as tributary.

IV. SELECTED EARLY EASTERN STATE DECISIONS

A. Absolute Ownership Decisions

The earliest reported American decision dealing with groundwater conflicts is the 1836 case of *Greenleaf v. Francis*.⁷² The plaintiff dug a cistern in her basement, which involved putting a barrel into the ground, essentially creating a well with no pump. Two years later, the defendant installed his own well, also with no pump, on his own property near the plaintiff's well. The plaintiff contended that the defendant's well lowered the amount of water in her well.⁷³ The court relied upon the common law maxim that in the absence of grant or adverse possession, the landowner owns everything under the surface of his land.⁷⁴ Because there was no express grant and no adverse possession, the court ruled in a brief opinion that the defendant was entitled to maintain his own well, even though "it may have been prejudicial to the plaintiff."⁷⁵

The leading American absolute ownership case, *Wheatley v. Baugh*,⁷⁶ involved a mining operation interfering with a neighbor's water supply. Here, the defendant miner pumped water out of its mines in order to conduct its mining operations. The mine tunnel was located over a quarter-mile from the plaintiff's spring. When the mining pumps were operating, the plaintiff's spring would stop flowing in approximately two weeks, and when the mining pumps were stopped, the spring's flow returned in about two weeks.⁷⁷ The trial court found for the plaintiff.⁷⁸ On appeal, the Pennsylvania Supreme Court reversed.

The court began by acknowledging the common law rule that the owner of land owns everything to the skies and to the depths.⁷⁹ In reviewing earlier water cases, the court acknowledged that percolat-

71. *Id.* at 156.

72. 35 Mass. 117 (1836).

73. *Id.* at 122.

74. *Id.* at 121-23.

75. *Id.* at 122-23. A similar result was reached in a case with virtually identical facts in *Roth v. Driscoll*, 20 Conn. 533 (1850).

76. 25 Pa. 528 (1855).

77. *Id.* at 528.

78. *Id.* at 530.

79. *Id.*

ing groundwater was not subject to the riparian law of watercourses but that underground streams were.⁸⁰ In this regard, the court discussed limestone caverns as examples of such underground streams, perhaps providing the genesis for the misapprehension of *Dickinson's* reference to disappearing and reappearing streams. The court also considered at length the resulting practical difficulties that resulted when a landowner was prevented from any activity that might affect the flow of percolating groundwater to his neighbor, significantly and usefully extending the list in the *Chesmore* parade of horrors:

No man could dig a cellar, or a well, or build a house on his own land, because these operations necessarily interrupt the filtrations through the earth. Nor could he cut down the forest and clear his land for the purposes of husbandry, because the evaporation which would be caused by exposing the soil to the sun and air would inevitably diminish, to some extent, the supply of water which would otherwise filter through it. He could not even turn a furrow for agricultural purposes, because this would, partially, produce the same result. Even if this right [to prevent a neighbor from changing the course of percolating groundwater] were admitted to exist, the difficulty in ascertaining the fact of its violation, as well as the extent of it, would be insurmountable.⁸¹

The court also cited Roman law as authority for the absolute ownership rule, to the effect that a landowner "may dig for water on his own ground, and if he should thereby drain a well or spring in his neighbour's ground, he would be liable to no action of damages on that score."⁸² Based on these principles the supreme court ruled for the defendant.⁸³

B. American Rule of Reasonable Use

The next case, *Bassett v. Salisbury Manufacturing Co.*,⁸⁴ is not a groundwater case *per se*, but nonetheless is the leading case for the American rule of groundwater reasonable use.⁸⁵ *Bassett* is noteworthy in any event because of the court's startling decision to disregard what it considered arbitrary classifications of water sources and to focus instead upon reasonable water use across water sources and any

80. *Id.* at 531.

81. *Id.* at 532.

82. *Id.* at 532.

83. *Id.* at 535-36. The limestone-cavern underground stream notion was also explored in another early case, which extended the absolute ownership doctrine to percolating groundwater. *Frazier v. Brown*, 12 Ohio St. 294, 300 (1861). The case contains a good discussion of most of the extant groundwater decisions. The court (as per *Anton*) rests its decision on (1) the "secret, occult and concealed" nature of groundwater, and (2) the court's belief that any other rule would unduly restrict economic progress. *Id.* at 311.

84. 43 N.H. 569 (1862). An earlier decision in the case dealt principally with whether the plaintiff had satisfactorily proven that he possessed legal title to his land. *Bassett v. Salisbury Mfg. Co.*, 28 N.H. 438 (1854).

85. Илчуння, *supra* note 15, at 159; ТАРЛОК, *supra* note 5, § 4:7 n.1

harm occasioned by such use.⁸⁶ The plaintiff contended that the defendant's dam across the Powow River flooded his meadow located half a mile from the stream.⁸⁷ An issue was whether a watercourse had existed on the plaintiff's land, as the defendant's liability for flooding depended upon whether the defendant raised the water level on the plaintiff's land above the ordinary level in the river.⁸⁸ If there was no watercourse on the plaintiff's land, there was no ordinary water level benchmark against which to measure the water level created by the plaintiff's flooding. Frustrated by this legal rigidity, the court in effect threw out the different categories of water sources, replacing the rule of absolute ownership with a new groundwater allocation rule of reasonable use.⁸⁹

The law regulating water-courses has its origin or foundation in the benefits and injuries that may arise from water; and among the former the propulsion of machinery is but one of many. These benefits and injuries may often be quite similar in cases of underground and surface drainage, and of drainage by water-courses. In such inquiries the ultimate source of the water is never regarded; and the immediate source seems to us equally immaterial, since it in no way changes the nature or effect of the water: and the regulations now settled by the law of water-courses were established, not because of any peculiarity in the origin of water in streams, but because of the good or harm that may result from its management or use. . . .⁹⁰

We think it does not follow, as some of the cases seem to assume, that because a land-owner has not the absolute and unrestricted right of drainage to or from his neighbor's land, he has no rights of drainage whatever, and that such land-owner has the entire and unqualified ownership of all water found in his soil, not gathered into natural water-courses, in the common acceptation of that term.

There is another view entitled to consideration. If the rights are not absolute and unqualified, they are qualified, or there are no rights at all. We need not argue that some rights exist; that the owner of the land may make some use of the water in it; that he may do some acts that will affect to some extent the drainage; that a well may be dug, under some circumstances, although it

86. This approach would be most similar to the eastern rule of correlative rights and the RESTATEMENT (SECOND) OF TORTS § 858A (1979). Regarding eastern correlative rights, see Davis, *supra* note 7, at 203-04. Regarding the Restatement, see TARLOCK, *supra* note 5, § 4:18.

87. *Bassett*, 43 N.H. at 569.

88. *Id.* at 569-72.

89. For example, the court was frustrated by the inconsistency of, on the one hand, prohibiting riparians from diverting water directly from the stream under the natural flow doctrine, but, on the other hand, allowing those same riparians to legally and indirectly divert the same water from the stream through a well under the absolute ownership doctrine. *Id.* at 576.

90. *Id.* at 576. The court continued:

Therefore, so far as a similarity of benefits and injuries exists, there should be a similarity in the rules of law applied. Whether the deposition or detention of water in or its removal from land is caused by a water-course, or by other means, can create ordinarily no difference in the effects of such deposition, detention, or removal.

Id. at 576-77.

will draw by percolation from a water-course, from adjoining land, or even from the well of a neighbor. If the views we have expressed are correct, they have already indicated the sole ground of the qualification of the land-owner's right in such cases, and that is, as in certain cases of water-courses, the similar rights of others; and this will of course determine the extent of the qualification, which . . . is the rule of reasonable use—of a reasonable exercise of one's own right. The rights of each land-owner being similar, and his enjoyment dependant [sic] upon the action of the other land-owners, these rights must be valueless unless exercised with reference to each other, and are correlative. The maxim, "Sic utere," . . . therefore applies, and, as in many other cases, restricts each to a reasonable exercise of his own right, a reasonable use of his own property, in view of the similar rights of others.⁹¹

In other words, groundwater rights are reciprocal, and the benefit of using A's well will be balanced against the harm to B's streamflow or B's well. The court explicitly acknowledged that the new reasonable use rule it was enunciating is in direct opposition to *Acton's* absolute ownership rule, and that *Acton* is the leading case. However the court noted that *Acton* had not been followed in New Hampshire, and awarded the plaintiff a new trial.⁹²

The implications of *Bassett* are profound. For our purposes, *Bassett* takes Lord Wensleydale's suggestion that the particular stage of the hydrologic cycle that water is in should have no special legal bearing on the outcome of a case. *Bassett* goes beyond Lord Wensleydale, however, in suggesting that the rights of the parties are reciprocal or correlative, and that all users need to reasonably experience some level of inconvenience in order to accommodate the reasonable property use of their neighbors. But when the interference becomes too great, the injured party should receive redress. Groundwater users may pump tributary groundwater (however classified), and surface water users should experience some inconvenience to accommodate the groundwater uses insofar as those uses are reasonable. But when too much tributary groundwater has been withdrawn, the surface water users must be able to obtain relief. The case-by-case implementation and lack of predictability are limitations of the reasonable use approach, but it is vastly preferable to the head-in-the-sand, do-nothing approach of absolute ownership.

The unreasonableness of nonoverlying or distant groundwater uses was first enunciated in *Smith v. City of Brooklyn*.⁹³ Perhaps more significantly, the case also rejected the *Broadbent* prohibition of liability for intercepting tributary groundwater. In *Smith*, the plaintiff was a farmer who used a stream-fed and spring-fed pond for boat-building and cutting ice. The defendant city developed a trench and a series of wells to pump an average of over thirty-six million gallons per day ("mgd") in 1895, with the amount withdrawn increasing by six mgd

91. *Id.* at 577.

92. *Id.* at 579.

93. 45 N.Y.S. 141 (App. Div. 1897).

every year thereafter. At trial, the plaintiff proved that the city's trench was nearly seventeen feet lower than the bottom of the pond and that water would percolate from the pond into the trench. The stream and pond dried up shortly after construction of the city wellfield began, and remained so once the wellfield went into operation.⁹⁴ The defendant admitted that it pumped groundwater that was tributary to the stream and pond, but asserted a right to do so under the absolute ownership doctrine. The plaintiff appealed a judgment for the defendant.

The appellate court distinguished the previous American tributary groundwater cases following *Broadbent* in that none of the groundwater uses intercepting tributary groundwater were nonoverlying uses.⁹⁵ The court noted that the city purchased its land for its wellfield intending to transport the water away from the overlying land to the city:

The sole purpose was subordinate the use of the land to the particular purpose of a reservoir and conduit in which to gather, store, and carry water to a distant place for its benefit and profit, and for the enjoyment of strangers who have no claim or shadow of right to it as against the plaintiff. It was its purpose not only to take the water which might come by natural percolation upon its land, but also to use artificial means and by powerful suction drain the adjoining land of its water. This purpose has been accomplished, and by the construction of its conduit, the sinking of its wells, and the suction of its powerful pumps, the whole spring level of the surrounding country has been lowered, and running streams and ponds dried up.⁹⁶

After briefly reviewing absolute ownership precedents, the court concluded that the rule was justified by its benefit of allowing the landowner to make his land more valuable by using groundwater. Referring to *Bassett* and the opinion of Lord Wensleydale in *Broadbent*, the court elected to limit the overlying landowner's right to freely pump groundwater to when the groundwater use benefitted the overlying land.⁹⁷

This right [to withdraw groundwater] is only qualified by the equal right of every adjoining landowner. The right of use is supported in either when, for purposes of use upon the land, or of the land, injury results to one as an incident to such use. But it seems to me monstrous to assert that one landowner may deliberately and intentionally make an erection for the express purpose of draining the land of another of its percolating water, and thereby destroy streams, springs, ponds, and wells, and be supported in doing so upon the theory that it is the exercise of a legal right in the use of his land. . . . "So use your own property so as not to injure another," is a maxim as old as civilized man and binding both in law and morals. It may be saved and applied to

94. *Id.* at 142-43.

95. *Id.* at 143-44. The court further acknowledged that *Chesmore* was the only British exception. *Id.* at 148.

96. *Id.* at 143-44.

97. *Id.* at 145.

percolating water and still support our prior decisions by placing the limitations upon it which reason and justice suggest.⁹⁸

The court awarded the plaintiff a new trial.⁹⁹

Notably, there exists an important difference between *Bassett* and *Smith*. The *Bassett* notion of reasonable use involves, *inter alia*, a comparison of the respective uses, and would today be characterized as the rule of Eastern correlative rights. *Smith* characterizes non-overlying uses as *per se* unreasonable, which is the important distinction between the absolute ownership rule and the American rule of reasonable groundwater use. Thus an overlying use that would be reasonable under *Smith* could be judged to be unreasonable under *Bassett*. It would be some time before the eastern states' correlative rights doctrine would crystalize as a separate doctrine. Nonetheless, it is noteworthy that American courts had begun diverging from the absolute ownership doctrine.

The leading decision for the American rule of reasonable groundwater use between competing groundwater users is *Forbell v. City of New York*.¹⁰⁰ In *Forbell*, the plaintiff grew celery and watercress on subirrigated land.¹⁰¹ The defendant city purchased two acres of land for its wells and pumps and withdrew between three and ten million mgd, which it transported to New York City.¹⁰² The city's wells lowered the groundwater table over an area of between five and eleven square miles, lowering the groundwater table under the plaintiff's field by ten to fifteen feet.¹⁰³ At trial, the New York Supreme Court noted that the defendant city did not own the bulk of the land experiencing the lowered groundwater levels, and that such water withdrawal and transportation off-site was not a legal use (as per *Smith*).¹⁰⁴ The supreme court concluded that the city understood that its well would draw groundwater from beyond its two-acre premises but also from underneath the land of other landowners within the region.¹⁰⁵

98. *Id.* at 145. The court also quoted the same language from Lord Wensleydale's opinion in *Broadbent* as accompanies note 69 *supra*. *Id.* at 146. In addition, the court noted the inconsistency the *Bassett* court identified in protecting a riparian's streamflow but allowing a groundwater pumpier to dry up the stream. *Id.* at 147.

99. *Id.* at 148. The subsequent verdict for the plaintiff was sustained on appeal. *Smith v. City of Brooklyn*, 54 N.E. 787 (N.Y. 1899), *aff'd* *Smith v. City of Brooklyn*, 52 N.Y.S. 983 (App. Div. 1898). Neither case dealt more than superficially with the *Smith* court's disapproval of *Broadbent*.

100. 58 N.E. 644 (N.Y. 1900).

101. *Id.* at 645.

102. *Forbell v. City of New York*, 61 N.Y.S. 1005, 1006 (App. Div. 1900).

103. *Id.* at 1006.

104. *Id.* at 1007.

105. *Id.* at 1007-08.

It created a condition whereby all the [ground]water was drawn to one spot. That this result would follow was, for all practical purposes, as well known when the wells were driven as it was when the pumps were applied and the conditions created. If the act is to be supported as the exercise of a legal right, then we must be prepared to say that the defendant may turn the area which it thus drains into a desert, and destroy, at least for agricultural purposes, a large tract of land, without even the pretense of improving its own.¹⁰⁶

The New York Court of Appeals adopted the reasoning of the supreme court. The court noted that the defendant's plan was to pump a large quantity of groundwater for nonoverlying municipal purposes:

The case is not one where, because the percolation and course of the subsurface waters are unobservable from the surface, they are unknown, and thus so far speculative and conjectural as to be incapable of proof or judicial ascertainment. Before the defendant constructed its wells and pumping stations it ascertained, at least to a business certainty, that such was the percolation and underground flow or situation of the water on its own and the plaintiff's land that it could by these wells and appliances cause or compel the water in the plaintiff's land to flow into its own wells, and thus could deprive the plaintiff of his natural supply of underground water. This it has accomplished just as it expected to do it; the evidence to that effect is about as satisfactory and convincing as if the case were one of surface waters.¹⁰⁷

The court declined to follow the absolute ownership precedents, because the defendant understood the effect its pumping would have on its neighbors, and because the defendant's nonoverlying use did not benefit the land from where the groundwater was withdrawn.¹⁰⁸

It is not unreasonable, so far as it is now apparent to us, that he should dig wells and take therefrom all the water that he needs in order to the fullest enjoyment and usefulness of his land as land, either for purposes of pleasure, abode, productiveness of soil, trade, manufacture, or for whatever else the land as land may serve. . . . But to fit it up with wells and pumps of such pervasive and potential reach that from their base the defendant can tap the water stored in the plaintiff's land, and in all the region thereabout, and lead it to his own land, and by merchandising it prevent its return, is, however reasonable it may appear to the defendant and its customers, unreasonable as to the plaintiff and the others whose lands are thus clandestinely sapped, and their value impaired.¹⁰⁹

The court concluded that the city could legally acquire its water supply through eminent domain.

The American cases began moving away from the absolute ownership doctrine. *Salisbury* is an amazing piece of natural resource jurisprudence. *Forbell* initiated the overlying land restriction of the American rule of reasonable use. While this restriction would not ultimately protect streamflow from being depleted by tributary groundwater withdrawals, it would avoid the inequity of a large well draining local groundwater supplies to the detriment of other overlying owners.

106. *Id.* at 1008.

107. *Forbell*, 58 N.E. at 645.

108. *Id.* at 645-46.

109. *Id.* at 646.

It would also complicate somewhat the water supply acquisition for municipalities.¹¹⁰

V. SELECTED WESTERN STATE TRIBUTARY GROUNDWATER DECISIONS

The western decisions are too numerous to address individually.¹¹¹ The cases discussed below are those most influential in the development of western tributary groundwater law. Absolute ownership was the principal rule for groundwater allocation in the West throughout the nineteenth century and into the twentieth century.¹¹² California courts developed the correlative rights doctrine, while Nebraska and Arizona followed the reasonable use doctrine and Texas adhered to absolute ownership.¹¹³ Most western states, however, ultimately applied the appropriation doctrine to groundwater via statute.¹¹⁴ This made resolving disputes over tributary groundwater simpler and competing surface water and groundwater rights easier to correlate, as priority of appropriation established the better right.

110. See TARLOCK, *supra* note 5, § 4:9.

111. Early cases are collected in Davis, *supra* note 7. Other general discussions include: Robert Glennon, *Pinching Straws: Reforming Groundwater and Surface Water Law to Protect the Environment*, 49 ROCKY MTS. MIN. L. INST. 7A-1 (2003); Glennon & Muddock, *Stream/Aquifer Interactions*, *supra* note 7; Grant, *supra* note 12, and Trelease, *supra* note 25. State-specific discussions include: David R.E. Aladjem, *California's Other "Dual System": Coordinated Management of Groundwater and Surface Water*, 49 ROCKY MTS. MIN. L. INST. 7C-1 (2003); Behrens & Dare, *supra* note 34; James N. Castleberry, Jr., *A Proposal for Adoption of a Legal Doctrine of Ground-Stream Water Interrelationship in Texas*, 7 ST. MARY'S L.J. 503 (1975-1976); F. Harlan Flint, *Groundwater Law and Administration: A New Mexico Viewpoint*, 14 ROCKY MTS. MIN. L. INST. 545 (1968); Glennon & Muddock, *Subflow*, *supra* note 7; David L. Harrison & Gustave Sandstrom, Jr., *The Groundwater-Surface Water Conflict and Recent Colorado Water Legislation*, 43 U. COLO. L. REV. 1 (1971-1972); Hillhouse, *supra* note 30; William E. Holland, *Conflicts between Private Appropriators of Stream Flows and Users of Ground Water in Nebraska*, 10 CREIGHTON L. REV. 592 (1977-1978); Ramsey L. Kropf, *Colorado Groundwater Law: Integration (Or Not?) of Groundwater and Surface Water*, 49 ROCKY MTS. MIN. L. INST. 7B-1 (2003); Leshy & Belanger, *supra* note 7; Lawrence J. MacDannell, *Colorado's Law of "Underground Water": A Look at the South Platte Basin and Beyond*, 59 U. COLO. L. REV. 579 (1988); Stephen D. Mussmun, *"Whiskey is for Drinkin' But Water is for Fightin' About": A First-Hand Account of Nebraska's Integrated Management of Ground and Surface Water Debate and the Passage of L.H. 108*, 30 CREIGHTON L. REV. 67 (1996); Sax, *supra* note 3; Wiel, *supra* note 25; Jeffrey Mauer, Note, *Conjunctive Management of Stream Aquifer Water Rights: the Hubbard Decision*, 38 NAT. RESOURCES J. 651 (1998).

112. See Hutchins, *Statutory Trends*, *supra* note 20, at 160-62.

113. *Id.* at 160-65.

114. See *id.* at 165-72 for a description of early statutes.

A. Early Decisions

The first western case invoking the *Dickinson* prohibition against inducing recharge from a stream was decided by the Kansas Supreme Court in the 1881 decision of *City of Emporia v. Soden*.¹¹⁵ The defendant city installed a large well above the stream supplying the plaintiff's mill pond. The well was located seventy-five to one hundred feet from the river. The trial court found that the well induced recharge from the mill pond.¹¹⁶ The court opined that "a man may not do indirectly what he may not do directly."¹¹⁷ The court acknowledged that absolute ownership was the common law rule for groundwater allocation, but held that the city could not induce recharge from the plaintiff's mill, citing *Dickinson*.¹¹⁸

In the 1881 Nevada decision of *Strait v. Brown*,¹¹⁹ tributary groundwater was in effect treated as surface water, although the court did not adopt the tributary groundwater doctrine. Duckwater Creek was fed by discharge from Warm Springs, which flowed a short distance through a surface channel before being discharged into a large wetland. The wetland had no natural surface outlet, but the jury found that the waters from the wetland percolated underground about one-half-mile to the creek.¹²⁰ The plaintiffs appropriated water from Duckwater creek in 1867 for irrigation. In 1875, the defendants diverted water from Warm Springs for irrigation. The plaintiff alleged, and the jury found, that the diversion from the springs cut off the groundwater flow (in effect tributary groundwater flow) from the wetland to the creek. The jury concluded that there was no underground stream connecting the creek with the spring, but also concluded that the springs were tributary to the creek and the defendant's diversions from the spring appreciably diminished the flow of the creek. The trial court ruled for the defendants, based upon the jury finding that there was no underground stream connecting the springs and the creek.¹²¹

On appeal, the defendants argued that since the defendants were charged with cutting off the groundwater flow to the creek, the case should be treated as a groundwater case. Under the absolute ownership doctrine, this meant that the defendant was not liable for preventing the groundwater from percolating to the stream. The Ne-

115. 25 Kan. 588 (1881).

116. *Id.* at 601. The opinion does not indicate how close the well was to the plaintiff's mill pond, but the tracts were adjoining. *Id.*

117. *Id.* at 608.

118. *Id.* at 608-13. The opinion includes a thorough review of the English cases dealing with induced recharge and intercepting tributary groundwater. *Id.* at 609-13.

119. 16 Nev. 317 (1881).

120. *Id.* at 319-20.

121. *Id.* at 320-21.

vada Supreme Court reversed, ruling that the facts were clear that spring fed the creek even if the groundwater percolating towards the stream did not constitute an underground stream. The court noted that surface water law applied to underground streams but not to percolating groundwater.¹²² The court also acknowledged that if the case had involved the direct diversion of groundwater, the absolute ownership doctrine would have governed and the defendants would have won. However, the court ruled that the absolute ownership doctrine was inapplicable, because the plaintiff did not seek to enjoin groundwater diversions, but rather diversions of spring water (i.e., surface water) that formed the source of the creek.¹²³ The court concluded that the mere fact that the water from the spring went underground before it joined the creek should not be used to defeat the rights of the senior appropriator:

It would be a mere pretense of protection of the rights acquired by the earlier appropriators of the waters of the creek to say that later appropriators could lawfully acquire rights to the springs which constitute the source of the creek simply because the means by which the waters are conveyed from springs to creek are subterranean and not well understood.¹²⁴

Although the court did not apply surface water law to tributary groundwater explicitly, the result is the same as if it had. The court's language regarding the injustice of allowing a junior groundwater user to, in effect, steal a senior appropriator's water foreshadows the eventual application of prior appropriation to tributary groundwater in the West.

A California riparian-appropriator dispute involving, *inter alia*, subflow rights was the subject of the 1908 case of *Huffner v. Sawday*.¹²⁵ The defendant appropriators sought to divert water from the stream to work a mining claim. In ruling for the plaintiff riparians, the court acknowledged some fundamental arid hydrologic facts that are also applicable to the Platte River in Nebraska.

It is true that there is evidence to the effect that during the summer months, when the stream is dry in the San Pasqual [V]alley, there is some water running at the defendants' [upstream] point of diversion. It does not follow, however, that the taking of this water would not injure the [riparian] respondents. There are long stretches of sandy bottom between the defendants' proposed works and the [riparian] lands of the plaintiffs. Water flowing over the rocky bed above sinks into the sand, which must become saturated before there can be a flow over its surface. To so fill this sand requires, as a witness testifies, several weeks. The [trial] court was justified in drawing from this testimony the inference that an interruption to the flow of this water would . . . materially postpone the time when a surface flow would come to plaintiffs' lands.

122. *Id.* at 321.

123. *Id.* at 323-24.

124. *Id.* at 324. The case was followed in *Cross v. Kitts*, 10 P. 409 (Cal. 1886). The extract was quoted with approval in *Brunning v. Dorr*, 47 P. 290, 293 (Colo. 1896), and in *Clark v. Ashley*, 82 P. 588, 589 (Colo. 1905).

125. 94 P. 424 (Cal. 1908).

Such postponement would be a clear injury to the plaintiffs, whose interest in the waters of the stream included the right to have the river bed continue to hold sufficient water to supply and support the surface stream in its natural state.¹²⁶

B. California and Correlative Rights

The California doctrine of correlative rights is one of the important legal innovations in western groundwater law. California courts ultimately expanded the underground stream doctrine to include tributary groundwater. In addition, the unique sharing feature of correlative rights is an important and appropriate groundwater policy for allocating scarce groundwater supplies among overlying owners. Correlative rights doesn't do as well as far as equitably integrating surface water uses with groundwater uses, although the physical solution provides at least part of the answer.

The 1899 California Supreme Court decision in *City of Los Angeles v. Pomeroy*¹²⁷ is an important milestone in the development of western tributary groundwater jurisprudence. Los Angeles sought to condemn property in the San Fernando Valley from which to divert subflow from the Los Angeles river for municipal water supply purposes.¹²⁸ The parties understood that the entire San Fernando Valley surface water and groundwater were a single integrated water supply system.¹²⁹ Under California water law, Los Angeles had pueblo water rights giving the city "paramount" water rights to the Los Angeles River.¹³⁰ However, city attorneys feared that because of earlier California absolute ownership decisions the city would have to compensate the landowners for their percolating groundwater, even though the city believed (correctly) that all or most of the percolating groundwater was tributary to the river. Because of this, the city sought broad jury instructions regarding what constituted an underground stream, reasoning that if they could shoehorn their particular hydrologic situation into the underground stream framework, they could achieve their objectives despite the absolute ownership rule.¹³¹ Los

126. *Id.* at 427.

127. 57 P. 585 (Cal. 1899).

128. *Id.* at 586-87.

129. *Id.* at 591; Sax, *supra* note 3, at 276.

130. The portion of *Pomeroy* dealing with pueblo water rights is 57 P. at 599-604. Regarding pueblo water rights generally, see WELLS A. HUTCHINS, *THE CALIFORNIA LAW OF WATER RIGHTS* 256-72 (1956) (hereinafter HUTCHINS, *CALIFORNIA WATER LAW*); 2 HUTCHINS ET AL., *supra* note 9, at 145-71.

131. This is a significant thesis of Sax and is fascinating legal history. See Sax, *supra* note 3, at 275-86. The *Pomeroy* trial judge was Lucien Shaw, later chief justice of the California Supreme Court, and author of the celebrated 1903 groundwater decision in *Katz v. Walkinshaw*, 74 P. 766 (Cal. 1903), which establishes the California doctrine of correlative rights in place of the absolute ownership theory. Shaw later wrote that he gave the percolating groundwater-underground stream

Angeles was successful in this regard and *Pomeroy* now stands for an expanded definition of what constitutes an underground stream. *Pomeroy* has been criticized for its convoluted underground stream definition, with critics contending that a tributary groundwater definition would have made more hydrologic sense.¹³² But such an approach would have been a significant legal gamble, one the city probably could not afford to take. The better approach is to recognize *Pomeroy* as a significant decision in the historical development of the tributary groundwater doctrine.

The first California Supreme Court decision establishing the California doctrine of correlative rights, *Katz v. Walkinshaw (Katz I)*,¹³³ was issued in 1902. The plaintiff, who was using groundwater on his overlying land, sued the defendant to enjoin her nonoverlying use. The trial court dismissed the complaint.¹³⁴ The defendants contended on appeal that the absolute ownership doctrine applied. But Justice Temple, writing for the court, demurred, stating that when an overlying owner withdraws groundwater for sale to distant customers, the water merchandiser also pumps groundwater out from underneath his neighbors.¹³⁵

By pumping out the water from his lands, he can, perhaps, deprive his neighbors of water for domestic uses, and in fact render their land valueless. In short, the members of the community, in the case supposed, have a common interest in the water. It is necessary for all, and it is an anomaly in the law if one person can for his individual profit destroy the community, and render the neighborhood uninhabitable.¹³⁶

After discussing *Acton* and noting the dramatic differences in climatic and water supply conditions between California and England, the court discussed a reasonable use concept similar to that expressed in *Bassett*. The court noted with approval Lord Wensleydale's opinion in *Chesmore*, in addition to *Bassett's* reasonable use theory and *Smith's*

instruction at Los Angeles's request, not because he approved of the distinction (or the absolute ownership doctrine), but because Los Angeles needed the underground stream doctrine at its disposal if the California Supreme Court adhered to absolute ownership. See Sax, *supra* note 3, at 283 n.3 and accompanying text.

132. Sax, *supra* note 3, at 277-79. This is in part because California Water Code section 1200 (enacted in 1913) made groundwater in an underground stream subject to appropriation, but left percolating groundwater outside of the appropriation system. The California Supreme Court did away with the legal distinction between percolating groundwater and the water of an underground stream by 1909, but the 1913 legislation froze the distinction into statute. Sax, *supra* note 3, at 281-86, 286-317.

133. 70 P. 663 (Cal. 1902).

134. *Id.* at 664.

135. *Id.* at 664-65. The court's largely correct unarticulated assumption is that the exporter will withdraw groundwater in sufficiently large quantities to cause groundwater to be drawn towards his well from beneath adjoining tracts.

136. *Id.* at 665.

conclusion that nonoverlying uses were *per se* unreasonable.¹³⁷ The court noted the inconsistency of allowing a riparian the right under absolute ownership to deplete streamflow with a large well but denying a riparian the right to divert the same amount of water directly under the natural flow doctrine.¹³⁸ The court concluded that it has never explicitly adopted absolute ownership, adopted the maxim *sic utere tuo* (that a landowner should use his property so as not to harm his neighbor), and awarded the plaintiff a new trial.¹³⁹ The court in *Katz I* essentially adopted the American rule of reasonable groundwater use as it was evolving in the eastern states, and rejected the absolute ownership rule.

Because of the outcry from companies selling groundwater to municipalities and others resulting from *Katz I*, the California Supreme Court agreed to rehear the case.¹⁴⁰ *Katz II* was issued in 1903.¹⁴¹ Justice Shaw wrote a strong opinion supporting *Katz I* and responding effectively to its criticisms. *Katz II* began by noting that a number of groundwater merchandisers participated in the rehearing.¹⁴² After dismissing the argument that common law rules should not be changed by the courts, the court explored the geographic, climatic and water supply conditions that justified a different rule than absolute ownership.¹⁴³ In that regard, Justice Shaw described the potential for future tributary groundwater depletion resulting from unconstrained groundwater development and use that is particularly apt for Nebraska:

It is usual to speak of the extraction of this water from the ground as a development of a hitherto unused supply. But it is not yet demonstrated that the process is not in fact, for the most part, an exhaustion of the underground sources from which the surface streams and other supplies previously used have been fed and supported. In some cases this has been proven by the event. The danger of exhaustion in this way threatens surface streams as well as underground percolations and reservoirs. Many water companies, anticipating such an attack on their water supply, have felt compelled to purchase, and have purchased, at great expense, the lands immediately surrounding the stream or source of supply, in order to be able to protect and secure the percolations from which the source was fed. Owing to the uncertainty in the law, and the absence of legal protection, there has been no security in titles to water rights. So great is the scarcity of water under the present demands and conditions that one who is deprived of water which he has been

137. *Id.* at 665-67.

138. *Id.* at 667-68.

139. *Id.* at 668-69.

140. Sax, *supra* note 3, at 281-82.

141. *Katz v. Walkinshaw*, 74 P. 766 (Cal. 1903).

142. *Id.* at 766.

143. *Id.* at 766-68. This includes an interesting description of the system of California groundwater basins found in mountain valleys, which contains most of California's groundwater supplies. *Id.* at 768.

using has usually no other source at hand from which he can obtain another supply.¹⁴⁴

After discussing the importance of irrigation to California's economy, and contrasting California's irrigation water requirements to the humid English climate, the court offered this sobering assessment:

It is clear also that the difficulties arising from the scarcity of water in this country are by no means ended, but, on the contrary, are probably just beginning. The application of the rule contended for by the defendants will tend to aggravate these difficulties, rather than solve them. Traced to its true foundation, the rule is simply this: That, owing to the difficulties the courts will meet in securing persons from the infliction of great wrong and injustice by the diversion of percolating water if any property right in such water is recognized, the task must be abandoned as impossible, and those who have valuable property acquired by and dependent on the use of such water must be left to their own resources to secure protection for their property from the attacks of their more powerful neighbors, and, failing in this, must suffer irretrievable loss; that might is the only protection.

"The good old rule
Sufficeth them, the simple plan,
That they should take who have the power,
And they should keep who can."

The field is open for exploitation to every man who covets the possessions of another, or the water which sustains or preserves them, and he is at liberty to take that water if he has the means to do so, and no law will prevent or interfere with him, or preserve his victim from the attack. The difficulties to be encountered must be insurmountable to justify the adoption or continuance of a rule which brings about such consequences.¹⁴⁵

The court concluded this portion of the decision by arguing that absolute ownership in fact provides no protection to groundwater users, while reasonable use provides more. The court then provided prospective guidance regarding how the new California groundwater doctrine will be applied to future conflicts, giving the doctrine its unique correlative rights dimension. The court indicated that nonoverlying users will be subject to the needs of overlying users but will be able to appropriate any surplus for nonoverlying uses.¹⁴⁶ Competing overlying owners "concerning water for use on the land, to which they have an equal right, in cases where the supply is insufficient for all, are to be settled by giving to each a fair and just proportion."¹⁴⁷ Finally, the remedy for nonusing overlying owners for nonoverlying uses should be limited to damages.¹⁴⁸

Katz made the legal distinction between percolating groundwater and the water of an underground stream legally irrelevant, in effect adopting the tributary groundwater doctrine. Professor Sax has aptly

144. *Id.* at 768.

145. *Id.* at 769.

146. *Id.* at 771-72.

147. *Id.* at 772.

148. *Id.* at 772. The court referred to the new doctrine as "the rule of correlative rights." *Id.*

characterized the implications of *Katz* for tributary groundwater disputes:

The relevance of the groundbreaking decision in *Katz* is that it made the doctrinal gymnastics of the *Pomeroy* case unnecessary, and reduced the subterranean stream category to virtual irrelevance. If landowners pumping ground water—even percolating ground water—must respect the rights of other water-rights holders, whom their pumping injures, then it makes no difference in a case like *Pomeroy* whether the water in question was a subterranean stream or percolating water. . . .

Katz essentially determined the resolution of conflict between contending water users should be based on the impact of one use upon another, rather than upon some ex-ante classification of the source. This change was calculated to bring the legal rules into congruence with hydrological realities, and in doing so, to replace the legal fiction that groundwater movement was unknowable with case-specific factual inquiries. Was the water's movement known or practically determinable? If so, what were the impacts? And if there were impacts, were they legally redressable?¹⁴⁹

These points are certainly as applicable in Nebraska today as they were in California in 1903. Most western states would achieve this same result by applying the doctrine of prior appropriation to both groundwater and surface water, the exceptions being Arizona, Texas and Nebraska.

The legal advantage of using wells over streamflow during a drought was illustrated in the 1909 California Supreme Court decision of *Hudson v. Dailey*.¹⁵⁰ In *Hudson* the plaintiff riparian diverted streamflow for irrigation and the upstream overlying owners obtained their irrigation water supply from wells. During a drought, streamflow decreased and the water available for the plaintiff's use decreased too. The defendants continued using their wells, and the plaintiff failed to prove that their use was unreasonable. So the groundwater pumpers received their full irrigation water supply while the surface water user received only a portion of her supply because of the reduced streamflow.

The court addressed several important legal issues. First, the court ruled that owners of land overlying a groundwater supply tributary to a stream have the same rights to reasonably use water on their overlying land as a riparian proprietor would.¹⁵¹ The measure of this correlative right is reasonable use; reasonable use on the overlying land (even if nonriparian) for the overlying owners and reasonable use upon riparian land for riparian proprietors. If the supply is insufficient for all overlying owners, they are entitled to a reasonable share of the available supply. But if the supply is sufficient for all overlying owners, they are all entitled to full reasonable use upon overlying

149. *Sax, supra* note 3, at 282 (emphasis added). Note the close similarity to the reasonable use doctrine espoused in *Bassett*.

150. 105 P. 748 (Cal. 1909).

151. *Id.* at 752.

lands, regardless of the effect that these groundwater withdrawals have on streamflow and riparian streamflow diversions.¹⁵² Thus, during a drought or other period of low streamflow, if groundwater withdrawals are further depleting streamflows, the riparian's remedy is to drill his own well. The riparian is not entitled to have the overlying owners' groundwater withdrawals curtailed—the reasonable sharing applies only among overlying owners making overlying uses.¹⁵³

There is some merit to this approach, at least in the short run. Restricting groundwater withdrawals, particularly tributary groundwater withdrawals, are unlikely to result in a timely increase in streamflow to benefit riparian diverters. Restricting subflow withdrawals might be a different story, but would create inequality among overlying pumpers. Imposition of a physical solution might help allocate the shortages among riparians and overlying pumpers. However, the physical solution was not an element of California water law at the time of *Hudson*. The physical solution doctrine involves a nonoverlying or junior user directly providing substitute water to a riparian or overlying user in order to use the much larger quantity of water to which the riparian or overlying user would otherwise be entitled.

In *City of Lodi v. East Bay Municipal Utility District*,¹⁵⁴ the district's proposed impoundment would have reduced streamflows past the city's wellfields. The state appropriation for the dam required the district to not injure the city's water supply. Maintaining groundwater levels would have required annual water releases of 120,000 to 360,000 acre-feet to allow the city to pump 3600 acre-feet from its wells per year.¹⁵⁵ The California Supreme Court ordered the trial court to seek a physical solution that would allow the district to avoid harm to the city's water supply more efficiently.¹⁵⁶ In the long run, depleting tributary groundwater supplies would permanently deplete streamflow. Although this issue has not been directly addressed by California water law, the physical solution does suggest one approach to dealing with it.

It was not until 1949 that the California Supreme Court finally reached the logical conclusion of the correlative rights doctrine: how is water allocated across uses when overuse creates a shortage? The

152. *Id.* at 753.

153. This is the simple case; in the future the mutual prescription doctrine would apply to competing overlying and nonoverlying pumpers creating a groundwater overdraft. *City of Pasadena v. City of Alhambra*, 207 P.2d 17 (Cal. 1949). See generally HUTCHINS, CALIFORNIA WATER LAW, *supra* note 130, at 444-46.

154. 60 P.2d 439 (Cal. 1936).

155. *Id.* at 448.

156. *Id.* at 450. See Harrison C. Dunning, *The "Physical Solution" in Western Water Law*, 57 U. CALIF. L. REV. 445, 462-63 (1986).

court's answer in *Pasadena v. Alhambra*¹⁵⁷ was the mutual prescription doctrine. Several municipalities and other large pumpers were depleting the Raymond groundwater basin. The California Department of Water Resources, as referee, determined what the long-term safe yield from the basin was, and most pumpers agreed to proportional share of the safe-yield amount. The lawsuit was filed to force the settlement upon the holdouts. The California Supreme Court accepted the settlement and the mutual prescription doctrine that was its basis.¹⁵⁸ Although mutual prescription, or the proportional sharing of an aquifer's safe-yield amount, has not yet been applied across surface water and groundwater users, a strong case can be made for doing so, especially where the bulk of the streamflow is (or was) supplied by tributary groundwater.

C. Arizona and Reasonable Use

The Arizona Supreme Court, in the 1931 *Maricopa County* decision,¹⁵⁹ elected to limit its integration of surface water and groundwater rights to subflow. The court distinguished correlative rights on the basis that California had recognized the legal doctrine of riparian rights and Arizona had not, despite the striking similarities in their stream-aquifer conditions.¹⁶⁰ In a more recent decision,¹⁶¹ and despite considerable effort to persuade the court to expand the subflow doctrine to include tributary groundwater,¹⁶² the Arizona Supreme Court adhered to the *Maricopa County* test. Consequently, tributary groundwater pumpers can dry up a stream in Arizona just as they can in most western states.

157. 207 P.2d 17 (Cal. 1949).

158. TAYLOR, *supra* note 5, § 4:16. The mutual prescription doctrine was severely limited by *City of Los Angeles v. City of San Fernando*, 537 P.2d 1250 (Cal. 1975). The California Supreme Court ruled that prescription did not apply against municipalities or holders of pueblo water rights. *Id.*; see also Charles E. Corker, *Inadequacy of the Present Law to Protect, Conserve and Develop Groundwater Use*, 25 ROCKY MTN. MIN. L. INST. 23-1, 23-7 to -11 (1979); TAYLOR, *supra* note 5, § 4:17.

159. *Maricopa County Mun. Water Conservation Dist. Number One v. Southwest Cotton Co.*, 4 P.2d 369 (Ariz. 1931). See also Glennon & Maddock, *Subflow*, *supra* note 7, at 571-74; Lesby & Belanger, *supra* note 7, at 676-90.

160. *Maricopa County*, 4 P.2d at 378-82. The court was also following a statutory extension of appropriability to "water . . . flowing . . . in [a] definite underground channel []." *Id.* at 375.

161. *In re General Adjudication of Gila River*, 857 P.2d 1236 (Ariz. 1993). The decision is criticized in Glennon & Maddock, *Subflow*, *supra* note 7, at 570-74.

162. Lesby & Belanger, *supra* note 7, 743-44.

D. Prior Appropriation¹⁶³

The first western case adopting the tributary groundwater doctrine is the 1893 Colorado Court of Appeals decision, *McClellan v. Hurdle*.¹⁶⁴ The case is remarkable in that it completely disregarded the distinction between water in an underground stream, subflow, and percolating groundwater (similar to *Bassett*) and simply characterized groundwater tributary to a stream as being tributary groundwater (although not using that precise term). The plaintiff was a senior appropriator from Lone Tree Creek with an 1886 priority.¹⁶⁵ The defendants in 1889 sank a well near the bank of the creek, and the well-pumping allegedly reduced the flow of the creek. The trial court instructed the jury to follow the absolute ownership rule: "As a matter of law, that water that percolates through the soil, without an evident and well-known channel, is regarded as a part of the land, and belongs to the water owner thereof. . . ."¹⁶⁶ The trial court also gave the jury a subflow instruction "that digging wells close to a stream, so that the waters of the stream necessarily percolate into such wells, thus diminishing the water previously appropriated, is but doing indirectly what the law forbids being done directly, and will not be allowed."¹⁶⁷ Clearly, the case was argued at a sophisticated level (or at least an imaginative one) regarding groundwater legal doctrine. Despite the subflow instruction, the jury nonetheless found for the defendants, concluding that the defendants' well-pumping did not diminish the flow of the creek.

The court of appeals, after reciting the absolute ownership instruction, continued:

It is probably safe to say that it is a matter of no moment whether water reaches a certain point by percolation through the soil, by a subterranean channel, or by an obvious surface channel. If by any of these natural methods it reaches the point, and is there appropriated in accordance with law, the appropriator has a property in it which cannot be divested by the wrongful diversion by another, nor can there be any substantial diminution. To hold otherwise would be to concede to superior (i.e., upstream or headwater) owners of land the right to all sources of supply that go to create a stream, regardless of the rights of those who previously acquired the right to the use of the water from the stream below.¹⁶⁸

The court ruled that the absolute ownership instruction was harmless in view of the jury finding that the defendants' well-pumping did not harm the plaintiff. The court of appeals did approve the subflow in-

163. Glennon & Maddock, *Stream/Aquifer Interactions*, *supra* note 7, § 22.03 (providing a useful review of the tributary groundwater policies in most western states).

164. 33 P. 280 (Colo. Ct. App. 1893).

165. *Id.* at 280.

166. *Id.* at 281.

167. *Id.* at 281.

168. *Id.* at 282.

struction as a clear statement of "all the law of the case." The court then described a *Dickinson* stream:

Streams of the character described in the complaint are frequent throughout the entire arid portion of the continent, and their existence and peculiarities cannot be ignored, being well-defined surface streams with well-defined channels, for long distances, then, for miles, sunken, until uniting with another stream, but having, topographically, all the physical characteristics of a stream,—a bed, banks, valley, etc., at times of high water, being, its entire length, a running surface stream, and, in low water, or droughts, running short distances, standing in pools, sinking into gravel or loose material in its bed, percolating through or passing under it, and reappearing at some point below, but still delivering at different points a greater or less volume of water,—sometimes at the surface, sometimes much below. It is not necessary to legally define water courses having these peculiar characteristics. They are, as conduits of water, such source of supply as to furnish an appropriator a legal basis for the appropriation of the available water. In the case of a running surface stream the question of appropriation is of easy solution; but not so in a sunken stream, particularly at a point where the water is an indefinite distance below the surface.¹⁶⁹

The court's description of what would later be referred to as tributary groundwater completely disregarded the legal categories of groundwater as percolating, underflow or underground stream, anticipating the widespread criticism of those artificial categories. The description of *Dickinson* sunken streams pointed to a circumstance that would confound many western courts regarding whether the groundwater of such sunken streams should be considered part of a definite underground stream, or whether the groundwater should constitute the subflow or underflow of a surface stream.¹⁷⁰ But the court admirably swept these complications aside in treating the groundwater as tributary to a surface stream, or tributary groundwater. In time, the concept of tributary groundwater would become the foundation for Colorado groundwater law. While the court cited no legal precedents, it certainly created an important one.

In the 1902 decision of *Medano Ditch Co. v. Adams*,¹⁷¹ the Colorado Supreme Court dealt with a buried stream channel, a fairly common phenomenon in the West. Buried streams are streams that were present in prehistoric times and were then covered by other geologic materials when the glaciers advanced and then retreated. The buried stream channel in this case was probably of more recent origin, having been covered by sand dunes. In *Medano*, the issue was whether two creeks were connected by a buried stream and whether the buried stream was an underground watercourse. The defendant had appropriated water from the upper branch, and would be junior to the plaintiff on the lower branch if the upper and lower branches were

169. *Id.* at 282.

170. *Id.* The court is also critical of the plaintiff's factual case, implying that if the plaintiff had done a better job at trial, the plaintiff would have won. *Id.*

171. 68 P. 431 (Colo. 1902).

connected by the buried river channel. After considerable discussion of the evidence, the court ruled that the buried river channel did exist, that it was a watercourse and not percolating groundwater, and that the defendant was subject to the plaintiff's senior priority.¹⁷²

In the 1905 decision in *La Jara Creamery & Livestock Ass'n v. Hansen*¹⁷³ the Colorado Supreme Court ruled that subsurface irrigation return flows percolating to the stream were tributary to the stream and subject to the rights of senior appropriators. The court noted the existence of *Dickinson* streams in Colorado, stating: "It is a well-known fact that some streams in this state, after running for less or greater distances on the surface, sink, and by a well-defined subterranean channel flow for a number of miles, and then come to the surface again."¹⁷⁴

A 1938 Utah Supreme Court decision recognizing the tributary groundwater doctrine gives perhaps the best judicial description of how tributary groundwater feeds streamflow, one that applies to Nebraska as well as to Utah:

Rains and snows falling on this entire vast area sink into the soil and find their way by surface or underground flow or percolation through the sloping strata down to the central channel. This entire sheet of water, or water table, constitutes the river and it never ceases to be such in its centripetal motion towards the channel. Any appropriator of water from the central channel is entitled to rely and depend upon all the sources which feed the main stream above his own diversion point, clear back to the farthest limits of the watershed.¹⁷⁵

Colorado law goes the farthest of any appropriation state in recognizing that the doctrine of priority may be inequitable if rigidly applied to surface water-groundwater conflicts.¹⁷⁶ In Colorado, tributary groundwater is regulated as part of the surface water supply. Colorado law has adopted several features to accommodate junior groundwater users. Surface water users are permitted to transfer their priority date to a well, in effect substituting a more reliable groundwater supply for a less dependable surface water supply and still retaining their earlier priority date.¹⁷⁷ In addition, junior groundwater users are permitted to provide substitute water to senior surface water users to compensate for stream depletion by groundwater withdrawals. Finally, junior groundwater users are not required to stop withdrawing groundwater that depletes streamflow if

172. *Id.* at 433-34. The Colorado Supreme Court took a narrower approach to groundwater than did the Colorado Court of Appeals in *McClellan*.

173. 83 P. 644, 645 (Colo. 1905).

174. *Id.* at 645.

175. *Richlands Irrigation Co. v. Westview Irrigation Co.*, 80 P.2d 458, 465 (Utah 1938).

176. *Harrison & Sandstrom*, *supra* note 111, *Hillhouse*, *supra* note 30; *MacDonnell*, *supra* note 111.

177. *Hillhouse*, *supra* note 30, at 707-09.

the increase in streamflow will not occur soon enough to benefit the senior surface water appropriator.¹⁷⁸ But the junior tributary well should be required to provide the substitute water to the senior surface appropriator; otherwise, in the long run, the stream depletions would increase.¹⁷⁹

New Mexico has developed an interesting strategy for dealing with the stream depletion effects of tributary wells. The first case is the famous *Templeton* decision.¹⁸⁰ The plaintiff sought to obtain a permit to drill an irrigation well into a basin that had been closed to further wells and transfer his surface appropriation priority date to the well, in effect changing his point of diversion from the stream to the well. The well would be withdrawing tributary groundwater, the withdrawal of which had reduced streamflows. One witness testified that tributary wells first intercepted tributary groundwater, lowering the water table and reducing streamflows. Ultimately the wells began inducing recharge. The stream had been transformed from a gaining stream into a losing stream, and the plaintiff elected to switch to groundwater instead of attempting to secure priority administration of the tributary wells (the result of which would have been uncertain at best). The State Engineer denied the well application, but was reversed by the district court. The New Mexico Supreme Court affirmed the district court and allowed the change in the point of diversion.¹⁸¹

The next case demonstrates the utility of allowing uses to shift between surface water rights and groundwater rights. In *City of Albuquerque v. Reynolds*,¹⁸² the city sought to appropriate tributary groundwater. State Engineer studies indicated that, over seventy-five years, half the water withdrawn would come from the river.¹⁸³ The State Engineer required the city to purchase and retire sufficient surface appropriations to compensate for the stream depletion effect of its wells. If this type of system could be imposed prospectively before an overwhelming number of tributary wells are installed, this system would limit the development of tributary wells (because it would increase their cost), and would significantly protect surface water users from the depletion effects of the tributary wells.¹⁸⁴ To impose such a

178. *Id.* at 706-07.

179. See Glennon & Maddock, *Stream/Aquifer Interactions*, *supra* note 7, § 22.03(3).

180. *Templeton v. Pecos Valley Artesian Conservancy Dist.*, 332 P.2d 465 (N.M. 1958). Regarding *Templeton*, see TARDY, *supra* note 5, § 8:20; ELLIS, *supra* note 11, at 474-75; and Glennon & Maddock, *Stream/Aquifer Interactions*, *supra* note 7, § 22.03(6) (providing a critical viewpoint).

181. *Templeton*, 332 P.2d at 469-70.

182. *City of Albuquerque v. Reynolds*, 379 P.2d 73 (N.M. 1962).

183. *Id.* at 78. It is not clear whether this amount would have included induced recharge, and/or the interception of tributary groundwater flow to the river, but it probably included both.

184. *Id.* The degree of protection afforded, however, would depend upon the seniority of the retired appropriations. If they were relatively junior and did not represent

system after significant tributary well development has occurred and significant tributary groundwater depletions are making their way to the stream, the cost of bringing the surface and tributary groundwater system into balance might be too high—the replacement costs for junior tributary well owners, for example, might be gallon-per-gallon. Irrigators are not dependably deep-pocket defendants, so following the *Templeton* approach might in effect require irrigators to abandon their tributary wells rather than to compensate the stream for their depletion effect. Nonetheless, *Templeton* and *Albuquerque v. Reynolds* illustrate how the forced retirement of surface appropriations by junior tributary groundwater appropriators may be one way to balance competing surface water and groundwater rights. However, as Professor Glennon points out, allowing tributary groundwater appropriators to buy their way out of their stream depletion effect could dry up the stream (or turn a gaining stream into a losing stream, as per *Templeton*) if tributary groundwater withdrawals are not limited.¹⁸⁵ To protect streamflows, as opposed to simply protecting senior surface appropriations, stream depletions caused by tributary wells must be reduced.

E. Texas and Absolute Ownership

Texas is the only western state that still follows absolute ownership. The absolute ownership rule was adopted by the Texas Supreme Court in the 1904 decision of *Houston & Texas Central Railway Co. v. East*.¹⁸⁶ The defendant railroad installed a well with a steam engine-powered pump and dried up the plaintiff's shallower domestic well. The trial court held for the defendant and the court of appeals reversed. The supreme court reversed again, citing two reasons for its opinion:

(1) Because the existence, origin, movement and course of such waters, and the causes which govern and direct their movements, are so secret, occult and concealed that an attempt to administer any set of legal rules in respect to them would be involved in hopeless uncertainty, and would therefore be practically impossible. (2) Because any such recognition of correlative rights would interfere, to the material detriment of the commonwealth, with drainage of agriculture, mining, the construction of highways and railroads, with sanitary regulations, building, and the general progress of improvement in works of embellishment and utility.¹⁸⁷

a stable water supply, they would be cheaper to purchase; however, appropriators senior to the retired appropriations would experience some interference. If the rights purchased were senior, then no remaining surface appropriators would be harmed, but the cost of the retired appropriations would be higher.

185. Glennon & Maddock, *Stream/Aquifer Interactions*, *supra* note 7, at 22–39.

186. 81 S.W. 279 (Tex. 1904), *rev'g* *East v. Houston & Texas Cent. R.R. Co.*, 77 S.W. 646 (Tex. Civ. App. 1903).

187. 81 S.W. at 281 (quoting *Frazier v. Brown*, 12 Ohio St. 294, 311 (1861)).

The court acknowledged the reasonable use precedents of *Bassett*, *Smith*, and *Forbell*, but was not persuaded by them.¹⁸⁸ Texas courts have applied surface water law to subflow, however.¹⁸⁹ The absolute ownership doctrine was recently affirmed and the tributary groundwater doctrine again rejected in *Denis v. Kickapoo Land Co.*¹⁹⁰ Interestingly, Texas has administratively designated the Edwards Aquifer as an underground stream to deal with endangered species issues not unlike those facing Nebraska on the Platte.¹⁹¹

F. Conclusions

While judicial or statutory recognition of the tributary groundwater doctrine is necessary, it is only the first step. Mere recognition of the doctrine without sufficient accompanying management policies to limit tributary groundwater development or to curtail tributary groundwater use will not protect streamflows or the water rights they support. However, without recognizing the tributary groundwater doctrine and making those pumping tributary groundwater subject to regulation, tributary groundwater-pumping will continue to deplete the base flow of streams, turning gaining streams into losing streams and perennial streams into intermittent streams. Raising the cost of tributary groundwater development by requiring the purchase and retirement of the quantity of streamflow depletion that the tributary well generates should slow streamflow depletion. But reducing tributary well-pumping would ultimately be needed to maintain streamflows.

VI. THE EMERGING NEBRASKA LAW OF TRIBUTARY GROUNDWATER

Relatively abundant groundwater supplies available in the state have made Nebraskans complacent regarding tributary groundwater issues. However, external events, including Platte River federal endangered species requirements and Republican River Basin Compact litigation, are forcing Nebraska water policy makers to acknowledge and begin dealing with tributary groundwater. Recent legislation will allow the State to implement policies to minimally protect streamflow by reducing tributary well-pumping. The pending *Spear T Ranch* litigation¹⁹² between competing surface water and groundwater irrigators in Pumpkin Creek in the North Platte River basin will also force

188. 81 S.W. at 281-82.

189. 2 HUTCHINS ET AL., *supra* note 9, at 742-44.

190. 771 S.W.2d 235 (Tex. App. 1989). See also Behrens & Dore, *supra* note 34 (analyzing the case).

191. See TARLACK, *supra* note 5, § 4:35 nn.12-20 and accompanying text.

192. See notes 252-59 *infra* and accompanying text; see also Brief for Appellant at 1-2, *Spear T Ranch v. Knaub* (No. A-03-000789).

the Nebraska Supreme Court to reconsider its 1966 *Metropolitan Utilities District (MUD)* decision¹⁹³ that hydrologically interrelated surface water and groundwater supplies need not be legally interrelated.

A. Reasonable Use

In its first major groundwater decision, the Nebraska Supreme Court in the 1933 decision of *Olson v. City of Wahoo*¹⁹⁴ adopted the American rule of reasonable use. The major significance of this case is that the court did not adopt the absolute ownership rule along with its rejection of the tributary groundwater doctrine. The court did recognize that the Todd Valley groundwater supply was hydrologically connected to the Platte River.¹⁹⁵

The *Olson* court's correlative rights dicta has perhaps been influential in the development of a correlative rights tilt within Nebraska's groundwater management statutes. Priority is not a factor in the Nebraska Groundwater Management and Protection Act. Instead, all groundwater irrigators are given an equal groundwater allocation to use, regardless of their well's priority.¹⁹⁶ Natural Resources Districts (NRDs) may, under subsections 46-739(4) and (5) of the Nebraska Revised Statutes, vary groundwater allocations for a limited number of specified reasons, including different irrigation equipment. Priority is introduced as a possible regulatory factor by subsection 46-739(6)(b) only when NRDs are dealing with surface water-groundwater disputes, in that NRDs can differ groundwater regulations relating to hydrologically-connected groundwater, based on a cut-off date established by the NRD. But, even here, section 46-739(6)(b) does not establish a well's individual priority date as a basis for regulation; instead the statute basically allows NRDs to exempt existing wells from regulations dealing with hydrologically-connected groundwater, and to apply those regulations only prospectively to new wells. Therefore, section 46-739(6)(b) does not establish priority in the traditional sense of prior appropriation, but rather gives NRDs the authority to make certain regulations prospective only instead of applying to, for example, all groundwater wells, existing and future alike. For these

193. *Metro. Util. Dist. of Omaha v. Merritt Beach Co.*, 179 Neb. 783, 140 N.W.2d 626 (1966).

194. 124 Neb. 802, 248 N.W. 304 (1933). See HARNBERGER & THORSON, *supra* note 5, at 214-17; Harnsberger, *supra* note 7, at 780.

195. *Olson*, 124 Neb. at 812-13, 248 N.W. at 308.

196. NEB. REV. STAT. § 46-739(1)(a) (Cum. Supp. 2004). See also J. David Aiken & Raymond J. Supalla, *Ground Water Mining and Western Water Rights Law: The Nebraska Experience*, 24 S.D. L. REV. 607, 635-42 (1979) (groundwater allocated on basis of irrigated acres, not on the basis of prior appropriation); Aiken, *supra* note 7, at 963-65 (Upper Republican NRD groundwater allocations based on irrigated acres, not on appropriation).

reasons, the *Olson* correlative rights dicta has had an important impact on the evolution of Nebraska groundwater management statutes.

B. Rejection of the Subflow Doctrine? The *MUD* Decision

By implication, the American rule of reasonable use includes the subflow doctrine.¹⁹⁷ Even Texas, with its absolute ownership doctrine, follows the subflow doctrine.¹⁹⁸ However, in a complicated setting, the Nebraska Supreme Court by implication rejected the subflow doctrine in its 1966 *Metropolitan Utilities District (MUD)* decision.¹⁹⁹ The first precedent for this case is the 1936 *Osterman* decision²⁰⁰ banning transbasin diversions of surface water. This controversial decision was still a major factor in Nebraska water law and politics when Omaha, in the 1960s, attempted to secure legislation to allow it to pump Platte River subflow to Omaha.²⁰¹ A statute that failed to incorporate underground stream, percolating groundwater, subflow, or tributary groundwater language was adopted, and Omaha applied for a municipal groundwater transfer permit under the Act.²⁰² The Omaha Metropolitan Utilities District ("MUD") applied under section 46-638 for a permit for its proposed Plattsmouth wellfield. MUD proposed to construct thirty-seven wells on a 600-acre site approximately five miles upstream of the confluence of the Platte and Missouri Rivers. MUD proposed to withdraw an average of forty mgd with a maximum of sixty mgd (approximately ninety-three cubic feet per second ("cfs")).²⁰³ The Nebraska Department of Water Resources ("DWR")²⁰⁴ director found that at least eighty percent of the groundwater withdrawn was induced recharge from the Platte, and the wellfield's pumping would lower streamflow by approximately 1.2 inches during

197. Regarding Arizona subflow law, see 3 HUTCHINS ET AL., *supra* note 9, at 171-72.

198. Regarding Texas subflow law, see *id.* at 742-44.

199. *Metro. Util. Dist. of Omaha v. Merritt Beach Co.*, 179 Neb. 783, 140 N.W.2d 626 (1966).

200. *Osterman v. Cent. Nebraska Public Power & Irrigation Dist.*, 131 Neb. 356, 268 N.W. 334 (1936), *overruled by* *Little Blue Natural Res. Dist. v. Lower Platte N. Natural Res. Dist.*, 206 Neb. 535, 294 N.W.2d 598 (1980). One major impact of *Osterman* was to protect, at least temporarily, streamflows in the Platte by preventing additional appropriations for out-of-basin use. J. David Aiken, *New Directions in Nebraska Water Policy*, 66 NEB. L. REV. 8, 19-20 (1987). For a sharp criticism of the decision and an interesting account of its political aftermath, see Jarrett C. Oeltjen, Richard S. Harnsberger & Ralph J. Fischer, *Interbasin Transfers: Nebraska Law and Legend*, 51 NEB. L. REV. 87 (1971).

201. HARNBERGER & THORSON, *supra* note 5, at 218-20; Aiken, *supra* note 7, at 551-55; Harnsberger, Oeltjen & Fischer, *supra* note 2, at 210-25.

202. NEB. REV. STAT. § 46-638 (Cum. Supp. 2002).

203. Cubic feet per second ("cfs") is a measure of water flow. One cfs equals 448.8 gpm (gallons per minute). HARNBERGER & THORSON, *supra* note 5, at 7-8.

204. The DWR became the Nebraska Department of Natural Resources (DNR) on March 22, 2000. L.B. 900, 96th Leg., 2d Reg. Sess., 2000 Neb. Laws 5 (codified as amended in scattered sections of chapters 2 and 46 of NEB. REV. STAT.).

the lowest recorded discharge (240 cfs on September 3, 1955) and considerably less during periods of normal flow. The director also determined that the water withdrawn by MUD was groundwater as per section 46-635, and expressly made no determination regarding whether the proposed diversion was illegal under *Osterman*.²⁰⁵ Opponents contended that the groundwater was subflow, and Omaha would be illegally moving groundwater from the Platte basin to the Papio basin in violation of *Osterman*.

The Nebraska Supreme Court affirmed the DWR grant of the MUD permit. After describing the proposed MUD wellfield the court set forth the provisions of the Act.²⁰⁶ Significantly, the court did not pursue the issue of whether the water to be withdrawn by MUD legally constituted surface water or groundwater, merely stating: "All of the water will be pumped from the ground, a direct diversion of water from the river not being contemplated."²⁰⁷ The court discussed whether objectors' allegations of unconstitutionality could be initially raised on appeal, concluding that they could.²⁰⁸ However, given the court's conclusion that MUD's proposed withdrawals would not interfere with objectors' groundwater levels or lake levels, objectors lacked standing to raise the issue of unconstitutionality.²⁰⁹

The court finally reached the issue of transbasin diversion, considering "the right of [MUD] to take water from the Platte River watershed outside of that watershed for its municipal purposes[:] . . . We think, because of the magnitude and importance of the question, and the interest of the objectors as resident riparian landowners within the Platte River watershed, that this question must be determined."²¹⁰ The court then reviewed the history of the development of riparian and appropriative rights in Nebraska and the different course taken with regard to groundwater management.²¹¹ After describing the piecemeal enactment of groundwater legislation, the court stated:

It will be observed that acts of the Legislature were the mere beginnings in the exercise of possible control and regulation of ground water. While the rights of appropriators to the use of water from rivers and streams have been protected over the years, rights in the use of ground water have not been de-

205. Harnsberger, Oeltjen & Fischer, *supra* note 2, at 222.

206. *Metro. Util. Dist.*, 179 Neb. at 785-91, 140 N.W.2d at 629-32.

207. *Id.* at 787, 140 N.W.2d at 630.

208. *Id.* at 790-92, 140 N.W.2d at 632-33.

209. *Id.* at 792-96, 140 N.W.2d at 635-35. The court suggested that while objectors' contention that the Act lacked appropriate administrative standards had great merit, objectors could still proceed against MUD for damages under the Act if they could ultimately prove damage; therefore their lack of standing did not compromise their rights. *Id.* at 796, 140 N.W.2d at 635.

210. *Id.* at 796-97, 140 N.W.2d at 635 (emphasis added). Note that the court refers to water, not groundwater.

211. *Id.* at 797-99, 140 N.W.2d at 635-36.

terminated nor protected, nor the public policy with reference to the use of such underground waters legislatively declared. The difficulties in administering dual conflicting principles, and fixing the rights of users thereunder, are readily apparent.²¹²

In this statement, the court acknowledged the difficulty inherent in attempting to coordinate appropriative (and riparian) rights to use surface water with common law rights to use groundwater. The court then stated that the constitutional declaration that the use of water for domestic and irrigation purposes is a natural want applied both to surface water and groundwaters. "Underground waters, whether they be percolating waters or underground streams, are a part of the waters referred to in the Constitution as a natural want."²¹³ The court continued with a statement of its judicial policy regarding groundwater use that seems to acknowledge the tributary groundwater doctrine:

Such [underground] waters are as much a part of the hydrologic cycle as the flow of water in a river or stream. It is true that such waters are not concentrated as in a river nor do they move with the velocity of a river, but they do percolate through underground formations and have the same source and termination as surface water flowing in a river. Underground waters are a part of the source of water supply to a growing population and an expanding economy the same as the surface waters flowing in a live stream on the surface of the ground. Because of the ever-increasing demands for water control of underground waters as well as the flow of rivers and streams, it is becoming more important and extremely necessary that regulation and control of all sources of water supply be attained. Without any declaration of public policy as to the use of underground waters other than the constitutional declaration that they are a natural want, we adhere to the rule that such waters must be reasonably used for a beneficial purpose without waste. It is axiomatic that waters which flow beyond the points of use to the sea are lost and constitute a form of waste, which is against public policy.²¹⁴

The court then turned to a consideration of groundwater rights, acknowledging that Nebraska had adopted the reasonable use rule, which prohibited nonoverlying uses (including transportation to distant lands) if other overlying landowners were harmed thereby. The court then concluded that in this case, where there was no injury to other overlying owners, "no reason exists for not permitting the use of [underground] waters for a public and beneficial purpose which would be otherwise lost."²¹⁵

The court then distinguished its holding from *Osterman*:

That case involved a diversion of the natural flow of the Platte River into the watersheds of the Republican and Blue Rivers. The taking of the water there

212. *Id.* at 799, 140 N.W.2d at 636.

213. *Id.* at 799, 140 N.W.2d at 636 (referring to NEB. CONST. art. XV, § 4). This statement is significant because the court is acknowledging the physical (and perhaps legal) differences between percolating groundwater and water in an underground stream, *i.e.*, subflow.

214. *Id.* at 799-800, 140 N.W.2d at 636-37.

215. *Id.* at 801, 140 N.W.2d at 637.

involved would damage the rights of lower appropriators on a river already over-appropriated. In the instant case, [MUD] is a riparian landowner. No water is taken directly from the river. There are no appropriators or riparian owners who are injured by the taking between the well field and the mouth of the Platte River some 5 miles east. . . . There is authority that one not damaged cannot raise the question of a diversion of ground water beyond the watershed. But we choose to decide the question on the ground of reasonable use and all the factors that enter into such a consideration, including the reasonableness of a watershed diversion, thus preserving the right of the Legislature, unimpaired, to determine the policy of the state as to underground waters and the rights of persons in their use. Under the record of this case and the applications of the declared law in this case, we can find no basis for holding the diversion from the well field to be unlawful. Under the evidence in this case the transwatershed diversion was reasonable, for a public purpose, not against public policy, and in the public interest.²¹⁶

The court adopted a balancing test and concluded essentially that because no one would be harmed by the diversion and the water would otherwise be wasted, the interbasin transfer should be allowed.

The court did not address the issue of whether the groundwater withdrawn was legally Platte River subflow, and therefore surface water, which legally would have been subject to *Osterman*, as objectors urged. However the court was clearly mindful that the groundwater pumped was induced recharge from the Platte River, stating that pumping could be maintained only fifteen days under no flow conditions.²¹⁷ The court may have avoided the subflow issue in order to avoid explicitly overruling *Osterman*, which did not occur until *Little Blue I*²¹⁸ in 1980. However, the court did spend considerable effort in discussing the transbasin diversion issue, and framed the issue in terms of harm to surface water and groundwater users in the Platte River basin. The court also discussed water generally rather than making artificial distinctions between surface water and groundwater, and chided the legislature for failing to legally tie the two together. That the court discussed the issue in terms of interbasin transfers of surface water as per *Osterman* rather than as a nonoverlying use of groundwater further indicates that the court was mindful that it was dealing with Platte River subflow rather than percolating water. While some commentators suggest that *MUD* and section 46-635 by implication reject the subflow doctrine,²¹⁹ the court does not explicitly do so, and might in fact be persuaded to adopt the subflow doctrine if it provided a reasonable method of coordinating surface water and groundwater rights in a common source.

The dissent stated that the groundwater to be pumped by MUD was subflow and therefore was subject to the *Osterman* prohibition

216. *Id.* at 801-02, 140 N.W.2d at 637.

217. *Id.* at 787, 140 N.W.2d at 630.

218. 206 Neb. 535, 294 N.W.2d 598 (1980).

219. Harnsberger, Oeltjen & Fischer, *supra* note 2, at 223-25.

against transbasin diversion.²²⁰ If the *Osterman* prohibition of interbasin surface water transfers had not been present, the *MUD* court could have freely characterized the groundwater at issue as subflow. However, apparently to avoid dealing with *Osterman*, the *MUD* court characterized the groundwater at issue as groundwater and not as subflow.

C. New Directions in Nebraska Water Policy

The transbasin diversion issue was mooted in 1980, when *Osterman* was overruled in *Little Blue Natural Resources District v. Lower Platte North Natural Resources District*.²²¹ Much of the *MUD* court's discussion of groundwater rights can be distinguished as dicta, as the court concluded the *MUD* well-pumping would neither harm the appellants' groundwater rights nor their surface water rights. Indeed, *MUD* can be seen as the court's suggestion that its adherence to *Osterman* was weakening, and that it would prefer to authorize a transbasin diversion of surface water than to have the water flow out of the state unused. Clearly the *MUD* decision is no precedent to preclude adopting the subflow doctrine, should a real conflict between surface water users and groundwater users come before the court—a condition not met in the *MUD* case.

More recently, the Nebraska Supreme Court has clearly signaled its willingness to adjudicate disputes between competing surface water users and groundwater users.²²² *Central Platte* involved an application for a Platte river instream flow appropriation by the Central Platte NRD ("CPNRD"). The instream flow application was opposed by the state of Wyoming on several grounds. One issue raised by Wyoming was that there was insufficient streamflow in the Platte for the instream appropriation, because 100 to 200 cubic feet per second of flow was needed to recharge alluvial aquifers depleted by irrigators. In essence, Wyoming contended that the 100 to 200 cfs of streamflow had already been appropriated by groundwater pumpers and therefore was not legally available for CPNRD's instream appropriation. To this novel argument, the Nebraska Supreme Court responded:

To the extent that ground water will be withdrawn in the future, this ground water remains, at the present, unappropriated water. (In part II (E)(a)(i) of this opinion, we held that for purposes of an instream flow application, surface water which had not been diverted from the Platte River for a beneficial use constituted unappropriated water. It logically follows that ground water which has not been removed also constitutes unappropriated water. We

220. *Metro Util. Dist.*, 179 Neb. at 804, 140 N.W.2d at 638-39 (Spencer, J., dissenting).

221. 206 Neb. 535, 294 N.W.2d 598 (1980). See Aiken, *supra* note 200, at 54-55.

222. *Central Platte Natural Res. Dist. v. Wyoming*, 245 Neb. 439, 513 N.W.2d 847 (1994).

therefore hold that the director was not obliged to reduce the historic flow records to account for future ground water depletions.²²³

This statement suggests that groundwater may be appropriated similar to surface water appropriation, a statement consistent with the subflow doctrine. The court then went on to state:

We note that the relative rights of those using ground water and those using surface water are often unclear. The courts can begin to give outlines and shape to these rights, but only in a case-by-case, piecemeal fashion, and only when those rights are brought into direct conflict. Wyoming's evidence regarding ground water depletion does not establish a direct conflict, but, rather, an anticipated conflict. This anticipated conflict is best resolved by the policy-based decision making process that is the province of our Legislature. In fact, the Legislature has recently created a system whereby public water suppliers—municipalities, water districts, irrigation districts, and the like—can apply for appropriation rights and thus secure their priority.²²⁴

The court continued: "It is the Legislature, and not the courts, which can paint a water rights picture with broad strokes and bold colors. It is to the Legislature that Wyoming must direct its argument regarding future groundwater depletion."²²⁵ The *Central Platte* court clearly stated that it would establish legal rules to deal with direct conflicts between surface water and groundwater users, if there are no governing statutes. The court's statement suggests that it would at least be willing to consider applying appropriation concepts—such as the subflow doctrine and priority—in resolving such conflicts.

D. External Pressures

While the Nebraska Supreme Court was edging toward adopting the subflow doctrine, external forces were moving Nebraska water officials and legislators toward implementing at least a limited version of the tributary groundwater doctrine if not completely embracing the doctrine itself. The first major push came from the power relicensing of Kingsley Dam (Lake McConaughy) on the Platte River; the second came in the *Kansas v. Nebraska* litigation regarding the Republican River Compact.²²⁶

223. *Id.* at 451, 513 N.W.2d at 857.

224. *Id.* at 451, 513 N.W.2d at 857-58. The court referred to induced recharge appropriation statutes. See 1993 Neb. Laws 301, Neb. Rev. Stat. §§ 46-233, -235, -235.01-.04 (Reissue 1998 & Cum. Supp. 2002).

225. *Central Platte*, 245 Neb. at 451-52, 513 N.W.2d at 858.

226. Earlier water conflicts impacting Nebraska that involved tributary groundwater is the *Kansas v. Colorado* litigation over the Arkansas River compact, and the *Nebraska v. Wyoming* litigation over the North Platte River decree. Regarding the Arkansas River litigation, see Glennon & Maddock, *Stream/Aquifer Interactions*, *supra* note 7, at 22-63 to -68; regarding the North Platte River litigation, see *id.* at 22-69 to -71. The Glennon and Maddock article also briefly mentions the pending Republican River litigation and the Platte River endangered species issues. Regarding the Republican River, see *id.* at 22-68 to -69, 22-71 to -72; regarding Platte River endangered species issues, see *id.* at 22-74 to -75.

The Platte River endangered species issues began to surface in the early 1980s when the Central Nebraska Public Power & Irrigation District ("CNPPID") and the Nebraska Public Power District ("NPPD") began the process of obtaining another fifty-year federal hydropower license from the Federal Energy Regulatory Commission ("FERC").²²⁷ Project relicensing activities achieved a multistate dimension, and the Platte River Cooperative Agreement was signed by Nebraska, Wyoming, Colorado, and the federal government on July 1, 1997.²²⁸ Under the agreement, the states pledge, among other things, to provide additional water for endangered species habitat protection.²²⁹ A substantial portion of that water will come through purchasing or leasing water from Platte valley irrigators in Nebraska, obligating Nebraska to develop the water marketing policies it lacked. Legislative Bill 962 ("LB 962"), enacted in 2004, does provide new water marketing authorities.²³⁰ The other major requirement from the Cooperative Agreement is the "no new depletions" requirement. Any water use initiated after July 1, 1997, is, in effect, junior to the Cooperative Agreement's endangered species water requirements.²³¹ This includes wells (*i.e.*, tributary wells) as well as stream diversions. So, the Cooperative Agreement requires the State of Nebraska to begin monitoring tributary groundwater withdrawals junior to the Cooperative Agreement and regulating those withdrawals to prevent interference with habitat flows. If Nebraska does not meet its obligations under the Cooperative Agreement, the State risks making all Platte River water uses subject to endangered species streamflow requirements, not just those junior to the Cooperative Agreement. Cooperative Agreement failure also jeopardizes the operating licenses for Kingsley, which in turn could jeopardize Platte Valley irrigation and power production.

The Nebraska Unicameral has responded.²³² Natural Resources Districts ("NRDs"), who have broad groundwater management responsibilities under Nebraska groundwater law,²³³ in 1998 were authorized under Legislative Bill 108 ("LB 108") to regulate (in effect) tributary wells in order to protect streamflow.²³⁴ Even more dramati-

227. See generally J. David Aiken, *Balancing Endangered Species Protection and Irrigation Water Rights: The Platte River Cooperative Agreement*, 3 GREAT PLAINS NAT. RES. J. 119, 137-39 (1999).

228. *Id.* at 142-46.

229. *Id.* at 146-47.

230. NEB. REV. STAT. §§ 46-290 to -294.05 (Cum. Supp. 2004).

231. Aiken, *supra* note 227, at 147-48.

232. *Id.* at 156-57.

233. See Aiken, *supra* note 7, at 960-67.

234. NEB. REV. STAT. § 46-740 (Cum. Supp. 2004), formerly codified at *id.* § 46-656.26. Nebraska statutes do not define the term "hydrologically connected ground water." See *id.* § 46-706. However, it is clear from the statute that the term has

cally, the Nebraska Department of Natural Resources ("DNR") under the 1998 act was authorized to regulate groundwater development and use interfering with streamflow in violation of interstate compacts, decrees or agreements if NRDs had not acted or their actions were inadequate.²³⁵ The LB 108 authority has been expanded by LB 962, which authorizes the DNR to designate river basins as either fully appropriated or overappropriated.²³⁶ Basin designation establishes an immediate halt on well-drilling and new appropriations.²³⁷ The DNR, in cooperation with the affected NRDs, will develop an integrated management plan ("IMP") to insure compliance with interstate decrees, compacts or agreements.²³⁸ A management objective for overappropriated basins or sub-basins will be to close any water supply gap.²³⁹ Plans will be implemented in ten-year increments.²⁴⁰ Beginning on January 1, 2006, the DNR will annually survey remaining basins, including the basin's "hydrologically connected" groundwater, to determine whether the basin should be designated as fully appropriated.²⁴¹

The IMP regulatory authorities are basically carried over from the 1998 law. IMPs may rely on a number of voluntary measures as well as the surface water and groundwater regulatory controls authorized by the 1998 integrated water management statutes. Among the authorized groundwater controls are groundwater allocations (e.g., withdrawal limits), pumping rotation, reducing irrigated acres, and incentive programs (e.g., paying farmers not to irrigate).²⁴² Surface water controls include reasonable conservation practices and other reasonable restrictions.²⁴³ If NRDs and the DNR disagree regarding IMP requirements, the dispute will be submitted to an Interrelated Water Review Board appointed by the Governor for resolution.²⁴⁴ If NRDs decline to regulate groundwater users, the DNR can do so, instead, if approved by the Interrelated Water Review Board.²⁴⁵ These

for all practical purposes the same meaning as tributary groundwater. For background on LB 108, see Messman, *supra* note 111.

235. NEB. REV. STAT. §§ 46-656.50-51 (Reissue 1998 & Cum. Supp. 2002), repeated by 2004 Neb. Laws 962, § 119.

236. *Id.* § 46-713 (Cum. Supp. 2004).

237. *Id.* § 46-714.

238. *Id.* § 46-715(3)(b), (4)(d)(i).

239. *Id.* § 46-715(4)(d)(v).

240. *Id.* § 46-715(4)(d)(iii).

241. *Id.* § 46-713(1)(a).

242. *Id.* §§ 46-715(2), -739.

243. *Id.* §§ 46-715(2), -716.

244. *Id.* § 46-719(2).

245. *Id.* § 46-719(4).

authorities will also be utilized by the DNR in implementing the settlement of the Republican River Compact litigation.²⁴⁶

It may be helpful to briefly sketch how the NRDs and the DNR may use the LB 962 IMP authorities to deal Republican and Platte River tributary groundwater issues. For the Republican, let us briefly compare the general case for interstate water rights administration²⁴⁷ with and without tributary well-pumping. In the simple surface-water-only case (no tributary groundwater pumping), when the downstream state is not getting its full supply of water, it notifies the upstream state and (ideally) junior appropriators in the upstream state are subject to priority administration (i.e., administratively ordered to stop diverting streamflow) until the downstream state is receiving its full allocation. Unless the water users in the downstream state are hundreds of miles from the junior surface appropriators in the upstream state, issuing closing orders to the junior appropriators will result in a water supply improvement to the downstream state in a timely fashion, usually in a few days or less.²⁴⁸

Tributary groundwater pumping complicates this simple system. First, the streamflow depletions are not obvious, as they occur underground: there is less water in the stream but there is no surface diversion indicating where the missing water has gone. Second, there is a time lag that may stretch to decades between tributary well-pumping and the resulting streamflow depletion.²⁴⁹ So, subjecting junior tributary wells to priority administration will not result in a timely increase in streamflow to the downstream state, unless all the tributary wells are subflow wells. Closing down junior subflow wells is likely to increase streamflow in a matter of days or weeks. However, closing tributary wells may not increase streamflows for months, years or decades. So, the states must estimate in advance the annual quantity

246. The litigation was settled December 16, 2002. Information regarding the settlement is available at the DNR website, <http://www.dnr.state.ne.us/legal/kan-sasva.html> (last visited June 28, 2004). Information regarding LB 962 implementation is available at <http://www.dnr.state.ne.us/watertaskforce/watertaskforce.html> (last visited June 28, 2004).

247. For simplicity's sake we will consider only irrigation water uses, which would constitute well over ninety percent of Republican and Platte basin water consumptive uses. The "general case" is specified here for simplicity and to avoid a detailed enquiry into how the Republican River Compact has been administered in the past and will be administered in the future under the compact litigation settlement—a very interesting topic that is well beyond the scope of this Article (but which merits its own separate examination). See Aaron M. Popelka, Note, *The Republican River Dispute: An Analysis of the Parties' Compact Interpretation and Final Settlement Stipulation*, 83 NEB. L. REV. 596 (2004).

248. In *State ex. rel. Cory v. Cochran*, 138 Neb. 163, 171–72, 292 N.W. 239, 245 (1940), the Nebraska Supreme Court noted that water flowed down the Platte River at approximately twenty-five miles per day.

249. For a helpful discussion of the lag between tributary groundwater withdrawal and the resulting reduction in streamflow, see Grant, *supra* note 12, at 74–80.

that tributary well withdrawals deplete streamflow into the downstream state that the downstream state was entitled to, and in what month and year those depletions occur, so that the upstream state knows how much water it must replace and when those replacements must occur to make the downstream state whole.

How could Nebraska use the LB 962 authorities to deal with this situation? In the short term, the DNR could purchase senior surface appropriations in Nebraska to reduce Nebraska surface water use in order to increase streamflows into Kansas. The DNR and NRDs might also consider ordering reduced pumping from subflow wells to increase streamflows into Kansas. In the longer term, significant reductions in tributary groundwater pumping should someday stabilize and perhaps even reduce subsequent streamflow depletions. Purchasing and retiring groundwater irrigation rights may ultimately be required in order to reduce tributary groundwater withdrawals sufficiently to control streamflow depletion effects. In the future, the DNR may purchase storage appropriations from Nebraska irrigators in wet years and save the water to meet Kansas water delivery requirements in dry years. Nebraska may need to negotiate purchases of water rights in Kansas where there is insufficient Republican River surface water available from Nebraska irrigators to meet Kansas water delivery requirements. Many of these alternatives are likely to be resisted by groundwater irrigators, and the DNR may need to resort to section 46-719 to resolve policy disputes between NRDs and the DNR.

LB 962's implementation on the Platte will be slightly different. Here there are two general water management objectives: (1) to provide replacement water for streamflow depletion resulting from post-Cooperative Agreement wells and (2) to increase streamflows to improve endangered species habitat. Streamflow depletion from tributary wells will need to be quantified, and surface water rights purchased to compensate for the depletion amount that harms endangered species. Additional surface water rights may be purchased (or leased) to provide additional water for endangered species flows. The availability of large quantities of stored water in Lake McConaughy provides greater flexibility on the Platte than on the Republican, where water storage is significantly less.

LB 962 treats surface water and groundwater rights differently. Section 46-716 authorizes the DNR to impose conservation requirements on surface water appropriators in an IMP. Section 46-739 IMP groundwater controls include allocation, pumping rotation, irrigated acre reduction, and best management practices. The surface water irrigation conservation requirements are probably comparable to the groundwater best management practices, where the same crops are grown but less irrigation water is used. However, the pumping rota-

tion and irrigated acre reduction authorities for groundwater irrigators have no explicit surface water parallel. This may reflect the more flexible and less defined nature of a Nebraska groundwater right. It may also reflect the hydrologic fact that during dry periods, streams carry less water and surface water irrigation is reduced through priority administration: junior appropriators are issued closing orders for the benefit of senior appropriators, and those junior appropriators become dryland farmers (unless they have irrigation wells, as many of them do). But in these same periods, groundwater irrigators simply pump more water to compensate for the reduced precipitation. In the short term, there is no natural check on groundwater irrigation in the same way that reduced streamflows on fully appropriated streams provide a natural check on surface water irrigation.²⁵⁰

One unresolved policy issue is whether those irrigating with tributary wells should be individually financially responsible for providing replacement water to offset the streamflow depletion attributable to their tributary well. The individual irrigator responsibility approach is followed in Colorado²⁵¹ but is not required by LB 962. The costs of replacing streamflow lost to tributary well-pumping in the Republican and Platte basins has not been formally estimated, but doubtless will cost millions of dollars in time. At some point, an increasingly urban Unicameral may decide that tributary groundwater pumpers, rather than Nebraska taxpayers at large, should bear some or all of those costs.

LB 962 is a long-overdue step forward, authorizing the DNR to take whatever steps are necessary to comply with the Platte River Cooperative Agreement and the Republican River compact litigation settlement. While LB 962 stops short of establishing an explicit tributary groundwater system, it does so implicitly in basins designated as overappropriated. Hydrologically connected groundwater withdrawals may be reduced, new well-drilling stopped, and surface water rights retired. Certainly the DNR and NRDs have a wide range of management alternatives to achieve a more sustainable water system in overappropriated basins.

E. *Spear T* Litigation

On February 26, 2003, the Spear T Ranch filed a complaint against upstream tributary groundwater irrigators alleging that the defendants were depleting the flow of Pumpkin Creek, of which the plaintiff was an appropriator.²⁵² The district court dismissed the complaint,

250. See the discussion of *Hudson v. Dailey*, *supra* notes 150–53 and the accompanying text.

251. For a discussion of how the Colorado replacement water system works, see MacDonnell, *supra* note 111.

252. Brief for Appellant at 1–2, *Spear T Ranch v. Knaub* (No. A-03-000789).

and the plaintiff appealed. The appeal was argued before the Nebraska Supreme Court on March 3, 2004 and reargued September 8, 2004. The court has yet to rule on the case as of the time of this publication.

The main issue before the court is whether the case, one of first impression in Nebraska, can proceed to trial. If the defendants' tributary well-pumping interferes with the plaintiff's surface appropriations, are the defendants liable? Given the court's observations on surface water-groundwater interrelationships in *Central Platte*, the court clearly seems ready to adjudicate tributary groundwater disputes, such as the one posed by *Spear T*. At one time, it might have seemed quite a stretch to go from *MUD*'s apparent rejection of the subflow doctrine to adopting the tributary groundwater doctrine. However, LB 962 certainly makes that an easier judicial step to take, given the statute's broad authorities for the DNR to prohibit the drilling of new tributary wells and NRD/DNR authorities to regulate withdrawals from existing tributary wells to protect streamflow.

The Nebraska Supreme Court's *Spear T* ruling could have profound implications for implementation of LB 962, and the associated compliance with the Republican River Compact litigation settlement and the Platte River Cooperative Agreement. For example, if the court follows *MUD* in ignoring the hydrologic connection between surface water and groundwater, tributary groundwater pumpers (including those pumping subflow wells) will then be able to argue that their regulation under LB 962 for the benefit of protecting streamflow is illegal. Similarly, if the court follows the *Restatement (Second) of Torts* approach of limiting judicial recognition of the hydrologic connection to subflow,²⁵³ non-subflow tributary well pumpers again will be able to argue that their regulation by LB 962 to protect streamflow is illegal. In effect, in order to bolster the constitutionality of LB 962 in the future, the Nebraska Supreme Court should embrace the tributary groundwater doctrine. The court need not make the important factual determination of where the dividing line between tributary and nontributary groundwater exists,²⁵⁴ as that boundary is likely to

253. RESTATEMENT (SECOND) OF TORTS § 858(1)(c) (1979).

254. Colorado statutes establish when groundwater is not tributary groundwater. Nontributary groundwater is groundwater (outside of a designated groundwater basin—see MacDonnell, *supra* note 111) that, when withdrawn, does not deplete the flow of a natural stream within 100 years, "greater than one-tenth of one percent of the annual rate of withdrawal." COLO. REV. STAT. § 37-90-103(11.5) (2003). For example, a well pumping 200 acre-feet per year for 100 years (20,000 acre-feet total) would be a tributary if it depleted streamflow more than 0.20 acre-feet per year within the 100 years. This is the most expansive definition of tributary (or hydrologically-connected) groundwater. It is likely that the DNR, when defining what constitutes hydrologically-connected groundwater, will be significantly less inclusive. On the Platte, NRDs and the DNR are using a "28/40" streamflow depletion test. If twenty-eight percent of the water withdrawn

fluctuate with study, additional information, and experience. But wells that have clearly contributed to current stream depletion should at least be presumed to be tributary wells. Failing to adopt the tributary groundwater doctrine could cast a significant constitutional doubt upon regulation of hydrologically connected wells under LB 962, something the court surely would wish to avoid. Rejecting the tributary groundwater doctrine does not necessarily make LB 962 unconstitutional, but it surely would strengthen the legal hand of groundwater users resisting LB 962 groundwater controls aimed at protecting streamflow.

While the Nebraska Supreme Court will take judicial notice of the policies underlying LB 962, the statute does not resolve the legal issue posed in the *Spear T* case. LB 962 does not establish a framework for resolving the individual competing claims of overlying owners and senior surface appropriators. So, any judicial guidance will need to be inferred from general provisions of the statute.

LB 962 adopts the tributary groundwater doctrine only to the minimum extent necessary to bring Nebraska into legal compliance with the state's interstate water obligations. LB 962 requires IMPs, the joint NRD-DNR surface water and groundwater controls, as a minimum (1) to assure compliance with interstate water obligations²⁵⁵ and (2) to protect existing surface waters (as well as induced recharge wells²⁵⁶) from post-LB 962 hydrologically connected wells.²⁵⁷ This latter provision suggests that pre-LB 962 wells are subject to regulations to protect surface water only to the extent necessary to bring Nebraska into compliance with interstate water obligations. This position is buttressed by section 46-715(4)(d)(v), which requires that the ultimate objective of an IMP is to bring an overappropriated basin into fully appropriated status. Section 46-715(4)(c) requires the IMP to identify "the overall difference between the current [overappropriated] and fully appropriated levels of [water] development." In other words, the IMP must identify how much basin water use must be reduced in order to move the basin from being overappropriated to being fully

from a well that is pumped continuously for forty years would otherwise have reached the stream, the well is a tributary well. Personal Communication with Mr. Steve Gaul, Supervisor, Planning & Assistance Div., Neb. Dept. of Natural Res. (Aug. 20, 2004). The 28/40 test is less inclusive than the Colorado 0.1/100 test and may not be inclusive enough to establish a truly sustainable policy that would protect streamflow from tributary groundwater withdrawals. However, the 28/40 test represents a good start, upon which a more inclusive standard can be based in the future.

255. Neb. Rev. Stat. § 46-715(3)(b) (Cum. Supp. 2004).

256. In Nebraska, public water suppliers can obtain surface water appropriations for induced recharge wells. *Id.* §§ 46-233, -235, -235.01-04 (Issue 1998 & Cum. Supp. 2002). Such wells are essentially treated as surface water diversions.

257. *Id.* § 46-715(3)(c) (Cum. Supp. 2004).

appropriated. While the term "overappropriated" is not defined,²⁵⁸ a fully appropriated basin is defined by 46-713(3) as follows:

A river basin, subbasin, or reach shall be deemed fully appropriated if the department [of Natural Resources] determines that then-current uses of hydrologically connected surface water and ground water in the river basin, subbasin or reach cause or will in the reasonably foreseeable future cause (a) the surface water supply to be *insufficient* to sustain over the long term the beneficial or useful purposes for which existing natural flow or storage appropriations were granted and the beneficial or useful purposes for which, at the time of approval, any existing instream appropriation was granted, (b) the streamflow to be *insufficient* to sustain over the long term the beneficial uses of wells constructed in aquifers dependent on recharge from the river or stream involved, or (c) reduction in the flow of a river or stream sufficient to cause non-compliance by Nebraska with an interstate compact or decree, other formal state contract or agreement, or applicable state or federal laws [emphasis added.]

This fully appropriated definition reads like a good definition of an overappropriated basin. A fully appropriated basin would better seem to be defined as one where the use of hydrologically-connected water would *not* harm existing surface water rights, or cause the surface water supply to be *sufficient* to satisfy existing natural flow and storage appropriations. If this were the case, then groundwater irrigation would be reduced through allocation, irrigated acreage reductions, and water right buyouts; surface water irrigation would be reduced through water conservation practices and water right buyouts. Under these circumstances, a better argument could be made that LB 962 is consistent with the tributary groundwater theory.

But this is not what LB 962 says. Thus, designation of fully appropriated basins can cap groundwater development by banning new well installation, but restoring surface water supplies to sufficiency in order to protect existing surface appropriations is not required by LB 962. The statute does adopt the tributary groundwater doctrine only insofar as necessary to meet interstate water obligations but no further. It is a short step, however, from LB 962's current provisions to a future version that would identify, for example, how much tributary groundwater withdrawals would need to be reduced in order to satisfy existing surface water rights, not just on the Republican River in Kansas but on Nebraska streams as well. While this is a step the Unicameral has not taken, it is the obvious next logical step.

The *Spear T* court can usefully nudge the Unicameral in that sensible direction by holding junior tributary groundwater users liable for streamflow depletions harming senior surface appropriators. Such a holding would not necessarily require that all groundwater disputes (such as well interference conflicts between neighboring wells) be re-

258. Overappropriated basins are essentially basins where NRDs had established well-drilling moratoria in response to interstate water obligations. *Id.* § 46-713(4)(a)-(b).

solved on the basis of priority, and would not mean that junior tributary wells would be shut down in the largely futile attempt to increase streamflows during a single irrigation season.²⁵⁹ However, junior tributary well owners should be liable for providing replacement water to the senior surface appropriator, which could even be in the form of an irrigation well. Alternatively, the junior tributary well owners could be liable in damages. Such a ruling would at last bring Nebraska common law into conformance with hydrologic reality, and would accelerate the evolution of Nebraska groundwater policy towards one that achieves a long-term balance between surface water and groundwater use that protects streamflows and surface water rights. The alternative is to continue in the willful ignorance of hydrologic reality, and relegate the public rights and values in flowing streams to whatever is left over when the irrigation wells have finished for the season.

VII. CONCLUSION

As Justice Oliver Wendell Holmes observed, "A river is more than an amenity, it is a treasure."²⁶⁰ Nebraska's rivers are a crucial part of our landscape and natural heritage, to be protected and passed on to our children and to their children. Groundwater irrigation has often been referred to as Nebraska's buried treasure, and its exploitation has long benefitted the state's agricultural economy. However, experience has taught us that there are limits to sustainable groundwater use, limits that clearly have been exceeded in the Republican and the Platte River basins. In grudging response, LB 962 acknowledges that groundwater controls must be established to protect senior Republican River surface appropriators in Kansas, and to protect Platte River endangered species. Justice demands that the same protections be provided to senior surface appropriators in Nebraska, wherever they may be, as the necessary next step in protecting a crucial element in our state's natural heritage. Failure to adopt the tributary groundwater doctrine will enable a policy that recognizes the public values of streamflows only when absolutely forced to do so. Such a crabbed and unsustainable resource policy would be a poor legacy for our children.

259. For a discussion of how the Colorado replacement water system works, see MacDonnell, *supra* note 111.

260. *New Jersey v. New York*, 263 U.S. 336, 342 (1931).