ALLOCATION OF GROUNDWATER RIGHTS IN MAINE

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I. Introduction

The principal editorial for the February 18, 1977 Christian Science Monitor begins:

> "This is a time when water - or the lack of it - is very much in the public eye. On the Pacific Coast, the Northwest is concerned about drastic water shortages, stemming from the snow and rain deficits, which affect the great rivers that provide electric power. Farther south some areas have faced water reductions, and even rationing.
>
> West of the Mississippi, in the Great Plains and Rocky Mountain regions, a severe drought cycle may be in the offing. Even in the East and Midwest, where flooding had been expected when the heavy snows melted, earlier prolonged dryness and low river levels have reduced the threat from thaws.
>
> All of which signals to a United States that already is learning hard lessons about its gas and oil shortages that another once-abundant resource can no longer be taken for granted. The water problem is no longer a peripheral one; Americans as a whole are going to have to give more thought to water conservation."[1]

As the 1930 Depression gave rise to many new and innovative laws, current drought conditions may also have similar effect. Whereas western states have for years addressed water

shortage problems, eastern and especially northeastern states, endowed with more water resources and greater annual precipitation have been slower in tailoring their case law and statutes to the problems of preserving adequate water supplies. Eastern states generally have continued to endorse the riparian doctrine for surface waters and the "absolute ownership" doctrine for groundwater, both of which developed in England during the first half of the nineteenth century. Some eastern states have modified or rejected completely these doctrines, turning instead to the doctrines of the western states. Two factors have stimulated eastern water law innovation: cyclical drought conditions and developmental pressures associated with population growth and industrialization.[2] Neither of these two factors has been as prevalent in Maine as in other eastern states. Maine's development has been slower than that of nearby eastern states and the nation. Drought conditions historically have not been severe in Maine. Consequently it is not surprising that Maine's water law is founded on the early English doctrines of riparian rights and "absolute ownership." Maine's allocation of water rights in surface streams is based on an 1832 case which today remains in substance virtually intact,[3] and its allocation of groundwater rights is controlled by an 1873 case which has not been altered at all.[4]

Today, however, Maine's development is continuing at a faster pace; population is increasing; and development is more concentrated around several urban centers. Although water

shortage problems have not been and currently are not apparent, weather and climatological changes combined with increased density of development could well belie history.

Maine water law, like that of most eastern states, developed piecemeal; separate doctrines arose for flowing surface water, non-flowing surface water, underground streams, and underground percolating water. If the interrelationships of these different waters were recognized, they were deemed unimportant by the courts who adopted separate legal doctrines for each. Of these water types and their legal doctrines, groundwater and its doctrine of "absolute ownership" presents the most antiquated system of allocation and perhaps the gravest potential for waste and mismanagement. The scope of this paper is the current status of groundwater allocation in Maine, its inherent problems, and possible changes to remedy these problems.

Chase v. Silverstone, decided in 1873, declares itself to be the first Maine case addressing "the law which governs proprietors of adjacent lands in relation to subsurface waters not gathered into a fixed, known channel."[5] Chase adopted the "absolute ownership" doctrine which to date has been unchallenged in either Maine's highest court or the legislature. As described above, the extent, nature and location of land development coupled with apparent plentiful water resources explain the inactivity in groundwater law at least insofar as the courts' role. The legislature's inactivity is less understandable unless one adopts the viewpoint that the legislature will not

act unless encouraged by enough interested parties. Nevertheless it is difficult to understand how the legislature could pass legislation such as the Water Improvement Commission Act,[6] the Great Ponds Act[7] and Wetlands Act[8] which address different phases of the hydrologic cycle, but in reality the same water, without even mentioning groundwater and the public interest therein. Maine, who has set examples for other states in water management policy, in particular addressing water quality, has apparently missed two fundamental concepts in water management. First, hydrology has become more sophisticated since the piecemeal legal doctrines developed for different water types. Elementary school teachers teach that water in its many forms actually is the same water appearing in different phases in a hydrologic cycle. The cycle has two aspects: one visible and familiar -- the circulation of water involving evaporation, precipitation and flow through a surface drainage network of lakes and streams -- and the other less visible and less familiar -- the subsurface movement of water through the ground. The interrelationships between groundwater and surface water is so fundamental that a water management program ignoring one aspect is counter-productive. Second, quantity is a function of quality. In regulating surface water quality, Maine has in effect recognized that unless water quality is protected, sufficient water will be unavailable for certain uses. If water resources were in such abundance as to support "desirable" as well as "undesirable" uses, the only conflict as to water quality would be location of uses. Water legislation at state and federal levels clearly recognizes, however, that location is merely one factor

of water quality control, leaving the implicit assumption that water quality is inextricably linked to water quantity. Maine has not, however, recognized that its apparent abundance of groundwater resources may be or have already been effectively reduced by pollution. Related to this concept is the recognition by hydrologists that overuse of a groundwater reserve tends to precipitate a decline in the quality of the water remaining in the reserve. Salt water intrusion and leaching of iron deposits often result from excessive use of an aquifer. The interrelationships between quality and quantity dictate a unified approach to water management, because unless quality is preserved quantities of useable water will be reduced and conversely, unless quantities are preserved, water quality often tends to deteriorate. These two concepts: the hydrologic cycle and the interrelationship of water quality and quantity, illustrate the major inadequacies of Maine's water management system and the need for change especially in the field of groundwater law. Polluted groundwater frequently appears as polluted surface water in a later phase of the hydrologic cycle, and pollution or overuse of groundwater resources can drastically reduce the seeming superabundance of groundwater found in the state, as well as surface water.

In addressing the legal problems of Maine groundwater one is hampered by the lack of substantive information for groundwater reserves, use, and rates of consumption. Little geological and hydrological research has been done to date relating to Maine groundwater. Only two professionals are currently working

to map and measure groundwater aquifers in a state where geological research has been historically limited by state and federal funding.[9] Although Maine's groundwater resources seem abundant, their true status in undetermined. Attempting to foresee future conflicts and to plan accordingly, one is reduced to educated speculation, relying on Maine's historical abundance and lack of user conflict.

Maine's legal inactivity as to groundwater may soon be ended. New federal legislation establishing strict standards for public water supplies has required municipalities to reduce their dependence on surface water sources and to drill large-yield artesian wells.[10] Municipalities situated on the same aquifer which might deteriorate with overuse may find themselves competing for high quality water. Similarly, a municipality's water supply might be threatened by a large industrial user.[11] Increasing population will demand greater public water supplies which, coupled with federal requirements for higher quality, signals more competition. Furthermore, further industrial development will place new demands for high quality water which may not be available from surface sources. Litigation can be expected between major industrial water users located on a common aquifer.

Maine should alter its water management system to address the realities of the hydrologic cycle and impending conflict between groundwater users. Groundwater law should be tailored to fit the existing system, both in terms of water right

allocation and management. A legislative effort is required to unify Maine's water law in order to assure adequate supplies of quality water to meet future demands.

II. Commonlaw Doctrine

A. The Doctrine

Chase v. Silverstone (1873) is today's statement of Maine groundwater law; the case both allocates groundwater rights and sets groundwater apart from other water types. In Chase, the defendant dug a well on his own land, struck a "vein of water" that overflowed the well, and consequently constructed an overflow drain to carry off the overflowing water. The plaintiff, an abutting neighbor, supplied his farm with a spring that was located on his own land, and the spring for at least thirty years had enough flow to fill the plaintiff's tanks without pumping. After the defendant had dug his well, the plaintiff's flow diminished to the point where a pump was required in order to continue use. Neither plaintiff nor defendant foresaw the effect of the new well, and the court concluded that the defendant acted without malice towards the plaintiff. The court in a superficial decision concluded that it was "compelled by the vastly preponderating weight of authority" to find that the damage to the plaintiff's spring was "damnum absque injuria" -- that the law provided no redress for his loss. Seeming content to follow the majority viewpoint, the court cited and quoted several English cases from Acton v. Blundel (1843),[12] the most

frequently cited "absolute ownership" doctrine case, to Chasemore v. Richards (1859).[13] The court, rather than attempting to analyze these cases, instead quoted them apparently adopting verbatim their reasoning. Of all the cited English cases the court focused longest on Chasemore in order to explain why percolating groundwater required a different rule than "flowing" surface or groundwater.[14] The court quoted the House of Lords opinion as follows:

> Wightman, J. "It is impossible to reconcile such a right (the plaintiff's right of action) with the natural and ordinary rights of landowners, or to fix any reasonable limits to the exercise of such a right.... Lord Chelmsford held the opinion - "the principles which apply to flowing water in streams or rivers are wholly inapplicable to water percolating through underground strata which has no certain course or defined limits, but which oozes through the soil in every direction in which the rain penetrates'..... Lord Cransworth said if the doctrine contended for by the plaintiff should prevail 'it would always require the evidence of scientific men to state whether or not there had been interruption. It is a process of nature not apparent; and therefore such percolating water has not received the protection which water running in a natural channel on the surface has always received'....."[15]

This quote illustrates the three principal grounds on which the English and Maine courts based their distinctions between percolating groundwater and flowing water. The first ground is the

uncertain limits of the right of action against interference by one who, without malice, on his own land reduces a person's underground water source. In comparing this possible right of action to a riparian action, for interference with flowing surface water, one finds little difference in terms of certain limits. In a riparian case a jury must determine whether a particular water use is "reasonable" which provides no definite limits.[16] The second ground for distinction is uncertain movement of groundwater as compared to surface water. This uncertainty has to the most part been removed by increased knowledge of hydrology and geology. Hydrologists can not only determine direction of flow but also areas of flow and their flowage rates. The third ground is that because groundwater is not visible expert testimony would be required in every case to determine causation. Obviously this ground is the weakest of the three because it would be a rare water rights case which did not utilize expert testimony. In sum, the three reasons for distinction between percolating groundwater and surface water adopted by the Maine court no longer, if they ever did, justify such a distinction.

When the court in Chase recognized that other states, including New Hampshire, had adopted a "reasonable use" rule similar to that of the riparian doctrine, they summarily rejected that rule, stating "we see less difficulties in applying the rule of cujus solum, etc., than that of sic utere, etc., to cases of this character."[17] New Hampshire had adopted the "reasonable use" rule in Bassett v. Salisbury[18] in 1854 and had

reaffirmed it by Swett v. Cutts[19] in 1870. That Maine did not look more closely at New Hampshire's doctrine which had several years of testing is surprising.

In 1854, nineteen years before Chase, the court held that one who by the use of his own land pollutes his neighbor's groundwater may be both enjoined and liable for damages.[20] In Chase, by holding that one who by the use of his own land reduces his neighbor's groundwater is not liable, the court severed the rights of groundwater owners into two components: quantity and quality. As to quality, an owner had a right of action, but as to quantity, he did not. The split appears to have developed by accident: the "quality" action was derived from a typical land use nuisance action and the "quantity" action from the English rule above described. Although the report of Chase does not mention the plaintiff's use of such an argument, he might have argued that for consistency between actions dealing in quantity and quality of water, he should be allowed a cause of action, especially considering the interrelationships between the two.[21]

Although Chase is the basis for Maine groundwater law, it addresses only one form of groundwater: percolating water "not gathered into a fixed known channel", as opposed to subterranean streams. Later cases in other "absolute ownership" states accepted the presumption that unless proven otherwise, groundwater was presumed percolating.[22] Although not discussed, this presumption appears in Chase/where percolating water was presumed even where upon striking a strong flow of water by digging into

the ground, the flow at a distant spring was greatly reduced. Nevertheless, Chase did not extend the "absolute ownership" doctrine to subterranean streams which continued to be governed by the riparian doctrine as applied to surface streams in Blanchard v. Baker (1832) and later cases. No reported Maine case addresses subterranean streams, nor is Maine geology particularly suitable for formation of these streams. Limited to bedrock with high limestone content, subterranean streams are probably limited to three areas of the State: the coastal area surrounding Rockland, the inland area surrounding Limestone, and the northern borders of the state south of the St. John Valley. Essentially, the riparian doctrine as it would apply to groundwater provides a right to "reasonable use" to the owner of land through which the stream passes; this right is correlative among land owners along the stream but not to non-riparian owners. In other words, a use is determined reasonable solely as to its effect on other riparian owners of the same stream.[23, 24] As later cases dealing with riparian rights in surface streams illustrate, the riparian doctrine is much more flexible and accomodating of multiple use of a water source than is the "absolute ownership" doctrine which in the early development of surface stream law proved inadequate to meet the water needs of a developing nation.[25] It seems only a quirk of law that two separate doctrines were applied to subterranean streams and percolating groundwater. The riparian doctrine was being applied to surface streams at the time the first English groundwater case was litigated -- Acton v. Blundell -- and in dicta

this case stated that if the groundwater were in an identifiable stream the riparian doctrine would apply.[26] Referring back to the reasons cited in Chasemore, supra, to justify the "absolute ownership" doctrine, however, one can equally apply the problems of defining limits to the right, identifying the bounds of the water, and requiring expert testimony to the riparian doctrine. Little justification existed then or exists today for such a distinction.

B. Its Problems

As described above, the doctrine of "absolute ownership" holds that the owner of land is deemed to own all percolating waters beneath the surface of his land as he owns the soil and minerals; this concept stems from the maxim "cujus est solum, ejus usque ad coelum et ad infernos." The landowner has the absolute right to intercept percolating water before it leaves his property for whatever purpose he pleases and without regard to the effect of such interception on the owner of other land. Actually the title "absolute ownership" is a misnomer and has been recognized as such.[27] This groundwater right lacks one of the attributes of normal property ownership, the right to prevent interference with one's property. Regardless of its title, the doctrine provides an unlimited right for overlying landowners to capture and use groundwater.

This right to groundwater poses several problems. First, no public right is established as exists in most other water types.[28] Obviously where the public has an interest in most water types and these types are interrelated by the hydrologic

cycle with those types where no public interest lies, the public right is jeopardized. For example, many lakes and ponds are spring-fed which means that groundwater is their major source. If the aquifer which feeds a lake is over-used or diverted, the lake level may drop and the water temperature may be raised. If that lake is larger than ten acres, a great pond, the public has substantial rights in it which may be affected without legal redress. This interrelationship should be obvious but has been flagrantly ignored by the Maine court.[29] Second, a landowner's rights in surface water and groundwater are substantially different, which makes no sense, considering that the water is often the same but appearing in a different phase. This difference of rights may allow a landowner to avoid legal limitations of water-use on a surface source by using a subsurface source, the effect of which being the same as initially exploiting the surface source. This dichotomy does not reflect sound water management.[30] Third, a landowner has no legal remedy for interference with his groundwater supply. As Chase illustrated, when a landowner's spring is rendered inoperative by another's action, the first's only remedy is to install a pump at his own expense. Chase indicated that if the other's action was malicious, an action for damages would lie, but otherwise the landowner must internalize the cost of another's action.[31] Fourth, because no action lies for non-malicious interference, there exists an uncertainty as to one's water supply that may serve as a disincentive for capital investment.

If an industrial user, requiring large amounts of water, has a choice to locate where economic certainty exists as to its continued supply, it will probably opt for that location rather than risking non-actionable interference by locating in an "absolute ownership" state. Fifth, if one assumes that demands on groundwater will increase and if one recognizes the finite limits to this resource, the "absolute ownership" doctrine fails to provide a basis to allocate water for maximum benefit. This failure to establish a logical priority of uses seems a remote problem in Maine today; however, increased use, especially for public water supplies, might generate a conflict where an allocation would be necessary between the public system and, perhaps, an industrial user. The current doctrine provides no method for making such an allocation. Sixth, as described above, groundwater law is unnecessarily complicated by the distinction between subterranean streams and percolating water. This distinction is meaningless in reality and creates the same problem as the distinction between groundwater and surface water. Finally, the "absolute ownership" doctrine encourages waste and deterioration of ground water supplies. No limitations, other than natural, serve to moderate a landowner's use of groundwater. No action for waste lies in conjunction with this doctrine.[32] As described, groundwater use exceeding the rate of recharge can significantly reduce an aquifer's water quality as well as quantity.

In sum, this analysis of the problems inherent in the "absolute ownership" doctrine indicates the need for extensive

change to update Maine's groundwater law to reflect current and future needs and to bring consistency to Maine's water management system. Critics may question the need for change when little conflict is now apparent, but that question has been well-answered by Frank J. Trelease, a respected authority on water law, who stated:

> "Even though there may be no present shortage of water or immediate prospect of conflicts between users, there are advantages to a system of water law that clearly describes and identifies a private right in terms of quantity and purpose. A future benefit can be reaped, since as each new right is added to the list, conflicts can be avoided, and as more and more uses are made, an agency charged with the duty of permitting the initiation of uses is furnished valuable data which it can use as the basis of action, and potential water users can employ the same data in making their plans. Many western water adjudications were made in water-rich or underdeveloped areas, and permits were issued as new development took place until the limit of the supply was eventually reached. Accidental and over-optomistic overdevelopment was avoided as well as deliberate claim-jumping.[33]

The remainder of this paper focuses on alternative groundwater doctrines from other states and proposals for legislative action to revise Maine's groundwater law.

III. Alternative Doctrines

A. American Rule

The "absolute ownership" doctrine is frequently referred to as the "English Rule" and its early counterpart was the "American Rule" which appeared first in the New Hampshire case of Bassett v. Salisbury, supra. The "American Rule" developed in reaction to the harshness and abuses of the "English Rule" and was based on the same principle as the surface water riparian doctrine: sic utere tuo ut alienum non laedas. As illustrated by the reasoning of an early California case, some judges saw no need for different doctrines for surface and ground waters:

> "His ownership of the land carries with it all the natural advantages of its situation, and the right to a reasonable use of the land and everything it contains, limited only by the maxim, sic utere tuo ut alienum non laedas. It is upon this principle that the law of riparian rights is founded, giving to each owner the right to use the waters of the stream upon his riparian land, but limiting him to a reasonable share thereof, as against other riparian owners thereon. We think the same application of the principle should be made to the case of percolating waters feeding the stream, and necessary to its continued flow. There is no rational ground for any distinction

> between such percolating waters and the waters in the gravels immediately beneath and directly supporting the surface flow, and no reason for applying a different rule to the two classes with respect to such rights, if indeed, the two classes can be distinguished at all. Such waters, together with the surface stream supplied by them, should be considered a common supply, in which all who by their natural situation have access to it have a common right, and of which they may each make a reasonable use upon the land so situated, taking it either from the surface flow or directly from the percolations beneath their lands.[34]

This quote not only reflects modern water law theory of unifying surface and subsurface jurisprudence but also provides a good description of the "American Rule" complete with its two principal limitations. First, "reasonable use" is determined only in reference to land owners along the same water source, and second, to be "reasonable" a water use must be situated on the land under which the water was drawn.

The attraction of the "American Rule", especially to a state like Maine where surface water law is based primarily on the commonlaw riparian doctrine, is the possibility of unifying the doctrines for surface water, subterranean streams

and percolating groundwater. Unification is, as described above, a prerequisite to sound water management; however, closer examination of the "American Rule" illuminates several problems which render it less attractive. First, "reasonable use" is a jury question, highly dependent on the circumstances of each case. Lockwood v. Lawrence (1885) provides Maine's definitive analysis for "reasonable use" in riparian, surface water cases, providing eight factors to be weighed in determining "reasonableness", and the breadth of these factors make unpredictable a finding of "reasonableness."[35] This uncertainty in water rights is, as discussed above, not only a disincentive for capital investment but, also, a generator of potential conflicts. Furthermore, that "reasonableness" is determined solely as to a use's effect upon other users of the same source, the doctrine fails to consider the broader public interest in water management. A user's waste may be found "reasonable" where all other users of the source have sufficient supply for their use, but such waste may have severe impact on future use and demands. Second, most jurisdictions that have adopted the "American Rule" have held that extraction of groundwater for sale at a distance, for use in supplying water for public water supplies or for irrigation of lands other than those above the source, are all unreasonable uses. The surface water riparian doctrine historically limited use of water to riparian land, and recent Maine cases continue this limitation.[36] Clearly, modern land use has frequently divorced the consumption of land's resources from the land from which they came, and water

consumption follows this trend, especially in the sphere of public water supplies. Although this limitation of the "American Rule" has been rejected in some states, particularly those which have abolished the commonlaw doctrine of riparian rights, it continues in Maine, posing at least theoretical difficulties in adopting the "American Rule."[37]

In addition to these two limitations, the "American Rule" provides little improvement from the "English Rule" as to discouraging groundwater waste. The "reasonable use" limitation arises only when a conflict becomes so acute as to require legal action. Where the source of supply is not visible and when pumps are not metered, the concept of "reasonable use" is only helpful as a means whereby a court can halt flagrant interference. In sum, the "American Rule" would provide unity to Maine's water jurisprudence but has several limitations which discourage its adoption in commonlaw form. Statutory modification of the doctrine could overcome these defects and provide the simplest means of unifying and modernizing groundwater law in Maine. Police power statutes supplementing the doctrine could establish use priorities and centralized administration to water management, two goals which judicial review under the current doctrine fails to provide.

B. Correlative Rights Rule

California has developed a variation of the "American Rule" which, due to its name, has been confused with that rule. The "correlative rights rule" is an extension from the concept of "reasonableness", emphasizing the rights of landowners

overlying a groundwater source. Under this doctrine, each overlying landowner is entitled to pump from wells on his land a reasonable share of the water for beneficial use on his overlying land, subject to the same rights of all other landowners overlying the same source of supply. Thus far, the "correlative rights rule" parallels the "American Rule." In addition to the above right and subordinate to it, an overlying landowner can take surplus water, that left after the reasonable needs of all overlying landowners, and he can use that water without the restrictions of use on the overlying land. In other words, he can appropriate the surplus water as the appropriation doctrine, to be discussed later, permits, even to the extent of prescription after five years of adverse use. If, however, an overdraft of the source is determined, all appropriations, except those vested by prescription, become illegal and allocation reverts to the test of "reasonableness" which is determined as to one landowner's use affecting another's.[38]

As a modification of the "American Rule", the "correlative rights" rule generally has the same advantage of providing a unified theory for surface and groundwater as well as the disadvantages of unpredictability, failure to establish priorities of use, judicial administration, and failure in representing the public interest in water management. The California rule does improve on the historical limitation of the "American Rule" as to transporting water away from its overlying land, but this improvement is limited to the surplus water and the water vested by prescription. The doctrine of "correlative rights" has been

described as establishing a public interest in groundwater by imposing a public servitude on a landowner's use, but this view is not totally correct.[39] Under this doctrine an owner's use is limited only by the needs of other landowners overlying the source which is only a small segment of the public, although admittedly often the most interested and affected. Although the "correlative rights" rule does not create a truly "public" interest, it does broaden the scope of a judicial determination of "reasonableness" from solely the parties of the action to all overlying landowners.

California has statutorily addressed the rule's disadvantage of judicial administration over groundwater management by creating a body known as the State Water Rights Board to which a court may refer any pending action for the determination of physical facts.[40] One of the recognized problems of groundwater litigation is the difficulty in obtaining adequate hydrologic data as to supply, movement, use and recharge. Experts are expensive, placing heavy burdens on litigants, and courts generally have no resources to gather additional facts to resolve conflicting data. California's State Water Rights Board investigates a conflict referred to it by the court, prepares a draft report, solicits comments on the draft from the litigants, and with the comments prepares a final draft which is filed with the court. The report, if not excepted to, becomes prima facie evidence; if excepted to, a hearing is held, from which the court makes findings of fact.[41]

Several advantages flow from California's procedure. First,

a single agency ascertains and accumulates needed data, thus reducing time and cost. Second, cost of the data gathering is allocated among litigants on the basis of their water use, not imposing a discouraging or deterring burden on the usual small user-complainant. Third, the board can make findings and recommendations as to the State's interest in water management, although the Court is not bound under the "correlative rights" rule to follow these recommendations.

C. Prior Appropriation Doctrine

As the American West became settled by easterners who brought with them their legal doctrines, it became clear that the commonlaw riparian doctrine was not a practical means of allocating water rights in arid land and consequently the "prior appropriation" doctrine was applied.[42] The Colorado Court in 1882 stated"(w)e conclude then that the common law doctrine.....is inapplicable to Colorado. Imperative necessity, unknown to the countries which gave it birth, compels the recognition of another doctrine in conflict therewith."[43] As in Colorado, most of those western states that adopted the "prior appropriation" doctrine, did so judicially and limited the doctrine to surface waters.[44] Application of the doctrine to groundwater came through statute or constitutional amendment. In 1927, New Mexico became the first of many western states to statutorily apply the doctrine to groundwater, and the statute was upheld by the New Mexico court as not constituting an unconstitutional taking of overlying owners' rights in unused waters under their land.[45] Alaska is the most recent state

to apply the doctrine to groundwater, adopting it in its constitution ratified in 1956.[46, 47]

The doctrine establishes a system of exclusive rights whereby a prior appropriator has a right to a fixed quantity of water to the extent of his priority. (Priority in time provides a priority of right.) Generally, each appropriator receives a license issued by the state, designating the permitted quantity for use. An appropriation right is independent of the land ownership, unlike a riparian right which is non-severable. Water may be used anywhere; it is not restricted to either the overlying land or watershed from which it came. The appropriation right is held only as long as the permitted beneficial use is continued and may be lost by non-use or abandonment. Water may be used for any "beneficial" purpose and the state generally by statute or regulation has defined and listed "beneficial uses."

The "prior appropriation" doctrine is considered by water law authorities as the basis for an effective water management system. That the doctrine developed in arid states provides features for tighter controls on allocation and definite rights with characteristics to meet the needs of future water conflicts in historically non-arid states. First, the doctrine provides for certainty of one's rights; an owner has a license for a specified number of gallons which is only limited by natural shortage. Second, a right is severable from the overlying land, permitting sale of the right. If one assumes that the marketplace allows economic forces to channel rights to

their highest and best use, this severability leads to a flexibility of use reflecting societal needs. This flexibility is increased by the fact an appropriator is not limited to use of the water on the overlying land. Third, the limitation of "beneficial use" injects the public interest through a legislative determination of what uses are beneficial. Furthermore, the licensing system inherent in the doctrine provides a mechanism whereby the state can monitor current users and their consumption.

The most obvious problem in applying the "prior appropriation" doctrine in Maine is that surface water would be allocated by an entirely different doctrine, which as discussed above would make little sense. Even in states where surface water allocation is controlled by the "prior appropriation" doctrine, the doctrine's failure to integrate ground and surface water management is a problem.[48] The practice in most western states has been to treat appropriation rights for surface and groundwater separate. Another problem with the doctrine is that allocation of water may not reflect social priorities, instead favoring pre-existing uses which acquired their rights solely as prior users. If prior users wish to continue their use, only eminent domain powers limited to public use can preempt those rights. Finally, the public interest element of the doctrine is limited to the role of defining "beneficial use"; the quantity of water consumption is not affected by public interest. In a period of water shortage the most recent users would lose their rights which are subordinate to those of prior users, regardless to the

ultimate use of the water.

D. Model Water Use Act

In 1958 the National Conference of Commissioners on Uniform State Laws approved a model act addressing management of ground and surface waters.[49] Although the act has had no success in promoting uniform management among the states, most probably due to great divergence of existing state law, it does present a fifth system which is substantially different from any one of the basic doctrines. The act provides for a comprehensive compulsory permit system for all substantial water uses, administered by a state water resources commission. The system exempts domestic uses and preserves rights existing prior to the act's enactment, permitting the continuation of existing "beneficial uses." These preserved rights are subject to commission review within three years of enactment. Non-use of a right can cause its extinguishment. The commission has allocation powers in water-short areas and emergency situations. The act delineates the standards for permit issuance as follows: 1) beneficial use, 2) availability of water, 3) no impairment of the most beneficial use of waters, and 4) no substantial interference with preserved or domestic uses. Permits are issued without regard to any commonlaw limitations such as use on overlying land or in the same watershed. In essence, the model act operates similarly to the "prior appropriation" doctrine, but no priority of right exists other than that given to uses preexisting the act and even those are defeasible. The public interest is considered in the issuance

of each permit as well as in greater public controls in crucial areas and times. Apparently, the system can be superimposed on an existing doctrine, virtually replacing it, similar to Maine's surface water classification act, which overrode the riparian doctrine as it applied to pollution in navigable streams.[50] A system similar to the model act is used in Iowa, superimposed on the the "American rule."[51]

IV. A Direction for Maine

Frank Trelease has stated that

> "water law should provide for maximum benefits from the use of the resource, and this end should be reached by means of granting private property rights in water, secure enough to encourage development and flexible enough for economic forces to change them to better uses, and subject to public regulation only when private economic action does not protect the public interests."[52]

With these goals in mind, Maine should attempt to integrate its groundwater law with the rest of its water management system.

The above analysis of various groundwater allocation doctrines illustrates that great variety of state law has been created since the middle of the nineteenth century when American groundwater law first developed. Recently, increased environmental awareness, technological and scientific advancements, and developmental pressures have encouraged re-evaluation of

early doctrines. Massachusetts adopted the "English Rule" in 1836, but in 1973 conducted a comprehensive investigation to study "the physical relationships between ground and surface water and the interrelated effects of man's activities on ground and surface waters", concluding that their current law was inadequate for proper groundwater allocation.[53, 54] Wisconsin recently rejected its notorious Huber v. Merkel known for its strong endorsement of the "absolute ownership" doctrine.[55] It is clear that the "English Rule" is losing its hold even in water-rich eastern states. Where should Maine turn?

A modified "American Rule" seems the most appropriate doctrine to allocate Maine groundwater. This same conclusion was reached by the Wisconsin court in their 1974 rejection of Huber. Since statehood in 1820 Maine has applied the riparian doctrine to flowing surface waters, using a "reasonable use" standard; to apply the same standard to groundwater use would greatly aid unification of Maine's water management system. The "American Rule" concept provides the only alternative which promotes unification without requiring substantial change of existing surface water law. As described above, the commonlaw doctrine has several weaknesses which make its adoption in commonlaw form less desirable. These deficiencies can be addressed and remedied by a comprehensive statute, based on the state's police power, aimed at providing rational allocation of groundwater rights.[56] Furthermore, legislative amendment could later improve certain aspects of the doctrine

especially those involved with public interest considerations, if additional steps appear necessary.

First, the Legislature in rejecting the "absolute ownership" doctrine and in adopting the "American Rule" should attempt to clarify the "reasonable use" concept. The concept should be more precise than the eight factors provided in Lockwood v. Lawrence, addressing surface waters. One form of modified "American Rule" which addresses this problem was adopted by the Wisconsin court in Michels reversing Huber. The Wisconsin court adopted the Restatement (Second) of Torts version of the "American Rule" which more closely parallels the riparian doctrine than other versions.[57] In adopting this version, Wisconsin has the benefit of the Restatement, its comments and examples to serve as guidelines for the otherwise slippery term "reasonable use". Because "reasonable use" is a subjective term, the meaning of which varies as to the fact situation involved, no easy definition is available, but Wisconsin's incorporation of examples and comments of the Restatement was an effective means to address this problem. If Maine were to adopt a statute substantially similar to the Restatement similar benefits could accrue.

Second, a definition of reasonable use which includes the transportation of water beyond its overlying land would avoid the historical restriction which has plagued many "reasonable use" jurisdictions.[58] As noted previously, Maine's riparian doctrine still has this limitation which has produced undesirable results.[59] Legislative change of the

surface water riparian doctrine might be considered to keep the two doctrines consistent. If use of groundwater was not restricted to overlying land, it seems that under this doctrine groundwater rights would be severable from the land, allowing market pressures to allocate water to its highest and best use, a common goal of resource management.

Third, the commonlaw "American Rule" fails to consider the public interest in water management. As the doctrine developed the focus of concern in litigation was the effect of one party's use on another's; little thought was given to lowering water tables, potential decline in water quality or effect on non-parties (whose interest at the moment might have been too small to warrant the cost of litigation). The Restatement alters the commonlaw as to several of these concerns, as follows: liability is imposed on a groundwater user whose use 1) "causes unreasonable harm through lowering the water table or reducing artesian pressure" or 2) "has a "direct and substantial effect upon the water of a watercourse or lake". These two sources of liability can arise, at least theoretically, from damage suffered by one who is not necessarily a user of the same water source; whereas, the commonlaw "American Rule" limits liability to correlative users. This expanded liability significantly broadens the protection of the public interest in determining a use's "reasonableness". Further public controls could be enacted through a limited permit system superimposed on the legal doctrine. Although the administrative expenses of a general permit system would seem

to outweigh its benefits and political feasibility, a limited system could address areas of shortage. For example, New York has adopted localized regulation of groundwater use on Long Island, requiring permits for large users only.[60] A limited system could be adjusted through its two factors of consumption and location to protect groundwater problem areas. This system, through the issuance of permits on a basis similar to that of the Model Act described above, affords the establishment of public priorities where supplies may become inadequate.

Without the enactment of a comprehensive general permit system, Maine will be unable to attain the goal of complete security of water rights. The "reasonable use" doctrine does not prevent intrusions on other users as long as the intruding use is "reasonable." In its comments to the definition of "reasonable use" the Restatement describes that no cause of action would arise where in an agricultural area a farmer dug a new well for irrigation, the normal use of which caused other farmers' irrigation wells to hold less water. None of the farmers have complete security as to their share of water. At this time, however, a general permit system seems unnecessary due to apparent adequate groundwater sources and to the administrative costs of such a system.

V. Conclusion

Maine, a state with a reputation of environmental awareness and forethought, has failed to recognize that management of water is incomplete and only partially effective when only surface water is addressed. Groundwater consumption constitutes

a large part of Maine water use today, complementing surface water use. To trust the proper allocation of groundwater rights to a legal doctrine which developed when little knowledge of hydrology existed and when demands on clean water were significantly less is only tempting fate." Before problems become acute, Maine should recognize this area of potential abuse and conflict and adopt a legal doctrine which recognizes the realities of hydrology and water use today. The legislature, and courts if necessary, should step forward to fashion a new doctrine which recognizes the interrelationship of surface and groundwater and which provides a more rational allocation of Maine's water.

Footnotes

1. "Christian Science Monitor", February 18, 1977;
2. Heath, Milton S. Jr., "Water Management Legislation in the Eastern States", Land and Water Law Review, Vol. 11, No. 1, 1967;
3. Blanchard v. Baker, 8 Me 253 (1832);
4. Chase v. Silverstone, 62 Me 175 (1873);
5. Ibid, page 176;
6. 38 MRSA 759;
7. 38 MRSA 380;
8. 12 MRSA 4751;
9. Brad Caswell works for the Department of Environmental Protection's Bureau of Geology, mapping bedrock aquifers, and Glen Prescott works for the United States Geological Survey, mapping gravel aquifers;
10. Safe Drinking Water Act, Pub. L. 93-523;

11. Such a situation now seems apparent in the South Paris, Maine area where a large leather tannery uses large quantities of water at spaced intervals during the day and where the municipality already faces an iron ore leaching problem which affects the quality of its public water supply;

12. 12 Mees. & W. 335 (1843);

13. 2 H. & N. 168; S.C. 7 H. L. Cas. 349 (1859);

14. If the riparian doctrine were applied to this case it is unclear whether the plaintiff would have won damages. A jury might not have found the defendant's use unreasonable;

15. Chase, p. 181;

16. Lockwood v. Lawrence, 71 Me. 297 (1885);

17. Chase, p. 183;

18. Bassett v. Salisbury Mfg. Co., 43 N.H. 569 (1840);

19. Swett v. Cutts, 50 N.H. 439 (1870);

20. Woodward v. Aborn 35 Me 271 (1853);

21. Another apparent inconsistency is created by Chase's dictum that no prescriptive rights are created in groundwater: whereas prescription of well rights had been generally accepted. Rollins v. Blackden 112 Me 459 (1914);

22. Huber v. Merkel 117 Wis 355, 94 NW 354 (1903);

23. This application of the riparian doctrine is the "pure" commonlaw doctrine as first advanced in Maine by Blanchard v. Baker, supra, and later modified by Lockwood v. Lawrence, totally ignoring the effect of the Mill Act and water pollution control statutes which limit themselves to surface stream;

24. Opinion of The Justices 118 Maine 503 (1919);

25. Horwitz, Morton J. "The Transformation in the Conception of Property in American Law, 1780-1860" 40 U. Chicago Law Review 248 (1971);

26. Acton v. Blundell 12 Messon & Welsby's Report at page 354;

27. Gallerani v. U.S. 41 F. Supp 293 (1941);

28. Waite, G. Graham, "Public Rights in Maine Waters" 17 U. Maine Law Review 161 (1965);

29. Stanton v. St. Joseph's College 233 A2d 718 (Maine 1967); see also Waite, G. Graham, "Ransoming the Maine Environment" 73 Maine Law Review 103 (1970);

30. Clark, Robert Emmet, "Ground Water Law: Problem Areas" 8 Natural Resources Lawyer 377 (1975);

31. Chase's dicta that where groundwater interference occurs with malice on the part of the defendant a cause of action lies creates an anomaly in property law. If a landowner has absolute ownership of groundwater his intent as to its use has little relevance as to the existence of a cause of action. Chase adopts the majority view that interference with malice gives rise to a cause of action. This view stems from Greenleaf v. Francis 18 Pick. 117 (Mass. 1836) which cites no authority for the view which in fact was dicta (at page 123, supra). The minority view which at least follows common law principles is adopted in Huber v. Merkel 117 Wisconsin 355 (1903) which cited Metzger v. Hochrein 107 Wisconsin 267 (1900). Metzger stated that the "general rule is that whatever a man may lawfully do on his own property under any circumstances, he may do regardless of the motive for his conduct". The harshness of this common law principle, coupled with the "absolute ownership" doctrine, most likely caused courts to opt the majority view, regardless of its inconsistency with property law;

32. Huber v. Merkel, supra, c.f. Stillwater Water Co. v. Farmer 89 Minnesota 58, 93 NW 907 (1903);

33. Trelease, Frank J., "Policies for Water Law: Property Rights, Economic Forces, and Public Regulation" 5 Natural Resources Journal 28 (1965);

34. Burr v. Maclay Rancho Water Co. 160 California 268, 116 Pacific 715 (1911);

35. Lockwood v. Lawrence, supra, held that a court in determining reasonableness of a surface water riparian use will look to the following eight factors:
    1) The occasion and manner of water use;
    2) The object, extent, necessity, and duration of the use;
    3) The nature and size of the stream;
    4) The kind of business to which it is subservient;
    5) The extent of injuries to other parties;
    6) The state of improvement of the country as to mills and machinery;
    7) The general and established usages, and
    8) All other relevant circumstances;

36. Kennebunk, Kennebunkport, and Wells Water District v.

Maine Turnpike Authority 145 Maine 35 (1950); Restatement of Torts, Vol. 4, Chapter 41, Sec. 855, page 374;

37. Cohen v. La Canada Land & Water Co. 151 California 680, 91 Pac. 663 (1907); Glover v. Utah Oil Ref. Co. 62 Utah 174, 218 Pac. 955 (1923);

38. Holsinger, "Required [California] Ground Water Legislation", (Mimeographed Address to California Irrigation Districts Association Convention, May 9, 1956); Bergholz, "Land Use and Rights in Groundwater", Land and Water Law Review, Vol. 10, pp. 489-503 (1975);

39. Bergholz, supra;

40. Bookman, "Procedures for Adjudication of Rights to Ground Water in California" (Mimeographed address presented to California Irrigation Districts Association Convention May 9, 1956);

41. Ibid;

42. Apparently, the "prior appropriation" doctrine developed in the American West by common usage of the earliest settlers and confirmation by the courts. Actually the appropriation doctrine and the riparian doctrine have been interchanged at several times and places throughout history, depending on local water resources, state of local development, and society's fluctuating goals of providing security to existing industry or promoting competition to stimulate growth. See, Maas and Zobel, "Anglo-American Water Law: Who Appropriated the Riparian Doctrine" X Public Policy 109 (1960) and Horwitz, "The Transformation in the Conception of Property in American Law, 1780-1860," 40 U. Chicago Law Review 248 (1971);

43. Coffin v. Left Hand Ditch Co. 6 Colorado 443 (1882);

44. Cardelli v. Comstock Tunnel Co. 26 Nevada 284, 66 Pacific 950 (1901); Vanderwork v. Hewes & Dean 15 New Mexico 439, 110 Pacific 567 (1910);

45. Yeo v. Tweedy 34 New Mexico 611, 286 Pacific 970 (1930);

46. Alaska Constitution, Article VIII, Section 13, "All surface and subsurface water reserved to the people for common use, except mineral and medicinal waters, are subject to appropriation. Priority of appropriation shall give prior right. Except for public water supply, an appropriation of water shall be limited to stated purposes and subject to preferences among beneficial uses, concurrent or otherwise, as prescribed by law, and to the general reservation of fish and wildlife."

47. Trelease, Frank J., "Alaska's New Water Use Act", 2 Land and Water Law Review 1 (1967); see, also, his "Policies for Water Law" 5 Natural Resources Journal 1 (1965);

48. Clark, Robert Emmet, "Ground Water Law: Problem Areas" 8 Natural Resources Lawyer 377 (1975) at page 386;

49. National Conference of Commissioners on Uniform State Laws, pp. 174-218 (1958);

50. 38 MRSA 361 overriding Lockwood v. Lawrence 71 Maine 297 (1885); but, see: Stanton v. St. Joseph's College 233 A2d 718 (Maine 1967);

51. Iowa Code, Sections 455A.1 -.39 (1962);

52. Trelease, "Policies for Water Law", supra, page 2;

53. Greenleaf v. Francis 18 Pick. 117 (1836);

54. Massachusetts Division of Water Resources, "Groundwater and Groundwater Law in Massachusetts (1976);

55. 117 Wisconsin 355, 94 N.W. 2d 354 (1903) overruled by State v. Michels Pipeline Construction, Inc. 63 Wisconsin 2d 278, 217 N.W. 2d 339 and 219 N.W. 2d 308 (1974); see, also, McAvoy, Peter, "Wisconsin Strives to Minimize Conflicts Over the Use of Water" 59 Marquette Law Review 145 (1976);

56. If the common law doctrine of "absolute ownership" is changed, the question arises whether such change would constitute a "taking" of private property rights in violation of the 14th Amendment, requiring compensation for public taking of private property. Although this issue was avoided by the U.S. Supreme Court in California Oregon Power Co. v. Beaver Portland Cement Co. 295 U.S. 142, 55 S. Ct. 725 (1935), several state courts have since indicated a change from an early reluctance to alter vested property rights, as illustrated by Huber v. Merkel. Huber held unconstitutional a state statute prohibiting waste of groundwater brought to the surface by artesian wells. Since Huber, several courts have adopted the view that proprietary rights in groundwater may be qualified judicially so far as necessary to preserve by legislation valuable subsurface resources for continuing beneficial use. Lindsley v. Natural Carbonic Gas Co. 220 U.S. 61, 55 L. Ed. 369, 31 Sup. Ct. 337, found no unconstitutional taking by a New York statute preventing waste and impairment of natural mineral springs. Eccles v. Ditto 23 New Mexico 235, 167 Pac. 726 (1917), upheld a New Mexico statute requiring the repair or plugging of artesian wells. Eden Irrigation Co. v. District Court 61 Utah 103, 211 Pac. 957 (1922) held

that "a state in its governmental capacity, has a right to regulate within reasonable bounds, the use of water, although the right to the use may have been adjudicated; and that no constitutional rights are invaded by such inconveniences as necessarily result in administering the law for the protection of all and for the public good." Southwest Engineering Co. v. Ernst 79 Arizona 403, 291 P 2d 764 (1955) upheld the constitutionality of an underground water code limiting drilling in critical aquifers and noted that a state could employ the police power to limit well drilling on any land where the public good required protection. The Maine court would seem to follow this line of cases by its interpretation of the police power in Inhabitants of York Harbor Village Corp. v. Libby 126 Maine 537 (1928) which stated that "a statute or ordinance regulating use of property tending to injure the public interest, neither arbitrary nor violative of the Constitution, is not deprivation of property without due process but exercise of the police power." Further support for the argument that no unconstitutional "taking" occurs when the "absolute ownership" doctrine is rejected comes from the fact that none of the at least eight states: Arizona, California, Florida, Kentucky, Tennessee, Utah, Wyoming and Wisconsin, which have rejected the English doctrine and adopted a version of the American rule, have been held to have made unconstitutional takings. Kansas, which adopted an appropriation doctrine after a history of riparian and proprietary water rights was held in Baumann v. Smrha 145 F. Supp. 617 (D. Kansas 1956) to have acted within its police power. No constitutional problem of "taking" seems to bar Maine's action in addressing the problem of protecting her groundwater supplies by means of a comprehensive allocation system which alters vested rights; the police power is clearly broad enough to protect this public interest;

57. Restatement (Second) of Torts Section 858A (Tentative Draft Number 17, 1971);

58. This, in fact, is done by the Restatement's definition, supra;

59. Kennebunk, Kennebunkport and Wells Water District v. Maine Turnpike Authority 145 Maine 35 (1950) holding that a water district had no cause of action as a riparian owner against the Turnpike for silting its public water supply source;

60. New York Conservation Law, Sections 475-76 (Supp. 1965);

61. An example for a statute to enact a "modified American Rule", based on the Restatement (Second) of Torts, Draft Number 17, 1971, follows:

AN ACT to Impose Liability for Interference with Groundwater Use

Be it enacted by the People of The State of Maine as follows:

Section 1 Statement of Purpose

The Legislature recognizes 1) that increased urban development and increased water use are demanding ever larger sources of clean water, 2) that groundwater sources now provide and will continue to provide a large portion of needed water, 3) that the demand will inevitably lead to conflict between water users due to the finite water supply, and 4) that current commonlaw is inadequate to equitably resolve such conflicts. The purpose, therefore, of this act is to amend the commonlaw doctrine of groundwater rights which now provides no liability for a landowner's use of groundwater from his own land which interferes with groundwater use of others, due to lowering the water table or reducing artesian pressure. This act would provide such liability only if groundwater use caused unreasonable harm.

Section 2 Liability imposed

A possessor of land or his grantee who withdraws groundwater from the land is subject to liability for interference with the use of water by another if the withdrawal of water causes unreasonable harm through lowering the water table or reducing artesian pressure or through a direct and substantial effect upon the water of a watercourse or other surface water body.

Section 3 "Unreasonable harm" defined

1) Harm is not necessarily unreasonable if caused by the use of groundwater at a location other than on the land from which it was drawn.

2) Harm may be unreasonable to persons other than landowners overlying the same groundwater source.