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Reasonable Groundwater Pumping Levels Under the Appropriation Doctrine: Underlying Social Goals[†]

INTRODUCTION

This is the second of two articles dealing with reasonable groundwater pumping level regulation in appropriation doctrine states.¹ The earlier article reported that most appropriation doctrine groundwater codes protect senior well owners in the maintenance of reasonable pumping levels, but the codes give little specific guidance on how to apply that criterion. The objective of both articles is to help fill the need for a means of measuring reasonableness.

The first article summarized notable features of the reasonable pumping level statutes in different appropriation doctrine states and then focused on the economic dimension of the reasonable pumping level concept. It suggested that the pumping level statutes could be construed to set a goal of optimum economic development, *i.e.*, an economically efficient allocation of the groundwater resource. The earlier article then considered the use of cost-benefit analysis to pursue the goal of economic efficiency.

This article focuses mainly on goals besides economic efficiency. For the sake of a convenient label, these other goals are grouped under the heading of social goals.² Thus, the two articles, when read together, use an analytical framework divided into economic efficiency and social goals. While this framework does not provide mechanical answers to pumping level problems, the author hopes that the discussion based on it will at least help to identify and illuminate the issues involved in pumping level decisions.

To set the stage for discussing social goals, this article begins with a

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†Parts of this article are an outgrowth of research funded by the Office of Water Research and Technology, United States Department of the Interior, as authorized under the Water Resources Research Act of 1964 and made available through the Idaho Water Resources Research Institute, University of Idaho. I am indebted to Professor David J. Walker, Department of Agricultural Economics and Applied Statistics, College of Agriculture, University of Idaho, for a number of useful comments on an earlier draft of the manuscript.

1. The first article is Grant, *Reasonable Groundwater Pumping Levels Under the Appropriation Doctrine: The Law and Underlying Economic Goals*, 21 NAT. RES. J. 1 (1981).

2. This label is also used in C. CORKER, *GROUNDWATER LAW, MANAGEMENT AND ADMINISTRATION* 130-35 (1971). The dichotomy here between economic goals and social goals should not be confused with the public finance theory dichotomy between private goods and social goods. On the latter, see R. MUSGRAVE & P. MUSGRAVE, *PUBLIC FINANCE THEORY AND PRACTICE* 6-7 (1973).

brief look at the normative incompleteness of the economic efficiency goal as pursued through cost-benefit analysis. Then comes detailed consideration of possible social goals under the reasonable pumping level statutes and related appropriation doctrine laws and traditions. The article concludes with some general thoughts on implementing the reasonable pumping level concept.

INCOMPLETENESS OF THE EFFICIENCY GOAL

Economic efficiency is not a self-defining concept. A useful starting point for discussion is the Pareto criterion, which has occupied a central position in theoretical discussions of efficiency for the last half century.³ The Pareto criterion in its pure form says that a resource allocation is optimal (efficient) if no change could be made that would make at least one person better off and no one worse off. Conversely, a different allocation would be superior (more efficient) if it would make at least one person better off and no one worse off.⁴ As a test of whether the government should act to alter a resource allocation, the Pareto criterion is highly restrictive. The status quo will almost always be Pareto optimal, and any alternative will seldom be Pareto superior. To illustrate, suppose that existing law protects the historic diversion levels of senior appropriators and that changing the law to protect only reasonable levels would yield large net gains to society. The Pareto criterion says the change is not superior to the status quo if, as will almost surely be the case, any senior appropriator would consider himself worse off under it.

In response to the restrictiveness of the Pareto criterion, a variation was developed.⁵ According to this variation, a new allocation of resources is superior to (more efficient than) the status quo if the gainers *could* compensate the losers and still be better off.⁶ This variation is often called the potential Pareto improvement criterion because it requires only hypothetical, not actual, compensation to those who will lose from the change. It is hardly a value neutral decision-making tool because some normative argument is required to justify why those who lose should have to do so for the benefit of the gainers.⁷

3. See J. HEAD, PUBLIC GOODS AND PUBLIC WELFARE 3-14 (1974).

4. *Id.* at 5-6; A. RANDALL, RESOURCE ECONOMICS: AN ECONOMIC APPROACH TO NATURAL RESOURCE AND ENVIRONMENTAL POLICY 101 & n. 1 (1981); P. SASSONE & W. SCHAFFER, COST-BENEFIT ANALYSIS: A HANDBOOK 8-9 (1978).

5. J. HEAD, *supra* note 3, at 6-10.

6. A. DASGUPTA & D. PEARCE, COST-BENEFIT ANALYSIS: THEORY AND PRACTICE 57 (1972); E. MISHAN, COST-BENEFIT ANALYSIS 390-96 (rev. ed. 1976); P. SASSONE & W. SCHAFFER, *supra* note 4, at 9-11. The evolution of this criterion through several stages is detailed in J. HEAD, *supra* note 3, at 6-10.

7. B. ACKERMAN, ECONOMIC FOUNDATIONS OF PROPERTY LAW xiii (1975). It has been argued that the more progressive the tax structure is and the more intense competition is, the

The potential Pareto improvement criterion underlies cost-benefit analysis.⁸ If the dollar value of expected benefits exceeds the dollar value of expected costs, then hypothetically the gainers could compensate the losers and still come out ahead. In this way, cost-benefit analysis can identify allocative efficiency, *i.e.*, the pattern that maximizes net benefits. Since the losers receive no actual compensation, a thorough cost-benefit analysis will include a separate statement of how the benefits and costs are distributed among people.⁹

Following the cost-benefit analysis, a question remains: Why should the gainers gain at the expense of the losers? If economic efficiency were the only goal in resource allocation, this question would be ridiculous. The simple and easy answer would be: Because it is efficient. Usually, however, this question is not answered so easily.¹⁰

Although the courts seldom, if ever, formally apply the potential Pareto improvement criterion or cost-benefit analysis, they do deal with efficiency arguments. The normative limits of efficiency claims have not escaped judicial awareness. For example, in one case upstream junior appropriators argued they should be allowed to divert water to the detriment of downstream senior appropriators because they could use it for greater benefit to more people with less waste. The court rejected this argument with the comment that "equity does not consist in taking the property of a few for the benefit of the many, even though the general average of benefits would be greater."¹¹ This example is not offered to suggest that courts never allow efficiency to be pursued unless the Pareto criterion in its pure form is satisfied, *i.e.*, no losers, or actual compensation is paid to the losers under liability or eminent domain rules. Rather,

more likely a potential Pareto improvement will result in an actual Pareto improvement (gainers but no losers) or something close to it. E. MISHAN, *supra* note 6, at 393. *But cf.* P. SASSONE & W. SCHAFFER, *supra* note 4, at 11 (finding the progressive tax structure argument less than completely convincing).

8. A. DASGUPTA & D. PEARCE, *supra* note 6, at 57-61; E. MISHAN, *supra* note 6, at xviii; P. SASSONE & W. SCHAFFER, *supra* note 6, at 8-12.

9. P. SASSONE & W. SCHAFFER, *supra* note 6, at 23-24; *see also* E. MISHAN, *supra* note 6, at xviii-xix and 412-15.

10. For a comprehensive theoretical discussion of why cost-benefit analysis is indeterminate as a criterion for shaping legal rules, see Kennedy, *Cost-Benefit Analysis of Entitlement Problems: A Critique*, 33 STAN. L. REV. 387 (1981).

11. *Morris v. Bean*, 146 F. 423, 436 (D. Mont. 1906), *aff'd* 159 F. 651 (9th Cir. 1908) and 221 U.S. 485 (1911). *Cf. Furrer v. Talent Irrigation Dist.*, 258 Ore. 498, ___, 466 P.2d 605, 613 (1964) (irrigation district could not escape liability in negligence for property damage to a farmer's land caused by leakage from its canal by showing that its canal operation substantially benefited other farmers and the public generally, for outweighing the harm done to the plaintiff alone). The results in both cases might have been explainable on a rationale of promoting long run efficiency by protecting security of investment (*see text infra* at notes 19-21) but the courts did not speak in that language and seemed to be concerned about something else—whether called equity, fairness, distribution, or whatever.

its purpose is to illustrate judicial recognition that economic efficiency is not always the only goal in resource allocation.

Of course, a state legislature has the authority to make economic efficiency its only goal in the pumping level situation (assuming no vested rights are taken in the process). The next section considers whether any states have done that or whether the reasonable pumping level statutes and related appropriation doctrine laws recognize goals in addition to economic efficiency.

SOCIAL GOALS

The inquiry into social goals begins with distributional preferences, the most frequently identified social goal in resource allocation literature. Then the possibility of other social goals unrelated to distribution is explored.

Distributional Preferences

The distinction in resource allocation theory between economic efficiency and distribution has been explained as follows: "Efficiency questions relate to the size of the pie available; distribution questions to who gets what share."¹² Both kinds of questions often will arise in the pumping level context. The typical problem presents two choices regarding the water in dispute: (1) leave it in the ground to provide lift for the pumps of senior appropriators and possibly to serve other purposes such as preventing the intrusion of saline water into the aquifer,¹³ or (2) allow new appropriators to withdraw it for use on the surface. If senior appropriators are already pumping from a reasonable depth, the reasonable pumping level statutes either prohibit juniors from lowering the depth or allow it only if juniors pay the increased pumping costs of seniors.¹⁴ If the senior wells are operating above a reasonable pumping depth, however, the juniors will be free to pull the level down to such a depth, and

12. J. HIRSCHLIEFER, J. DeHAVEN, J. MILLIMAN, WATER SUPPLY: ECONOMICS, TECHNOLOGY AND POLICY 36 (1960).

13. The possible other functions are described in Grant, *supra* note 1, at 28.

14. The pumping level statutes themselves generally do not address whether a protected reasonable level is mandatory in the sense that it cannot be lowered at all or whether a junior appropriator can pull the level lower if he pays damages to affected parties. Other groundwater statutes may affect the result. In the Odessa subarea of Washington, for example, groundwater regulations say that the water table in a particular zone shall not drop more than 300 feet below the static water level as measured in 1967. These regulations were issued under an entire chapter of the Washington Code, chapter 90.44, which includes a safe sustained yield statute as well as a reasonable pump lift statute. *Pima Farms Co. v. Proctor*, 30 Ariz. 96, 245 P. 369 (1926), and *Current Creek Irrigation Co. v. Andrews*, 9 Utah 2d 324, 344 P.2d 528 (1959), allowed junior appropriators to keep pumping despite violation of senior rights upon in kind replacement of water to the seniors, although these cases were not decided under reasonable pumping level statutes. *Pima Farms* is discussed in text *infra* at notes 27-29. A recent Idaho case that took a similar approach is discussed in note 33 *infra*.

the seniors will have to pay their own increased pumping costs. Thus, reasonable pumping level determinations can raise not only the efficiency issue of how the particular quantity of water in dispute should be used but also the issue of proper wealth or income distribution between senior and junior appropriators.

The discussion below considers distributional preferences that may operate in pumping level situations. The general approach is to describe different features of distributional theory and, as each feature is stated, to discuss pumping level law in light of it. Several preliminary points are in order. First, the reasonable pumping level statutes tend to be so vacuously worded that frequent reference to the broader appropriation doctrine context in which those statutes exist is unavoidable. Second, the inquiry into distributional preferences cannot end with identification of the distributional effects of various appropriation doctrine laws and traditions. One must also ask whether those effects have policy significance, *i.e.*, whether they really represent distributional goals or are merely incidental by-products of rules based on a goal of promoting economic development. Finally, the organizational scheme below borrows from an article by Guido Calabresi and A. Douglas Melamed, in which they divide distributional preferences into those regarding wealth (or income) and those regarding the distribution of specific goods, often called merit goods.¹⁵

Wealth Distribution

Calabresi and Melamed suggest that all societies have wealth distribution preferences, such as for more (or less) equality of distribution and for less (or more) willingness to reward producers for their contributions to economic development.¹⁶ For convenience, these examples are considered in reverse order.

Reward of producers. Although the reasonable pumping level statutes say little explicitly about rewarding producers for their contributions, similarly worded statutes from Colorado and Idaho are of interest for what they say about potential conflict or tension between economic development and protection of the diversion systems of senior appropriators.¹⁷ The Idaho statute provides: "[W]hile the doctrine of 'first in time is first in right' is recognized, a reasonable exercise of this right shall not block full economic development, but early appropriators shall be protected in the maintenance of reasonable groundwater pumping levels. . . ." The earlier article suggested that although this tension is not expressly recognized in many other reasonable pumping level statutes, it

15. Calabresi & Melamed, *Property Rules, Liability Rules and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1098 (1972).

16. *Id.*

17. COLO. REV. STAT. § 37-90-102 (Supp. 1981); IDAHO CODE § 42-226 (Supp. 1982).

is often likely to be at the heart of pumping level disputes regardless of the specific statutory structure in a given appropriation doctrine state.¹⁸

Concern about protecting the diversion systems of senior appropriators could have any of several origins. First, it might represent a policy of promoting long run economic development of groundwater by affording security of investment,¹⁹ with any distributional benefits for senior appropriators viewed as merely incidental or irrelevant. Second, it might be based on the view that security of investment is a value in its own right to be maximized, in combination with other values, under the banner of efficiency.²⁰ Third, it might represent a distributional preference for senior appropriators as a reward for pioneering the development of groundwater in their area—a reward they are entitled to keep, at least in large part, over time.²¹

Only the last of these possibilities is significantly distributional in orientation. Whether a policy of rewarding developers underlies the concern for protecting the diversion systems of senior appropriators cannot be determined by looking at the reasonable pumping level statutes alone. Nor do related but more general water statutes give us guidance.²² Thus, it is necessary to turn to appropriation doctrine traditions.

The appropriation doctrine has long been characterized by a policy of promoting economic development by affording security to investors in the beneficial use of water.²³ A distributional rather than economic development objective, however, is stressed in an account of the inception of the appropriation doctrine in the West given by Elwood Mead, the

18. Grant, *supra* note 1, at 14–15.

19. *E.g.*, Moyer v. Preston, 6 Wyo. 308, 318–19, 44 P. 845 (1896) (“Irrigation . . . cannot be accomplished with any degree of success or permanency without the right to divert and appropriate water of natural streams for that purpose, and a security accorded to that right.”); C. MEYERS, A HISTORICAL AND FUNCTIONAL ANALYSIS OF THE APPROPRIATION SYSTEM 6 (1971). See also Farnham, *The Improvement and Modernization of New York Water Law Within the Framework of the Riparian System*, 3 LAND & WATER L. REV. 377, 378 & n. 4 (1968).

20. See *infra* pp. 22–23.

21. Cf. R. NOZICK, ANARCHY, STATE AND UTOPIA 154 (1974) (suggesting that most people think it is relevant in assessing the distributive justice of a situation to consider how that distribution came about). Sax, *Selling Reclamation Water Rights: A Case Study in Federal Subsidy Policy*, 64 MICH. L. REV. 13, 32–34 (1965) discusses whether the pioneer-reward theory explains why farmers receiving federal reclamation project water for land not in excess of applicable acreage limitations are allowed upon sale of the land to cash in on values created by the federal reclamation subsidy. He rejects the theory as inappropriate for modern reclamation projects where the water made available by the project generally is not used to open new land to cultivation but to provide supplemental water for existing farms.

22. WYO. STAT. § 41-2-109 (Supp. 1982) directs the state development commission to formulate water plans that identify appropriate state, regional and local management goals “including the obtaining of economic efficiency and a desirable distribution of income.” The statute itself does not list any distributional preferences, however. That task is left to the state water commission. The commission has not completed any of its planning projects and has not yet addressed income distribution goals. Letter from Michael Reese to Douglas L. Grant (October 5, 1981).

23. Grant, *supra* note 1, at 23 and authorities cited therein.

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Justice seemed to demand that when there was not water for all, those who first used water from a stream should have the better right to continue that use, and the doctrine of priority was the result. This doctrine grew out of the belief of the first settlers that their claims were superior to those of later comers, and they insisted that the owner of the last ditch built should be the first to suffer when the stream failed to supply the needs of all. The first builders of ditches could not anticipate how many were to follow. Unless protected by some such principle, the greater their success, the sooner they would be injured by the attempts of others to benefit from their experience.²⁴

In reading Mead's account, it is useful to remember that the appropriation doctrine originated in community custom and only later was given judicial and legislative sanction.²⁵ His reference to what “[j]ustice seemed to demand” in the minds of the first settlers appears to relate more to distributive justice than to economic efficiency. Mead's account seems plausible. The early settlers, many of whom already had their water rights, were more likely attracted to the priority principle as a matter of distributive justice than as a tool to promote additional water development.

Western courts and legislatures no doubt initially sanctioned and later continued to adhere to the priority principle because of its power to promote economic development by affording security of investment in water use projects.²⁶ However, that does not necessarily mean they rejected the distributive facet of the priority principle stressed by Mead. This point is illustrated by *Pima Farms Co. v. Proctor*,²⁷ a 1926 case involving wells that tapped an underground stream. The senior appropriator in that case was a farmer with several shallow wells. The junior appropriator had a number of large wells used to supply water to irrigators of land five or six miles away. The senior appropriator sought to enjoin operation of the junior wells because they lowered the water level below the reach of his wells. The court said its task was to formulate “a rule

24. E. MEAD, IRRIGATION INSTITUTIONS 65 (1903). Cf. A. MAASS & R. ANDERSON, . . . AND THE DESERT SHALL REJOICE: CONFLICT, GROWTH AND JUSTICE IN ARID ENVIRONMENTS 3 (1978) (“The ‘first in time, first in right’ principle has been accepted, apparently, because of a widespread belief that man is entitled to the product of his own labor and therefore to protection against latecomers of land he has worked.”).

25. I. W. HUTCHINS, WATER RIGHTS LAWS IN THE NINETEEN WESTERN STATES 159–71 (1971); Phillips, *The Doctrine of Appropriation: An Example of American Born Common Law*, 1939 A.B.A. SECTION REAL PROP., PROBATE & TRUST LAW 38.

26. See C. MEYERS, *supra* note 19.

27. *Pima Farms Co. v. Proctor*, 30 Ariz. 96, 245 P. 369 (1926). Although percolating groundwater in Arizona is not governed by the appropriation doctrine, underground streams are. Higdon & Thompson, *The 1980 Arizona Groundwater Management Code*, 1980 ARIZ. ST. L. J. 621, 624–26 (1980).

that will permit successive appropriations of an independent underground stream of flowing water to the point of exhaustion, and at the same time give reasonable protection to the rights of the senior appropriator with as little expense and hardship upon the subsequent appropriators as possible."²⁸ The court enjoined the defendant from interfering with the plaintiff's wells as then constructed, but suspended the injunction pending acceptance by the defendant of a plan to furnish water to the plaintiff through one of its canals on equal terms with its other customers.

The court obviously wanted to foster full development of the water. At the same time, it rejected an argument by the defendant that the plaintiff had no cause of action so long as he could still get water by deepening his wells, regardless of the cost to him. The court was concerned about "reasonable protection to the rights of the senior appropriator." This concern had a distributive justice aspect, as revealed by the court's statement that "to permit a junior appropriator, who, perhaps, obtains his knowledge of such body of water by the pioneering explorations and sacrifices of the first appropriator, to lower the water level and thereby destroy or greatly impair the latter's means of diversion, including his pumps and water containers, does not comport with justice and equity."²⁹

In sum, the modern reasonable pumping level statutes might be regarded as embracing solely an economic efficiency goal. Under this view, the reason for giving senior appropriators some legal protection of pumping levels is to afford the security needed to induce investment in groundwater development. But only reasonable, rather than historic, pumping levels are protected because too much security for early investors could cut off development prematurely by exposing latecomers to inestimable liability to senior appropriators for lowering historic pumping levels.³⁰ One may argue, however, that such a view of the priority principle and the pumping level statutes is too narrow. The early history of the priority principle reveals a distributive as well as an efficiency aspect. At least a residue of the early conception of distributive justice described by Mead survived as a policy of the appropriation doctrine in the *Pima Farms* case. Arguably it should have a role in the modern reasonable pumping level statutes alongside the policy of economic efficiency.

28. 30 Ariz. at —, 245 P. at 371.

29. 30 Ariz. at —, 245 P. at 373. Cf. Trelease, *New Water Legislation: Drafting for Development, Efficient Allocation and Environmental Protection*, 12 LAND & WATER L. REV. 385, 414 (1977) ("From the standpoint of equity and justice, it should be remembered that development takes place over time. The first users take cheap, easily available, always available water. There is no shortage. When more and more uses are made, shortages are created as demands increase to meet or exceed low flow supply. Additional risks are created and additional costs must be met. It seems not unfair for the government to place those risks and those costs on those who create them.").

30. This economic efficiency analysis of the reasonable pumping level statutes is developed more fully in Grant, *supra* note 1, at 23-26.

Equality of distribution. Economist Tibor Scitovsky has written that in trying to ascertain the public's feelings about equality, "all one can do is guess."³¹ The present inquiry is governed by statute, and thus legislative feelings rather than the public's feelings about equality are primary. Nonetheless, Scitovsky's statement applies: all one can do is guess about legislative intent regarding the role (if any) of equality of distribution under the reasonable pumping level statutes.

Some of Scitovsky's additional remarks are useful in discussing equality of distribution in the pumping level context, even though his focus is broader. He starts from the premise that in a society such as ours where economic incentives are preferred over coercion to get goods and services produced, perfect equality in the distribution of wealth or income is unattainable because of the need to reward producers as an incentive to produce. He believes, however, the public will resent wealth and income inequalities that are too great. If this is true, the dividing line between what is too great and what is not becomes important. While Scitovsky does not claim to know where the dividing line is, he identifies three factors that determine its location. He says society is more likely to tolerate inequalities under the following circumstances: (1) the inequalities are correlated with merit or one's contribution to societal value; (2) people feel they have equal chances with others of reaching the top; and (3) the least well off are more nearly assured of the necessities of life.³²

The first two factors listed prompt some comments and questions about wealth distribution policy as it applies in the pumping level context (the third factor will be mentioned later in the subsection on Merit Goods). First, the old caselaw that gave senior appropriators a right to maintenance of historic diversion systems without regard to their reasonableness³³ tended to enhance the wealth position of senior appropriators at the expense of juniors. Juniors either could not pump at all or had to pay the increased pumping costs of seniors. The reasonable pumping level statutes now in force narrow the wealth inequality between seniors and juniors by allowing juniors to pump down to a reasonable level and requiring seniors to pay their own increased pumping costs down to that level. In

31. T. SCITOVSKY, *PAPERS ON WELFARE AND GROWTH* 252 (1964). Scitovsky was talking about "equity," but by that he means "if not equality, at least something that approximates it closely enough to satisfy" the public. *Id.* at 251.

32. *Id.* at 251-53.

33. The leading example is *Noh v. Stoner*, 53 Idaho 651, 26 P.2d 1112 (1933), subsequently disapproved in *Baker v. Ore-Ida Foods, Inc.*, 95 Idaho 575, 583, 513 P.2d 627, 635 (1973) (dictum). Recently, however, in *Parker v. Wallentine*, — Idaho —, 650 P.2d 648 (1982), the Idaho court ruled that *Noh* still applies to domestic wells drilled before a 1978 amendment to the state groundwater code. In other words, such wells are absolutely protected in their historic means of diversion. To balance the right of the senior well user in the case and the public interest in maximum groundwater development, the court denied injunctive relief but gave the senior well owner damages for increased diversion expenses.

other words, the modern statutes promote greater equality in the distribution of wealth or income as between juniors and seniors. Do these statutes represent merely a legislative policy of facilitating new development by latecomers? Or, in the last half of the 20th century when areas of underdeveloped groundwater are fewer, do they also represent a legislative judgment that an earlier distributional policy of rewarding senior appropriators for contributing to societal development now has less appeal to justify inequality in the distribution of wealth or income?³⁴

Second, to what extent in the past was acceptance of greater wealth or income inequality between senior and junior appropriators based on a view that latecomers had a good chance to "reach the top" by going somewhere else with a less fully developed water supply?³⁵ If that view was a factor, does enough of it survive in the last half of the 20th century to continue to justify much deference to senior diversion systems (as distinguished from senior water rights)?

In closing as in opening this subsection, the guesswork nature of the discussion must be acknowledged. One might question whether junior appropriators are sufficiently less well off economically than seniors and whether the two groups are sufficiently large or significant enough³⁶ to call into operation a broad societal principle such as reasonable equality of wealth distribution. More fundamentally, one might question whether American society is committed to such a principle.³⁷

Merit Goods

The merit good concept comes from the field of public finance. The concept is subject to enough debate to require some explanation of its use in this article. Richard A. Musgrave's classic treatise on public finance theory defines merit wants as "those which are considered so meritorious that their satisfaction is provided for through the public budget, over and above what is provided for through the market and paid for by private buyers."³⁸ Musgrave's examples are publicly furnished school luncheons, subsidized low cost housing, and free education. Other examples are publicly furnished police protection and museums.

34. See *supra* note 21.

35. Cf. Phillips, *supra* note 25, at 43 (characterizing appropriation doctrine property rights as a monument to the passion of western pioneers "for justice and a legal system . . . which accorded equality of opportunity to all").

36. Distributional preferences seem to be aimed more at groups of people rather than individuals. See B. DAVIE & B. DUNCOMBE, PUBLIC FINANCE 16-17 (1972).

37. Cf. G. LEFCOE, AN INTRODUCTION TO AMERICAN LAND LAW: CASES AND MATERIALS 6-7 (1974) (characterizing the concept of equality in this country as being, at best, more of a commitment to a measure of mobility through competition than a preference for equal distribution of wealth). See also J. HEAD, *supra* note 3, at 27 and n. 50 (questioning whether there is real agreement in many societies on the meaning of reasonable equality between the well off and the less well off).

38. R. MUSGRAVE, THEORY OF PUBLIC FINANCE 13 (1959).

Since merit goods entail governmental intervention into the marketplace production and consumption of certain goods and services, more of them are consumed than otherwise would be the case. Furthermore, the governmental intervention occurs through the public budget, *i.e.*, taxation and spending to make the goods and services available to consumers on a subsidized basis. A major source of controversy about merit goods lies in how to rationalize or explain why the government should interfere with consumer sovereignty in the production and consumption of goods and services.

Among the reasons that have been advanced to justify governmental intervention in the marketplace with respect to merit goods are the following: (1) government intervention is needed to correct consumer preferences that are distorted by ignorance or irrationality, *e.g.*, the view that education should be free because the uninformed do not appreciate the advantages to them of an education; (2) intervention is needed to correct distributional problems, *e.g.*, the view that education should be free so it is available to the poor³⁹ (compare Scitovsky's claim that income inequalities are more easily tolerated if the least well off are more nearly assured of the necessities of life⁴⁰); (3) intervention is needed because greater consumption of a merit good or service benefits not only the immediate consumer but others in society, *e.g.*, the view that education should be free because it benefits not only the particular pupil but the community. Different types of merit goods have been given labels corresponding to these three rationales, namely, corrective goods, necessity goods and public goods.⁴¹

Many merit goods, though not all,⁴² share all three rationales, as illustrated by the example of free education. Some merit goods, though, may be explainable only on a fourth and rather different ground. They

39. Why not cure the distributional problem with a monetary subsidy to the poor? "The social philosophy of Western society appears to be such that the freedom to tolerate inequality in the distribution of luxury consumption and saving is purchased at the cost of earmarked (specific) subsidies which assure equality in the consumption of necessities." Musgrave, *Provision for Social Goods* in J. MARGOLIS & H. GUITTON, PUBLIC ECONOMICS 124, 143-44 (1969). Musgrave has pointed out, also, that there is an element of paternalism with in-kind rather than cash subsidies because if the subsidy has merely a redistributive purpose, a cash payment would be better since the recipient could then use the cash in line with his or her own preferences. R. MUSGRAVE & P. MUSGRAVE, *supra* note 2, at 81.

40. Free education for the poor would also be supported by Scitovsky's second principle. See SCITOVSKY, *supra* note 31.

41. The three rationales are stated and the shorthand labels suggested in J. HEAD, *supra* note 3, chs. 10 & 11. Although Calabresi and Melamed treat merit goods as a distributional preference, the first and third rationales are obviously efficiency related. The same may even be true of the second rationale, if it is viewed as an expression of interpersonal utility preferences. See Calabresi & Melamed, *supra* note 15 at 1094. See also R. MUSGRAVE & P. MUSGRAVE, *supra* note 2, at 81.

42. At least, Musgrave would not limit the merit good concept to cases where all three features are present. See R. MUSGRAVE & P. MUSGRAVE, *supra* note 2, at 81.

may simply represent an autocratic aspect of society, *i.e.*, a belief that it is acceptable for some elite group to impose its preferences.⁴³

In the pumping level context, an analogy to merit goods can be found in water use preferences. The earlier article noted that a number of states with reasonable pumping level statutes also have laws that declare preferences for certain kinds of water use, most commonly for domestic use. The article also suggested that at least some of these preference laws could be construed to affect the setting of reasonable pumping levels.⁴⁴ One example given was Oregon, where the state water resources director is authorized to designate domestic and livestock use for first preference in critical areas⁴⁵ and deny or limit permits for new wells that would cause "undue interference" with existing wells.⁴⁶ If domestic use has been designated for preferred status, arguably the economic pumping reach of small domestic users would be highly significant in determining reasonable pumping levels.⁴⁷

A South Dakota case that came down while the earlier article was at press seems to adopt this approach.⁴⁸ The court held that the state water rights commission erred in granting a permit for an irrigation well and gave as one reason that the well had a detrimental effect on the supply to domestic wells nearby. The court added:

SDCL 46-1-5(1) states that the use of water for domestic purposes is the highest use of water, and takes precedence if such use is consistent with [the] public interest. . . . Although the Commission is no longer required to regulate irrigation to absolutely protect artesian pressure for domestic uses, reasonable domestic use must be assured before irrigation is allowed. SDCL 46-6-6.1. There is a "vested right" in the use of the water for domestic purposes.

SDCL 46-6-6.1 does not, we are convinced, give the Commission unbridled power to approve irrigation projects without giving consideration to the maintenance of artesian head pressure as a method of delivery. This statute merely requires a balancing of interests between irrigation and delivery of water by artesian pressure for domestic use.⁴⁹

The latter paragraph evidences a striking receptiveness to special status

43. *Id.*

44. Grant, *supra* note 1, at 18-20.

45. OR. REV. STAT. § 537.735(4)(c) (1981).

46. OR. REV. STAT. § 537.620(3) (1981).

47. Of course, this would not be true of a preference statute having only a more specialized effect. For discussion of the different kinds of water use preferences, see Oeltjen & Fischer, *Allocation of Rights to Water: Preferences, Priorities and the Role of the Market*, 57 NEB. L. REV. 245, 256-60 (1978); Trelease, *Preferences to the Use of Water*, 27 ROCKY MTN. L. REV. 133 (1955).

48. *Fraser v. Water Rights Comm'n*, 294 N.W.2d 784 (1980).

49. *Id.* at 789.

for domestic uses when one realizes that section 46-6-6.1 says state officials are authorized to control the location and capacity of large wells "for the purpose of ensuring or protecting water for reasonable domestic use, *without* the necessity of requiring maintenance of artesian head pressure in a domestic use well."⁵⁰ The court seems to be saying that even though there is no "necessity" to maintain artesian head pressure in domestic wells, it might sometimes be reasonable to do so.

A statutory preference for domestic (or other) water use that affects pumping levels would not be a true merit good preference in the public finance sense discussed above. With standard merit goods such as free education and subsidized low cost housing, the governmental intervention in the marketplace takes the form of taxation and monetary subsidies. With water use preferences, the intervention is through governmental regulation.

Nevertheless, some parallels can be drawn between merit goods and water use preferences. If a preference for domestic use affects the setting of reasonable pumping levels, the end result is similar to the merit good situation in that governmental intervention makes water available to consumers for the preferred use at lower cost (*i.e.*, from a shallower pumping depth) than might occur under market conditions.⁵¹ Furthermore, a domestic use preference might be claimed to rest on one or more of the three merit good rationales stated above: (1) domestic water is a corrective good, *e.g.*, the unwashed do not appreciate the health or other values of personal cleanliness; (2) domestic water is a necessity good, *e.g.*, it is necessary for life and should be available without (too much) regard to personal income; (3) domestic water is a public good, *e.g.*, its use confers health, olfactory or other benefits on members of society due to the immediate consumer's greater cleanliness. Instead, a domestic use preference might be based on the fourth explanation for merit goods stated earlier, *i.e.*, it may simply represent an autocratic aspect of society in which it is considered acceptable for some elite group to impose its preferences.

Viewing water use preferences as akin to the public finance concept of merit goods is unconventional. If correct, though, such a view could affect pumping level decisions by helping to focus the debate about the legitimacy of water use preferences. These preferences are sometimes criticized for blocking economic progress by sheltering low value uses from market forces. Whether a preference is or continues to be warranted may, of course, be affected by marketplace economics. The merit good

50. S.D. CODIFIED LAWS ANN. § 46-6-6.1 (Supp. 1982) (emphasis added). See note 33 *supra* for another recent case illustrating special treatment for domestic wells.

51. *Cf.* J. HEAD, *supra* note 3, at 254-56 (suggesting no reason exists why a merit good policy could not be implemented by regulation rather than taxation and monetary subsidy).

parallel should make clear, however, that the debate must also extend to whether the preferred water use has significant corrective good, necessity good, or public good aspects, and to the propriety of governmental intervention in the marketplace based on those grounds or, possibly, on autocracy grounds alone.

Another example—one that is hard to classify within the analytical framework used in this article—may now be considered. A general tradition that is sometimes codified into law⁵² views family farms as desirable even though larger corporate farms might be more economically efficient. The tradition may have anti-monopoly (*i.e.*, efficiency) and wealth distribution aspects, as well as a merit good aspect representing a judgment about the value to society of a certain kind of life that transcends marketplace pricing.⁵³ In the pumping level context, a general family farm policy may come into conflict with a goal of economic efficiency, at least if efficiency means maximizing net benefits as measured in the marketplace.⁵⁴ Because of economies of scale, a large irrigator may be able to afford to pump from a considerably greater depth than a small one.⁵⁵ If pumping levels are geared to the economic feasibility of large farms, small ones may be driven out of existence except perhaps for those that fortuitously can combine to construct and operate joint wells. If the continued existence of small family farms is a societal goal, then pumping levels should be coordinated with that.

The same type of issue arises with potentially greater stakes when agricultural uses come into conflict with municipal or industrial uses that can afford to pump water from substantially greater depths. Does the agrarian way of life have some special merit, not reflected in market prices, that entitles it to insulation from the forces of economics? Frank Trelease has observed:

In much of the rural west water is held almost in reverence. Water rights are heirlooms to be treasured beyond their intrinsic value. There is real resistance to the notion that water is an article of

52. See, e.g., 7 U.S.C.A. § 2266(a) (Supp. 1982) (reaffirmation of policy to foster and encourage small farms in Food and Agriculture Act of 1977); WASH. REV. CODE ANN. §§ 90.66.010 to 90.66.910 (Supp. 1982) (Family Farm Water Act).

53. The provision of the Food and Agriculture Act of 1977, *supra* note 52, states in part: "Congress hereby specifically reaffirms the historical policy of the United States to foster and encourage the family farm system of agriculture in this country. Congress firmly believes that the maintenance of the family farm system of agriculture is essential to the social well-being of the Nation and the competitive production of adequate supplies of food and fiber. Congress further believes that any significant expansion of nonfamily owned large-scale corporate farming enterprises will be detrimental to the national welfare." Food and Agriculture Act of 1977, Pub. L. No. 95-113, § 102(a), 91 Stat. 913, 918.

54. See text *infra* at note 60 for discussion of a broader view of economic efficiency.

55. See Corey, *Size of Farm in Relation to Irrigation Pumping Costs*, 12 TRANSACTIONS AM. SOC'Y AGRICULTURAL ENGINEERS 795 (1969).

commerce and subject to trading in the market place. The notion persists that water for cattle, for hay, for fodder, for feed grain, for cash crops is the highest and best use of the resource.⁵⁶

Where this notion is translated into law, which is mainly in the context of water right transfers,⁵⁷ it appears to represent a merit good preference based more on pure autocracy (the power of a political elite) than on any of the other three rationales for merit goods. A question yet to be answered is the extent to which a similar, perhaps unwritten, policy will operate in the reasonable pumping level context.

In summary, pumping levels in some appropriation doctrine states may have to be coordinated with groundwater use preference statutes. Family farm or rural lifestyle policy may also be relevant in some areas. One way to examine these considerations is to view them in light of the merit good concept from the field of public finance.

Other Social Goals (Besides Distributional Preferences)

Economic Efficiency Broadly Viewed

Whether there are any resource allocation goals apart from economic efficiency and distributional preferences depends upon how broadly one defines those two goals, especially the efficiency goal. The potential Pareto improvement criterion of efficiency seeks to maximize net resource benefits over time.⁵⁸ Much of the theoretical resource allocation literature takes a broad view of what to count as the benefits and costs of a proposed course of action: all positive and negative effects that are of social concern should be counted, whether or not they are items of commerce or can be valued in market terms.⁵⁹ Thus, the calculation would include numerous nonmarket items of personal utility or disutility such as environmental amenities.

At the theoretical level, this broad view of economic efficiency has even been extended to take into account distributional preferences. This extension is achieved simply by postulating that people care about not

56. Trelease, *Federal-State Problems in Packaging Water Rights* in ROCKY MTN. MIN. L. FDN., *Water Acquisition for Mineral Development Institute*, Paper 9, Pg. 11 (1978).

57. E.g., IDAHO CODE § 42-222(1) (Supp. 1982) (no change from agricultural use to another use is allowed if that would significantly affect the agricultural base of the area); MONT. CODE ANN. § 85-2-402(3) (1981) (appropriator of more than 15 cubic feet per second may not change from agricultural use to industrial use).

58. Net benefits means benefits minus costs. The time dimension requires discounting future benefits and costs to present value. See E. MISHAN, *supra* note 6, Part IV; P. SASSONE & W. SCHAFFER, *supra* note 4, ch. 6.

59. See, e.g., E. MISHAN, *supra* note 6, at 126; R. SUGDEN & A. WILLIAMS, *THE PRINCIPLES OF PRACTICAL COST-BENEFIT ANALYSIS* 93 (1978); Calabresi & Melamed, *supra* note 15 at 1094 & n. 11. One of the costs of any resource allocation rule would, of course, be the administrative cost of implementing it.

only how much they have themselves but whether others have enough. If personal utilities are interdependent in this fashion, then the distribution of income becomes an item of personal utility or disutility that fits within the theoretical efficiency calculus.⁶⁰

Of course, it is one thing to have a broad economic efficiency criterion in theory and quite another to apply it in practice. Much effort has been devoted to developing methods of "shadow pricing" for items that are not traded in the market or are traded at prices which are thought to be distorted.⁶¹ Yet economists generally agree that at least some items cannot be assigned reliable shadow prices either at all or at a cost low enough to make the effort worthwhile.⁶² In those cases, the cost-benefit analyst is advised to list the items separately and describe them in nondollar terms.⁶³

In a sense, it may not make much difference whether items that are not readily and accurately valued in dollars are treated under (a) the efficiency goal but separately described in nondollar terms or (b) a separate category of other social goals and described in nondollar terms. Either way the hard questions remain. What, if any, such items are of concern under the reasonable pumping level statutes and related appropriation doctrine laws and traditions? And how can they be evaluated in relation to more tangible concerns? These questions are considered below with respect to two items—being there first and security of investment.

Being There First as a Value in Its Own Right

Calabresi and Melamed use a threefold classification of factors bearing on resource allocation—economic efficiency, distributional goals, and other justice reasons.⁶⁴ Since they take a fairly broad view of economic efficiency and distributional goals, they acknowledge difficulty in finding anything to put in their other justice reasons category. They suggest, though, that dialogue about resource allocation may be enlightened by putting into this category "reasons which, though possibly originally linked to efficiency, have now a life of their own" and "reasons which, though distributional, cannot be described in terms of broad principles

60. The leading article is Hochman & Rodgers, *Pareto Optimal Redistribution*, 59 AM. ECON. REV. 542 (1969); see also J. DUE & A. FRIEDLAENDER, GOVERNMENT FINANCE: ECONOMICS OF THE PUBLIC SECTOR 120-22 (1973). This approach will not fully collapse distributional preferences into economic efficiency, though, unless one also postulates that individual preferences are aligned with societal preferences.

61. See, e.g., E. MISHAN, *supra* note 6, chs. 13 & 14; P. SASSONE & W. SCHAFFER, *supra* note 4, ch. 5; R. SUGDEN & A. WILLIAMS, *supra* note 59, ch. 8.

62. See P. SASSONE & W. SCHAFFER, *supra* note 4, at 51. There is disagreement, however, on how many of these items cannot be assigned shadow prices.

63. See, e.g., E. MISHAN, *supra* note 6, at 406-07; P. SASSONE & W. SCHAFFER, *supra* note 4, at 34-37; R. SUGDEN & A. WILLIAMS, *supra* note 59, at 180-81.

64. Calabresi & Melamed, *supra* note 15, at 1093-1105.

like equality."⁶⁵ Their most specific example is the significance in the law of nuisance attached to "being there first," by which they no doubt have in mind the doctrine of coming to the nuisance.⁶⁶ Although they recognize that the significance of "being there first" might be part of either a long run efficiency goal based on protecting expectancies or a distributional goal, they imply that it might also be part of an independent concept of justice.⁶⁷

Obviously, the priority principle of the appropriation doctrine attaches great significance to being there first. Whether this significance has some independent basis, apart from long run efficiency or distribution, is an intriguing possibility but unfortunately one about which little hard evidence can be adduced either to prove or to disprove it. Of interest, however, is the observation of a leading water law scholar that time priority features exist in numerous water law systems throughout the world. He concluded that time priority represents "the verbal identification of a very widespread human trait."⁶⁸

Security of Investment as a Value in Its Own Right

Security of investment is a pervasive theme of the appropriation doctrine. Senior appropriators are given security by the priority principle. Junior appropriators are given security, to the extent possible in view of their status, by the related rules that (1) a junior is entitled to the maintenance of stream conditions existing as of the time of his appropriation⁶⁹ and (2) no appropriator can change the point of diversion, place of use, or nature of use of his right if that will injure any other appropriator including juniors.⁷⁰ The security of investment afforded by these rules originally served and continues to serve the function of promoting full economic development of water resources.

Yet, to paraphrase Calabresi and Melamed, one wonders whether security of investment, though linked to efficiency, now has a life of its own. The appropriation doctrine prohibits unreasonably wasteful diversion, transportation and use of water, but generally the courts have been quite reluctant to require appropriators to use better methods to avoid waste than are customary in the community.⁷¹ Perhaps the security of

65. *Id.* at 1105.

66. That the defendant was there first and the plaintiff came later is a relevant factor, though generally not decisive in itself, bearing on whether the defendant is liable for committing a nuisance. See R. STEWART & J. KRIER, ENVIRONMENTAL LAW AND POLICY 231-33 (1978).

67. Calabresi & Melamed, *supra* note 15, at 1123.

68. Trelease, *supra* note 29, at 414-415.

69. This rule is discussed in 1 W. HUTCHINS, *supra* note 25, at 576-77.

70. *Id.* at 623-44.

71. Fisher, *Western Experience and Eastern Appropriation Proposals* in D. HABER & S. BERGEN, THE LAWS OF WATER ALLOCATION IN THE EASTERN UNITED STATES 75, 108-09 (1956).

investment derived from this deference to custom is based entirely on a long term efficiency goal, *i.e.*, protection of expectancies to encourage investment. However, there may be more to it than that. At least one commentator has suggested that the courts seem more deferential to custom in applying the rule against waste of water than in analogous tort law negligence cases.⁷² The prevailing view in the latter is that customary safety practices in an industry are relevant but far from controlling on the issue of reasonable care by the defendant. Thus, the law seems to give more security to investors in water development under the appropriation doctrine than to industrial investors generally. Could it be that security of investment has come to have a life of its own in appropriation doctrine water law that is not matched in the tort law of negligence?

Modest support for such a hypothesis can be found in a turn of the century study of irrigation in several arid regions of the world by French geographer Jean Brunhes.⁷³ He looked for relationships between the physical environment and the organization and regulation of economic activity. He reached three conclusions: (1) menacing irregular natural environments create psychological uncertainty that varies with the degree and type of physical hazard; (2) generally people seek to free themselves from such psychological uncertainty by associating their common interests under fixed laws; but (3) whether and exactly how they do so depends on their attitudes toward cooperation and individualism, which in turn is a function of various ethnic, historic, legal and political influences. If Brunhes is correct, it would hardly be surprising if the water law system developed by settlers in the arid west was designed (in part) to free them from psychological uncertainty about water supply and thus included something of a fixation on security of investment going beyond the dollar value of the goods produced with the water.

If security of investment has a life of its own, in theory it could be measured in dollars and treated under the economic efficiency goal (even if that goal is viewed in a narrow marketplace sense). Security of investment as a value in its own right is readily subject to dominion by one person to the exclusion of others, so that others who want it would have to pay to get it. Thus, security of investment is readily subject to pricing and market exchange.⁷⁴

72. J. SAX, *WATER LAW, PLANNING AND POLICY: CASES AND MATERIALS* 273-74 (1968).

73. J. BRUNHES, *ETUDE DE GEOGRAPHIC HUMAINE: L'IRRIGATION SES CONDITIONS GEOGRAPHIQUES, SES MODES, ET SON ORGANISATION DANS LA PENINSULE IBERIQUE ET DANS L'AFRIQUE DU NORD* 429-39 (1902). Brunhes work is discussed in A. MAASS & R. ANDERSON, *supra* note 24, at 9-10, 399-400. I wish to thank Mary Ann Lyman for translating portions of Brunhes for me from the original French.

74. The reason some values are not priced by the market is that for physical or other reasons they lack the characteristic of excludability. See R. MUSGRAVE & P. MUSGRAVE, *supra* note 2,

With irrigated farmland, for example, if the security of investment associated with pumping level stability is a value in its own right that transcends the dollar value of the crops to be produced with the water, this value should be reflected in the market price of the farmland.⁷⁵ In theory, then, one might expect to measure this value in dollars by comparing the market prices of different farms that are essentially identical except for the stability or instability of the pumping levels of their groundwater rights. The price differential might be due partly to a capitalization of the expected greater net crop income from lower pumping costs on the parcel with a more stable pumping level, and partly to a payment for security of investment as a value in its own right transcending expected net crop income. Allocation of the price differential between these causes may be difficult if not impossible, but allocation would be unnecessary since the important objective would be to quantify in dollars *all* the benefits or costs associated with greater security of investment.⁷⁶

Measuring security of investment as an end in itself through the comparative land price approach encounters difficulties in practice, however.⁷⁷ Gathering a data base of truly comparable parcels with differing pumping level security would be no easy task. Even then, the difference in market price may understate security of investment as a value for its own sake because of the effect of property taxes. If security has a value in its own right transcending the net dollar value of goods produced with the water, the market price of high security land should be higher than low security land. If land is assessed for property taxes according to its market value, the property tax burden of high security land would in turn increase.⁷⁸ By hypothesis, though, security in its own right will not add to the flow of net income from the property and help to pay the higher property taxes. Thus, the cost to a buyer of high security land is not only the initial higher market price but also the future higher property tax burden.

Since part of what the buyer is willing to pay to get the more stable

at 52-53; J. SINDEN & A. WORRELL, *UNPRICED VALUES: DECISIONS WITHOUT MARKET PRICES* 433-36 (1979).

75. The demand for land is a function of all of its characteristics that are of utility to consumers, and in theory the annual flow of utility can be capitalized to measure the value of the land. J. SINDEN & A. WORRELL, *supra* note 74, at 291.

76. Double counting must be avoided, of course. One could not count both the net dollar value of increased crop production and increased land prices that reflect a capitalization of increased crop income. On double counting in irrigation projects, see A. GIFFORD, JR. & G. SANTONI, *PUBLIC ECONOMICS: POLITICIANS, PROPERTY AND EXCHANGE* 71 (1979); E. MISHAN, *supra* note 6, at 78-80.

77. Cf. R. SUGDEN & A. WILLIAMS, *supra* note 59, at 161-62 (reporting that because of such difficulties the comparative land price approach to measure amenities and disamenities has been successful only for extreme disamenities such as high levels of aircraft noise).

78. This would not be true if, as in Idaho, agricultural land is taxed not according to its market value but under a capitalization of economic rent or crop rental approach. IDAHO CODE § 63-105CC (Supp. 1982).

pumping level will be absorbed by higher property taxes, the initial market price he will pay for the land is likely to understate the true value to him of the greater security.⁷⁹ To illustrate, assume that security of investment as a value in its own right is worth \$400 annually to a buyer. If a four percent capitalization rate is used, security of investment would add \$10,000 to the price of the land before taxes are considered. With a one percent tax levy, annual property taxes would rise \$100, leaving a net benefit of \$300. Applying the same capitalization rate to a net benefit of \$300, the actual increase in market price would be \$7,500 rather than \$10,000.

If security of investment has a life of its own that is difficult to measure in dollars, some other means to evaluate its importance would be useful. As a start in this direction, one might note that the security of a water user's investment is a function of more than pumping level stability. For example, irrigators are subject to considerable fluctuation in the cost of such factors of production as fertilizer, energy and borrowed capital. Their crop production can vary due to hail, wind, frost, insects and plant disease. Furthermore, the selling prices of their crops fluctuate. With all these variables, the question is whether legal regulation of pumping levels can make much of a contribution to an irrigator's security of investment. On the other hand, one might ask whether such regulation nonetheless has a useful role in combination with other governmental efforts to prevent other variables from fluctuating too widely, *e.g.*, crop price supports, crop disaster aid programs, and efforts to control interest rates.

SUMMARY

The earlier article suggested the reasonable pumping level statutes invite the construction that they contemplate a goal of economic efficiency. That article discussed efficiency in the sense of maximizing net groundwater values that are measured in the marketplace. The present article has sought to explore the significance under the pumping level statutes of social goals—distributional and otherwise. Since the pumping level statutes tend to be vacuously worded, this article has focused mainly on related appropriation doctrine laws and traditions rather than on specific language in the pumping level statutes.

The exploration indicates that the common law priority principle started out with a wealth distribution facet that may well have some continuing vitality in appropriation doctrine states. Also, groundwater use preference statutes exist in some appropriation doctrine states. In a sense, these statutes constitute a merit good preference. Possibly some other policies akin to merit good preferences may come into play, *e.g.*, a preference

for an agrarian lifestyle. Finally, but by no means clearly, general appropriation doctrine laws and traditions may include other values that are not priced directly or separately in the marketplace, namely, a special justice dimension to being there first and a life of its own for security of investment.

The important question, of course, is: How significant are these distributional or other social values under particular reasonable pumping level statutes? As noted earlier, the Colorado and Idaho reasonable pumping level statutes explicitly recognize tension or potential conflict between achieving economic development and protecting the diversion systems of senior appropriators.⁸⁰ These statutes allow, if not require, an agency or court that makes pumping level decisions to consider various non-efficiency concerns that might be express or implicit in broader appropriation doctrine laws and traditions. Furthermore, it seems unlikely that other western legislatures intended to make economic efficiency in a narrow marketplace sense the only goal when the vacuously worded reasonable pumping level statutes are read in their broader appropriation doctrine context.

Perhaps the strongest case against considering social goals can be built upon the Nevada reasonable pumping level statute, since it is more specific than most in stating what factors should be considered. After stating that a groundwater appropriation is subject to reasonable lowering of the static water level at the point of diversion, the statute says: "In determining such reasonable lowering of the static water level in a particular area, the state engineer shall consider the economics of pumping water for the general type of crops growing and may also consider the effect of water use on the economy of the area in general."⁸¹ One might argue that by stating what "shall" and "may also" be considered, the statute precludes consideration of anything else.

It would seem prudent, however, for the state engineer in Nevada to consider other statutes that expressly authorize him to give certain water uses preferred status⁸² and to limit the depth of domestic wells in designated groundwater areas.⁸³ Furthermore, even if the pumping level statute were construed to allow him to consider only the factors listed, this construction would not necessarily limit the inquiry to economic efficiency in a narrow marketplace sense. The directive to look at "the economics of pumping water for the general type of crops growing" in the area seems intended to protect the growing of such crops, at least to

80. See text *supra* at notes 17 and 18.

81. NEV. REV. STAT. § 534.110(4) (1981).

82. NEV. REV. STAT. § 534.120(2) (1981).

83. NEV. REV. STAT. § 534.120(3) (1981). NEV. REV. STAT. § 534.030 (1981) states the procedures for declaration of designated groundwater areas.

79. See J. SINDEN & A. WORRELL, *supra* note 74, at 299.

some extent, even though that may not be the most efficient use for the water. Although this directive could be aimed at long run efficiency by protecting expectancies, it sounds very much like either a merit good type preference for existing crops or a desire to provide security of investment for existing uses (customary uses) as an end in itself.⁸⁴

The statutory authorization to consider also "the effect of water use on the economy of the area in general" would allow the state engineer to weigh or blend into his decision the goal of economic efficiency in groundwater allocation. But even this language is not necessarily limited in scope to narrow marketplace efficiency. Arguably, the authorization to consider the "economy" of the area in general opens the door to looking at family farm policy and wealth distribution considerations since the character of an economy can depend on how wealth is distributed within it.⁸⁵

CONCLUSION

The earlier article opened by quoting the following statement about the reasonable pumping level concept from a National Water Commission study: "No definitive guidelines exist as to what the measure of reasonableness is or how it will be applied."⁸⁶ Although the reasonable pumping level statutes incompletely enumerate factors that should bear on the measure of reasonableness, the root cause of the uncertainty lies deeper. Additional factors can be ascertained from study of appropriation doctrine laws and traditions, albeit with varying degrees of clarity. Definitive guidelines in the sense of rules that will yield mechanical answers, however, are impossible or at least unwise. Unless one is willing to accept a simplistic, tunnel vision approach, the need is inevitable to weigh potentially competing concerns about economic efficiency, wealth and merit good distribution, and (perhaps) other social goals.

The task then is to develop procedures to achieve knowledgeable and responsible weighing of such concerns. The essence of the problem is captured by the following commentary upon water management under the Alaska water code. That code allows new appropriations only for uses that will be in the public interest, and it enumerates a number of factors

84. See the discussion of custom and security of investment as an end in itself, in text *supra* at notes 64-73.

85. The pattern of wealth distribution can, of course, affect the demand for various consumer items, which in turn determines what is an efficient allocation of resources. See Kennedy, *supra* note 10, at 422.

86. Grant, *supra* note 1, at 1, quoting NATIONAL WATER COMMISSION, A SUMMARY DIGEST OF STATE WATER LAWS 56 (1973).

bearing on the public interest.⁸⁷ Despite the enumeration Frank Trelease, the code's principal draftsman, has commented:

Making decisions such as these will be very difficult. No law can make them. They must be made by people. No economic formula can solve these problems by push button techniques. . . . It is believed that the real strength of the Code lies in its procedures, which will enable all viewpoints to be brought together and all factors considered, so that choices will be made, not by action of an appropriator or polluter, and not to further the policy of a single purpose agency, but on an informed basis by officials responsible to the State for "maximum use consistent with the public interest" for the "maximum benefit of (all) its people."⁸⁸

Similarly, the strongest approach to the pumping level problem seems to be to use procedures which will enable all viewpoints to be brought together and all factors considered, so that choices will be made on an informed basis by officials responsible to the state for the maximum benefit of all its people.⁸⁹ The reasonable pumping level statutes are readily adaptable to that approach.

87. ALASKA STAT. § 46.15.080(b) (1977): "In determining the public interest, the commissioner shall consider (1) the benefit to the applicant resulting from the proposed appropriation; (2) the effect of the economic activity resulting from the proposed appropriation; (3) the effect on fish and game resources and on public recreational opportunities; (4) the effect on public health; (5) the effect of loss of alternate uses of water that might be made within a reasonable time if not precluded or hindered by the proposed appropriation; (6) harm to other persons resulting from the proposed appropriation; (7) the intent and ability of the applicant to complete the appropriation; and (8) the effect upon access to navigable or public waters."

88. F. TRELEASE, A WATER CODE FOR ALASKA 17 (1962), excerpted in F. TRELEASE, CASES AND MATERIALS ON WATER LAW 146, 148 (3d ed. 1979).

89. Cf. C. CORKER, *supra* note 2, at xviii-xix ("The most that can be hoped is mechanisms which permit flexible and ad hoc solutions applicable to a particular basin, designed to achieve maximum net benefit and to avoid offending community concepts of distributive justice.").