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Aqua currit et debet currere, ut currere solebat [water runs, and ought to run, as it has used to run].[2]

I. INTRODUCTION

States East of the Mississippi River have long relied on the traditional common law of riparian rights to manage their water resources. Towards the end of the Twentieth Century, rising demand for consumptive water use due to population growth, modern agricultural practices and industrialization began to conflict with environmental concerns. Throughout the East, states recognized the riparian doctrine's failure to provide a reliable means for allocating water during times of scarcity. In response, most of these states replaced common law water rights with regulatory water management systems. Maine is the only state that has not followed this trend.

It is not surprising that the issue of water allocation should arise so belatedly in Maine given that its water resources are incredibly abundant. However, increased demand for consumption of the state's flowing waters has diminished their flow. In some areas this impairment has jeopardized critical fish and wildlife habitat. These changes are due to greater levels of water withdrawal[3] for municipal

*After this paper was first written in late 2000, a drought pushed the issue of water withdrawal to the forefront of Maine's environmental concerns. As a result, the state's legislature finally addressed the topic of streamflow regulation. L.D. 1488 (120th Legis. 2001). An Act to require Major Water Users to Provide Information About Their Annual Water Withdrawals from Public Water Resources, was introduced into the 120th Legislature in March of 2001. 1 Legis. Rec. 253 (2001). The bill met strong resistance from agricultural interests and the skiing industry. That resistance was overcome when, two weeks before Governor Angus King formally submitted a request to the Federal Emergency Management Agency that Maine be declared a disaster area due to drought conditions, the Legislature enacted 38 M.R.S.A. §470-A—470-G. *See* David Connerty-Marin, *King Files for Federal Disaster Aid*, PORTLAND PRESS HERALD, Apr. 11, 2002, at 1A; Tom Bell, *FEMA to Assess Drought's Damage*, PORTLAND PRESS HERALD, Mar. 28, 2002. These provisions require all water withdrawals beyond a certain threshold amount to be reported to the Maine Department of Environmental Protection. Lacking any substantive controls on withdrawal, however, the law is primarily a data collection device. Nonetheless, it represents a much needed first step in responding to the changing balance of Maine's water resources, and hopefully, after sufficient data is compiled, will lead to further legislation such as discussed in this paper.

1. B.S., University of California at Davis, 1996; M.S.E.L., Vermont Law School, 1998; J.D., University of Maine School of Law, 2001. I would like to thank Laura Rose Day, Watershed Director of the Natural Resources Council of Maine, for her assistance and guidance with this topic, and for her tireless efforts to restore Maine's rivers.

2. BLACK'S LAW DICTIONARY 113 (6TH ED. 1990) (quoting JAMES KENT, 3 COMMENTARIES ON AMERICAN LAW (2d ed. 1832)).

3. For the purposes of this report, the terms water withdrawal, consumptive water use, and, occasionally, water diversion will all be used synonymously and in their plainest sense: the removal of water from a water source, unless the water removed is returned not long after its original withdrawal, to the same location, and unchanged in volume.

use, agriculture, hydropower, and snow making. In Maine the need for a regulatory water management system has been heralded by an increase in irrigation for crops such as potatoes, cranberries, and blueberries.[4] Recent events involving these agricultural industries in the Downeastern and northernmost regions of the state have made it apparent that business as usual is no longer possible with the our water resources. Rather, as water resources are further limited by the increasing demands of developing industrial and agricultural uses, the need to regulate its consumption in order to further more efficient and ecologically sound management will necessarily lead to a repudiation of traditional common law water rights. This transformation has already taken place in the rest of the Eastern United States.[5] It is now apparent that Maine stands on the same threshold.

Part I of this paper analyzes the need to develop a water management system that controls consumptive uses of Maine's fresh surface waters, first, in terms of ecological necessity; and second, in relation to the effectiveness of existing state water law. Part II assesses and compares the effectiveness of creating that management system by promulgating regulations under preexisting water quality statutes, a method proposed by the state, with the need for enacting comprehensive legislation. Various aspects of water allocation schemes adopted by other states are proposed as a means of plugging the holes in Maine's water law.

II. DOES MAINE NEED TO REGULATE CONSUMPTIVE WATER USE?

A. Are Maine's Rivers Running Dry?

Both commercially and ecologically, Maine's rivers are perhaps its most valuable natural resources. In 1867, Governor Joshua Chamberlain ordered a complete survey of these great resources. Two years later the State Hydrologist reported his findings:

> The people of the State of Maine may justly congratulate themselves upon the fact . . . that our grand resource is of a kind that will never fail or become materially modified, because it is based upon the unchanging features and sustained by the perpetually recuperative processes of nature. It can never fail . . . .[6]

Time has not born out the survey's optimistic predications. Rather, the "perpetually recuperative processes of nature" have been outpaced by the impacts of human endeavor. In Maine's early industrial phase of development, the use of "our grand resource" was dominated by the paper and power industries, and these im-

4. *See* Phyllis Austin, *Potato Irrigation Pond Prompts Federal-State Clash*, MAINE TIMES, June 24, 1999, at 9; Brenda Seekins, *DEP Accuses Hartland of Water-Flow Violations*, BANGOR DAILY NEWS, May 28, 1999; Mary Anne Clancy, *Salmon Win Fight Over Irrigation, Water Use Strict on Downeast Rivers*, BANGOR DAILY NEWS, Apr. 16, 1999.

5. *See generally* Joseph W. Dellapenna, *Eastern Water Law: Regulated Riparianism Replaces Riparian Rights in* THE NATURAL RESOURCES LAW MANUAL 317, 324 (Richard J. Fink ed., 1995); Joseph Dellapenna, THE REGULATED RIPARIAN MODEL WATER CODE iii–viii (1997); Robert Abrams, *Replacing Riparianism in the Twenty-First Century*, 36 WAYNE L. REV. 93 (1989); Robert Abrams, *Water Allocation By Comprehensive Permit Systems in the East: Considering A Move Away From Orthodoxy*, 9 VA. ENVTL. L.J. 255 (1990); George William Sherk, *Eastern Water Law: Trends in State Legislation*, 9 VA. ENVTL. L.J. 287 (1990).

6. WALTER WELLS, THE WATER-POWER OF MAINE: A HYDROGRAPHIC SURVEY OF MAINE 66 (1869).

pacts took the form of water quality degradation.[7] As a result, Maine's water management system is primarily focused on water quality.[8] As Maine's economy has grown and diversified in recent times, so too has the use of its flowing waters. A demand for the consumptive use of the state's waters has now formed and Maine's water management system has not yet been adjusted to address the impacts associated with these new uses.

The effects of these new and significant consumptive demands first became apparent in the northernmost region of the state where agricultural interests have long struggled against out-of-state markets. In 1995, excessive water withdrawal for crop irrigation in northern Maine killed fish and damaged lake beds. Similar problems were recorded by game wardens on other waterbodies in the area. The State responded in 1996, when a number of state agencies—including the Maine Department of Environmental Protection (DEP), the Maine Department of Agriculture, and the Department of Inland Fisheries and Wildlife—jointly implemented a policy aimed at curbing low flows in Aroostook County.[9] Although this policy established a number of procedural requirements for handling citizen complaints, it was otherwise voluntary and failed to establish minimum low flow standards for streams, or place any substantive limits on irrigation withdrawals.[10]

In 1997, numerous complaints were lodged with the Maine Land Use Regulatory Commission (LURC) citing reduced lake levels and stream flows in Downeastern Maine.[11] Landowners accused the excessive water withdrawals by cranberry and blueberry growers of causing fish kills, algal blooms and disrupting salmon habitat.[12] The effects of irrigation on salmon were of particular concern to the state, which had just avoided listing Atlantic salmon on the endangered species list by producing the Atlantic Salmon Conservation Plan for Seven Maine Rivers.[13] In spite of the danger to salmon, and threat of federal intervention, the state responded by placing only voluntary water withdrawal limitations on a few selected rivers.[14]

The following year it became clear that voluntary water use limits were not protecting salmon habitat. During the summer of 1998, the LURC issued an irri-

7. *See generally* JEROME G. DAVIAU, MAINE'S LIFE BLOOD (1958); *see also* Robert F. Blomquist, *What is Past is Prologue: Senator Edmund S. Muskie's Environmental Policymaking Roots as Governor of Maine, 1955-58*, 51 ME. L. REV. 88, 98-128 (1999) (detailing Maine's earliest efforts at curtailing pollution).

8. Maine's primary instrument of water law is its water quality classification scheme, Title 38, sections 464-70 of the Maine Revised Statutes Annotated (West 2001 and Supp. 2001), enacted in accordance with the Federal Water Pollution Control Act (FWPCA) (codified at 33 U.S.C. §§ 1251-1387 (1994)).

9. *How to Deal With Low Periods and Irrigating Farmers and Environmental Concerns in Aroostook County*, Aroostook Water and Soil Management Board, adopted Mar. 1, 1996.

10. *Id.*

11. Maine Land Use Regulation Commission, 92 Me. Govt. Reg. 56, DP-3624-E (1998); Phyllis Austin, *Cherryfield Foods Gets Water Permit, But Only For This Year*, MAINE TIMES, July 23, 1998, at 10.

12. Maine Land Use Regulation Commission, 92 Me. Govt. Reg. 56, DP-3624-E (1998); Phyllis Austin, *Cherryfield Foods Gets Water Permit, But Only For This Year*, MAINE TIMES, July 23, 1998, at 10.

13. Maine Atlantic Salmon Task Force, *Atlantic Salmon Conservation Plan for Seven Maine Rivers*, Mar. 1997.

14. Mary Anne Clancy, *Council Puts Limits on Use of River, Salmon Protection Spurs Irrigation Restriction*, BANGOR DAILY NEWS, Mar. 27, 1998; Mary Anne Clancy, *Grower to Draw Water From Down East Rivers*, BANGOR DAILY NEWS, June 18, 1998.

gation permit to Cherryfield Foods, placing the first quantitative limitations ever imposed on irrigation practices in the State.[15] Local residents and environmental organizations argued that the controls were inadequate.[16] The criticism led the DEP to begin drafting a water withdrawal regulation,[17] and the LURC to further limit Cherryfield's water withdrawal permit.[18]

By the summer of 2000, *quantity* had finally displaced *quality* at the center of the ongoing debate about how to best manage Maine's water resources: efforts to compel federal agencies to list the Atlantic Salmon under the Endangered Species Act began to make progress; the LURC further limited water withdrawal by Cherryfield Foods[19]; and farmers, berry growers, ski area operators, and environmental organizations finally gathered with State and Federal agencies to discuss the need for regulating water withdrawal.[20] Although these events established water withdrawal as an important environmental issue in the State, no progress has yet been made towards finding an effective management solution; and the DEP has actually withdrawn its proposed water withdrawal regulation from the rulemaking process.[21]

Reports of fish kills and degraded river habitat by landowners, sportsmen, and environmentalists have conclusively shown that Maine's rivers are in danger of running dry. The remaining question is how dry? Long-term data is not yet available to perform the stream flow studies needed to answer that question in a meaningful way. Nonetheless, it is apparent, and the State has now acknowledged, that Maine rivers, both Downeast and in the North, cannot support present levels of withdrawal during times of scarcity.[22] This finding alone is enough to institute some form of control on water withdrawal that, as data is collected and analyzed, can be refined to reflect a better understanding of the needs of each watershed.

Even though the impacts of consumptive water use are now evident, progress has been delayed by concern for the economic impacts that use limitations will

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15. Maine Land Use Regulation Commission, 92 Me. Gov. Reg. 56–57 DP-3624-E (1998); *see also* Mary Anne Clancy, *Grower to Draw Water From Downeast Rivers*, BANGOR DAILY NEWS, June 18, 1998.

16. Orna Izakson, *Group Prepares Suit Against Salmon Plan*, BANGOR DAILY NEWS, Nov. 19, 1998; *see also* Mary Anne Clancy, *Maine Touts Progress in Salmon Protection, Down East Group Working On Irrigation Issue*, BANGOR DAILY NEWS, Jan. 12, 1999.

17. Mary Anne Clancy, *Maine Trouts' Progress in Salmon Protection, Down East Group Work On Irrigation Issue*, BANGOR DAILY NEWS, Jan. 12, 1999.

18. LURC Development Permit 3624, *available at* the LURC field office in Washington County, Maine.

19. Mary Anne Clancy, *Cherryfield Irrigation Permit Strictest Yet*, BANGOR DAILY NEWS, May 22, 2000.

20. Susan Young, *Federal Fish Fracas Continues over Irrigation Policy Debate*, BANGOR DAILY NEWS, July 20, 2000.

21. As the MDEP was retreating from its early efforts to regulate water withdrawals, the legislature debated the means of providing relief for irrigators whose withdrawals had been hampered by dry seasons. L.D. 2340 would have extended the financial assistance of the Agricultural Marketing Loan Fund to "the purchase of land in connection with development of new cranberry acreage or irrigation reservoirs or to provide direct access to water for irrigation. . . ." L.D. 2340 (119th Legis. 2000). An appropriations bill, L.D. 2493 proposed $7,500,000 in funds to help blueberry growers "design, develop, and construct irrigation water sources. . . ." L.D. 2493 (119th Legis. 2000). Although the latter bill made passing reference to the Maine Atlantic Salmon Task Force, it did nothing to address the low streamflow effects that would follow from increased irrigation levels. *Id.*

22. Susan Young, *Federal Fish Fracas Continues over Irrigation Policy Debate*, BANGOR DAILY NEWS, July 20, 2000, at 1.

have on the industries that now depend on a steady supply of water. Berry growers, predominantly located in the State's poorest region, point out that irrigation more than triples their crop yield.[23] Berries have become big business for Downeastern Maine with industry production climbing from 35 million pounds in the early 1980s to over 70 million pounds at the close of the millennium.[24] Currently, berry-growing takes place on over 60,000 acres of Washington and Hancock County land, creates nearly 8000 jobs seasonally, and produces a $75 million crop.[25] Considering the region's otherwise narrow economic base, these statistics are significant, but so is the demand for water that these industries place on their watersheds. Berry growers estimated water withdrawal for 1995 at over 530 million gallons over 6000 acres.[26] In the absence of regulation this figure is expected to increase to one *billion* gallons by 2001.[27]

Similar economic figures are put forward to justify demand for water in Aroostook County by vegetable farmers for irrigation and, in the western portion of the State, by ski area operators for snowmaking.[28] Certainly, any water management system that is developed for the State needs to consider these economic concerns, but they must be balanced by an understanding of the impacts these industries have on the watersheds in which they operate. As the following section explores, these impacts undermine the natural character and beauty of Maine's flowing waters and wildlands—qualities that the state has pledged to protect.

B. The Ecological Impacts of Low Flows

Regardless of its importance to cranberry and blueberry growers, water, in the proper amounts and at the appropriate times, is critical to the functioning of any riverine ecosystem.[29] Native river species are adapted for life within a specific range of environmental characteristics.[30] Their survival and reproduction is dependent upon the fluctuation of a number of physical variables: water temperature, substrate grain size and distribution, dissolved oxygen, turbidity, and depth.[31] These environmental dimensions are in turn directly dependent upon the nature of the river's discharge. Flow characteristics such as the timing, frequency, duration, and the rate of change of flow are, therefore, all determinative of the diversity and integrity of any given watershed.[32] Thus, "[c]urrent is the most significant characteristic of running water, and it is in their adaptations to constantly flowing wa-

23. Dieter Bradbury, *Fate of the Atlantic Salmon*, PORTLAND PRESS HERALD, Jan. 30, 2000, at 6A.

24. *Id.*

25. Mary Anne Clancy, *LURC Vote Expected on Application to Dig Blueberry Land Irrigation Well*, BANGOR DAILY NEWS, Jan. 19, 2000; Bradbury, *supra* note 23, at 6A.

26. Mary Anne Clancy, *Tribe, LURC Disagree On Water Pumps*, BANGOR DAILY NEWS, June 30, 1999, at B5.

27. *Id.*

28. Mary Anne Clancy, *Drought Boosts State's Thirst for Irrigation Systems*, BANGOR DAILY NEWS, Aug. 25, 2001.

29. *See generally* N. Le Roy Poff et al., *The Natural Flow Regime: A Paradigm for River Conservation and Restoration*, 47 No. 11 BIOSCIENCE 769 (1997) (noting that the exploitation of rivers inhibits ability of those rivers to support native species or sustain healthy ecosystems).

30. NANCY GORDON ET AL., STREAM HYDROLOGY: AN INTRODUCTION FOR ECOLOGISTS 18–25 (1992); *See generally* J. DAVID ALLAN, STREAM ECOLOGY (1995).

31. *See generally* GORDON, *supra* note 30, at 18-25; ALLAN, *supra* note 30, generally.

32. Brian D. Richter, *How Much Water Does A River Need?*, 37 FRESHWATER BIOLOGY 231, 232 (1997) (collecting references).

ter that many stream animals differ from their still-water relatives."[33]

The morphology of any given river forms the foundation of its ecosystem. The alteration of a river or stream's flow regime necessarily results in drastic changes to the physical habitat available for the species that live there.[34] Less energetic discharges are incapable of maintaining a watercourse's normal sediment budget.[35] Rivers so affected are unable to entrain the larger sediment that once flowed freely down its channel. As heavier sediments are deposited, riverbeds aggrade and channel size decreases.[36] Species that rely on the large interstitial spaces between course grains of sediment are forced out by the deposition of fines.[37] Although the impact of this process has been closely studied on salmonid populations in relation to the availability of spawning area,[38] it has consequences that reach out to a far larger array of species than just salmon. Numerous species of fish, as well as macro and micro invertebrates that rely on these interstitial spaces for the survival of their eggs or the success of their larval stages are all adversely affected by the accumulation of fine sediments in the river bed.[39]

As the flow of a river decreases, so too does its channel size. The reduction in channel size (or loss of wetted perimeter) that results from impaired streamflow, exposes new portions of stream bank that are frequently colonized by non-native opportunistic plant species.[40] The invasion of exotic species threatens the diversity of native riparian flora and the animal species that depend on their unique qualities.

Low flows also impair the functioning of other important ecological processes that are related to sediment transport. Downstream ecosystems—estuaries, flood plains, and the lower reaches of the river—depend on sediment movement to export organic resources, such as detritus and detached periphytons, from upstream. The nutrient supply of a river drives the productivity of these ecosystems and, as such, the relative abundance of species present in flowing waters is directly related to the intensity of streamflow.

The impacts of diminished instream flow affect the physical characteristics of the water as much as the physical characteristics of the watercourse. During periods of low flow, temperatures rise, salinity levels increase, and the concentration of dissolved oxygen is reduced.[41] The alteration of these physical variables can strike a tremendous blow to riverine ecosystems, touching every trophic level of the food chain.

Primary production of organic material is supplied by periphytons—algae and mosses attached to the substrate of the river. These species are valuable not only

33. HUGH B.N. HYNES, THE ECOLOGY OF RUNNING WATERS, 121 (Univ. of Toronto Press 1970) (the seminal work on the impacts of alterations to the natural flow regime); *see also* Poff, *supra* note 29, at 769 (stating that streamflow quantity "can be considered a '*master variable*' that limits the distribution and abundance of riverine species.").

34. Franklin K. Ligon et al., *Downstream Ecological Effects of Dams: A Geomorphic Perspective*, 45 No. 3 BIOSCIENCE 183, 183 (1995). *See generally* Mary E. Power et al., *Biotic and Abiotic Controls in River and Stream Communities*, 7 J. N. AM. BENTHOL. SOC. 456 (1988).

35. Ligon, *supra* note 34, at 183 (noting that a dam "alter[s] the flow of sediment").

36. *Id.* at 189.

37. GORDON, *supra* note 30, at 18.

38. Ligon, *supra* note 34, at 185-87.

39. Poff, *supra* note 29, at 773.

40. *Id.* at 777.

41. GORDON, *supra* note 30, at 19.

for the nutrients they supply but for the shelter they provide small invertebrates.[42] Additionally, the close relationship between these plants and fish species, especially trout, is well documented.[43] Many species of periphyton are particularly intolerant to environmental stresses; this means reduced flows may affect the very foundation of riverine ecosystems.[44]

One rung up the trophic ladder the myriad of lotic and benthic invertebrates—insects, crustaceans, mollusks and worms—account for the largest portion of any river's biodiversity.[45] These species rely on a steady supply of clean, oxygen rich water to sustain them and serve as indicator species used to assess the health of river ecosystems.[46] Alterations in the physical and chemical characteristics of the water can result in high mortality rates among these species, thereby depriving fish of an important supply of food.[47]

Finally, fish, situated near the top of the river food chain, rely on a narrow range of stream characteristics that they have adapted to over their long evolutionary histories. Because they rely on the ecological health of all the trophic levels below them, they are potentially subject to a larger variety of environmental stresses than any other component of the ecosystem. Fish require sufficient dissolved oxygen to breathe, adequately large invertebrate and plant populations for food, particular types of substrate to reproduce, and the availability of pools for shelter from predators. As noted above, the availability of all of these biological necessities are impaired by the low flows that result from water diversions and withdrawals.[48]

Salmonid spawning is one facet of diminished streamflow that has particularly drawn the attention of researchers. Atlantic salmon rely on the occurrence of certain streamflows as a biological trigger to initiate spawning.[49] Spawning requires the availability of a riverbed composed of small cobbles and gravel (100 to 150 mm. in diameter) in which the Salmon dig "redds" (nests).[50] Once they have been deposited and fertilized in the redds, salmon eggs need a steady flow of water to supply oxygen and flush out waste materials.[51] Reduced streamflow affects this process in two ways: first, by reducing the area available for spawning; and second, by increasing the mortality rate of the eggs that are successfully laid.[52]

Altering the flow regime creates a substitution of an established hydrologic system that native species may be poorly adapted to.[53] Although salmon acutely feel the stresses associated with this substitution, it must be remembered that they are born by the ecosystem as a whole, and that "entire food webs, not just single species" may suffer the consequences.[54] The cumulative effect of water quantity

42. Joseph S. McLean, Note, *Streamflow Policy in Vermont: Managing Conflicting Demands on the State's Waters*, 19 VT. L. REV. 191, 198 (1994).

43. *Id.*

44. *Id.*

45. GORDON, *supra* note 30, at 21.

46. McLean, *supra* note 42, at 199.

47. *Id.* at 200.

48. *See generally* C.E. Cushing, *Sunshine, Bugs and Trout*, 29 TROUT (Spring 1995).

49. *Id.* at 203.

50. Ligon, *supra* note 34, at 185.

51. McLean, *supra* note 42, at 203.

52. Ligon, *supra* note 34, at 185.

53. Poff, *supra* note 29, at 778.

54. *Id.* The "food web" referred to here extends beyond the river and includes riparian plant species and species from adjoining ecosystems, such as birds that feed on fish or other freshwater fauna. *Id.*

mismanagement on Maine's watersheds, when added to the stresses associated with water quality mismanagement could be devastating. Indeed, hydraulic regime alteration alone has been identified as one of the most significant threats to freshwater biodiversity.[55] However, "[j]ust as rivers have been incrementally modified, they can be incrementally restored."[56] Deriving and implementing the correct method of management is the most important step in that restoration process.

C. Maine's Existing Water Resource Management Tools

Establishing the ecological necessity for a management scheme controlling water withdrawal is only the first part of the problem. It is also necessary to review Maine water law and determine whether there are existing resource management tools that could be implemented to stabilize instream flow. Maine is the only eastern state that has yet to enact water resource allocation legislation.[57] Given this, we must turn to common law water rights and existing water management statutes and determine if these may be adapted for use as an operative body of law for controlling water withdrawal.

1. Private Rights in Water: Riparianism

The body of common law specifying who may take or alter flowing water is known as the law of riparian rights. The term "riparian" is derived from the Latin word *ripa*, meaning stream bank. Thus, "riparian rights" refers to the bundle of rights that arise by virtue of owning land that is contiguous with a flowing watercourse.[58] They are distinguishable from "littoral" rights, which are appurtenant to the ownership of land abutting an ocean or lake, although the two terms are often used interchangeably.[59] The rights of riparian landowners include nonconsumptive as well as consumptive use of water adjoining their property.[60] Nonconsumptive uses often affect water quality and are strictly controlled in Maine, as in the rest of the country, by extensive water quality legislation.[61] Therefore, with respect to water *quality*, state and federal law have largely preempted riparianism, however, this is not the case in our state with respect to water *quantity*. Maine's lack of statutory and regulatory control over the consumptive use of flowing water means that the ancient common law doctrine of riparian rights is the operative law regard-

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55. *See generally* Brian D. Richter et al., *Threats to Imperiled Freshwater Fauna*, 11 CONS. BIO. 1081, 1081-93 (1997) (discussing the results of a survey which addressed threats to natural hydralogic regimes in regions across the country).

56. Poff, *supra* note 29, at 780.

57. Dellapenna, *supra* note 5, at 324.

58. In practice, riparian rights attach not only to surface waters (navigable and non-navigable rivers and streams) but to diffuse surface waters (water from rains, springs, or melting snow with little or no flow) and lakes as well. A. DAN TARLOCK, LAW OF WATER RIGHTS AND RESOURCES §§ 3:11-3:14 (2001). *See* Opinion of the Justices, 118 Me. 503, 503-508, 106 A. 865, 865-869 (1919); State v. Leavitt, 105 Me. 76, 79, 72 A. 875, 877 (1909); Brown v. Chadbourne, 31 Me. 9, 23 (1849).

59. JOHN M. GOULD, A TREATISE ON THE LAW OF WATERS 300-01 (1891); CARROLL DUNSCOMBE, RIPARIAN AND LITTORAL RIGHTS 1 (1970). Maine is one of the few remaining eastern states in which this distinction remains important. *See* Opinion of the Justices, 118 Me. at 505-08, 106 A. at 868-69 (1919).

60. 1 WATERS AND WATER RIGHTS § 6.01(a) (Robert E. Beck ed., 1991) [hereinafter 1 Beck].

61. ME. REV. STAT. ANN. tit. 38 §§ 464-470.

ing stream flow in the state. This is known as "pure riparianism."[62]

The basic elements of the riparian doctrine were first set forth in 1827 by Justice Story, sitting as a federal circuit judge, in *Tyler v. Wilkinson*.[63] This case announced two conflicting sets of theories governing water rights. The first is concerned with the natural flow of a river: "[N]o [riparian] proprietor has a right to use the water to the prejudice of another . . . . [N]o one has a right to diminish the quantity which will, according to the natural current, flow to a proprietor below, or to throw it back upon a proprietor above."[64]

The second water rights theory found in *Tyler* considers injury to co-riparians from "reasonable uses":

> There may be, and there must be allowed of that, which is common to all, a reasonable use. The true test of the principle and extent of the use is, whether it is to the injury of the other proprietors or not. There may be a diminution in quantity, or a retardation or acceleration of the natural current indispensable for the general and valuable use of the water . . . .[65]

One year after *Tyler*, Chancellor Kent incorporated Justice Story's dual interpretation of water rights into his *Commentaries*,[66] placing a somewhat greater emphasis on the right to natural flow: "Every proprietor of lands on the banks of a river, has naturally an equal right to the use of the water which flows in the stream adjacent to his lands, as it was wont to run, (*currere solebat,*) without diminution or alteration."[67] However, "[s]treams of water are intended for the use and comfort of man; and it would be unreasonable, and contrary to the universal sense of mankind, to debar every riparian proprietor from the application of the water to domestic, agricultural, and manufacturing purposes. . . ."[68]

These two sources provided the early foundations for riparian water law in the United States and in England.[69] The water right they create is a qualified property right or usufructory right. That is to say, a riparian proprietor does not own the water that flows through his land, but has only a right to its use and flow.[70]

In the early stages of its development, Maine's mill economy dictated that current (flow) was the most valuable attribute of a river. As such, early water law in Maine and in many eastern states emphasized natural flow over reasonable use. In *Blanchard v. Baker*,[71] an 1832 case, the Maine Supreme Judicial Court stated:

> It is an ancient and well-established principal, that [water] cannot lawfully be diverted, unless it is returned again to its accustomed channel . . . . The proprietor of [a] watercourse has a right to avail himself of its momentum as a power . . . [a]nd he may make a reasonable use of the water itself . . . provided it is not . . . essentially diminished.[72]

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62. 1 Beck, *supra* note 60, § 6.01(a).
63. 24 F. Cas. 472 (C.C.D.R.I. 1827).
64. *Id.* at 474.
65. *Id.*
66. 3 JAMES KENT, COMMENTARIES ON AMERICAN LAW 439 (2d ed. 1832).
67. *Id.* at 439.
68. *Id.* at 440.
69. Samuel C. Wiel, *Origin and Comparative Development of the Law of Watercourses in the Common Law and in the Civil Law*, 6 CAL. L. REV. 245, 247-49 (1918). *See also* LUDWIK A. TECLAFF, WATER LAW IN HISTORICAL PERSPECTIVE 7 (1985).
70. *See* Samuel C. Wiel, *Running Water*, 22 HARV. L. REV. 190, 199 (1908).
71. 8 Me. 253 (1832).
72. *Id.* at 266.

Under the natural flow theory a riparian proprietor's right is violated by any use that diminishes the flow past his land regardless of whether he has been injured by the diversion.[73] Such close control over water usage left riparians with virtually no use of the water flowing through their property. For this reason a limited exception for "domestic" needs (such as water for bathing, drinking, and household purposes) was created.[74] These domestic or "natural" needs were distinguished from "artificial" needs such as irrigation, mining, manufacturing, power generation, and large-scale livestock watering.[75]

As an industrial economy began to supplant the mill economy, demand for consumptive use of water resources began to exceed what the simple domestic needs exception could accommodate. The strict water appropriation limitations imposed on riparian proprietors by the natural flow rule conflicted with these new demands, and courts soon began to expand riparian rights by shifting to the reasonable use theory.[76] This transition did not occur in Maine until 1885 with the Law Court's decision in *Lockwood Co. v. Lawrence*:[77]

> Every proprietor upon a natural stream is entitled to the reasonable use and enjoyment of such stream as it flows through or along his own land, taking into consideration a like reasonable use of such stream by all other proprietors above or below him. The rights of the owners are not absolute but qualified, and each party must exercise his own reasonable use with a just regard to the like reasonable use by all others who may be affected by his acts. Any diversion or obstruction which substantially and materially diminishes the quantity of water, so that it does not flow as it has been accustomed to, . . . thereby preventing the use of it for any of the reasonable and proper purposes to which it is usually applied, is an infringement of the rights of other owners of land through which the stream flows. . . .[78]

The Law Court noted that "[t]he law does not lay down any fixed rule for determining what is a reasonable use of the water of a stream" and that a determination of reasonableness depends upon the circumstances of each particular case.[79] The decision lists a number of relevant factors to consider:

> [T]he subject matter of the use; the occasion and manner of its application; the object, extent, necessity and duration of the use; the nature and size of the stream; the kind of business to which it is subservient; the importance and necessity of the use claimed by one party[;] . . . the state of improvement of the country in regard to mills and machinery, and the use of water as a propelling power; the general and established usages of the country in similar cases; and all the other and ever varying circumstances of each particular case, bearing upon the question of the fitness and propriety of the use of the water under consideration.[80]

The reasonable use rule found in *Lockwood*, as it relates to water quantity, has

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73. *Id.*

74. *Id.*; *see also* City of Auburn v. Union Water Power Co., 98 Me. 576, 38 A. 561 (Me. 1897).

75. *See* J.H. Beuscher, *Appropriation Water Law Elements in Riparian Doctrine States*, 10 BUFF. L. REV. 448, 452-53 (1960-61).

76. *See, e.g.*, Dumont v. Kellogg, 29 Mich. 420, 424 (1874); Harris v. Brooks, 283 S.W.2d 129, 132-33 (Ark. 1955).

77. 77 Me. 297 (1885).

78. *Id.* at 316.

79. *Id.* at 316-17.

80. *Id.* at 317 (quoting Red River Rolling Mills v. Wright, 15 N.W. 167, 169 (Minn. 1883)).

remained essentially the same for over a century.[81] It allows each riparian to divert and use water in quantities that are reasonable considering the size of a watercourse and the comparative needs of other riparians. Where a lower riparian does not suffer actual damage, a diminishment in flow is considered *damnum absque injuria* (harm without injury) and may not be enjoined.[82]

The abstract standards put forward in *Lockwood* for determining reasonableness have been applied more frequently to cases challenging degradation than diversion.[83] As a result, there are few functional definitions of unreasonable water withdrawal in Maine's riparian caselaw.

At least one form of consumptive use is categorically unreasonable in Maine. The so-called watershed limitation prohibits the diversion of water on non-riparian land or outside of the watershed.[84] Beyond this limitation, however, the orthodox riparianism operating within the state sets no concrete limitations on water withdrawal. Nearly every conceivable use has been considered reasonable by the Law Court at one time or another and no challenges have been brought in Maine in which riparian rights were used to protect a river ecosystem for anything other than its recreational value.[85]

In its present state, the doctrine of riparian rights is best suited to deal with disputes concerning the allocation of water use rights between competing users. Early riparian cases utilizing the natural or uniform flow theory to assure stable flows for mill owners could be useful for protecting instream flow, but Maine has rejected the natural flow theory and now requires a showing of actual injury to a riparian proprietor before any upstream use may be enjoined.[86] Accordingly, riparianism may only be used to preserve river ecosystems if the Law Court finds a right to healthy river habitat within the bundle of riparian rights. Recreational uses and scenic value may be asserted as proxies for preservation of unique and vital ecosystems,[87] but this approach elevates concern for the symptom (faltering fish population) over that for the disease (failing ecosystem) and may not, in the long term, effectively treat the real problem. Even if ecological health were found

81. Opinion of the Justices, 118 Me. 503, 106 A. 865 (1919):

> [The riparian proprietor] does not own the water itself, but he has the right to the natural flow of the stream, and the right to the use and benefit of it, as it passes through his land, for all the domestic and agricultural purposes to which it can reasonably be applied, and no proprietor above or below can unreasonably divert, obstruct or pollute it.

Id. at 507, 106 A. at 868. *See also* Kennebunk, Kennebunkport and Wells Water Dist. v. Me. Turnpike Auth., 145 Me. 35, 42-43, 71 A.2d 520, 526 (1950); Stanton v. Trs. of St. Joseph's Coll., 233 A.2d 718, 721 (Me. 1967).

82. *See* TARLOCK, *supra* note 58, § 3.12 (2001).

83. *See, e.g.*, Lockwood v. Lawrence, 77 Me. 297 (1885); Stanton v. Trs. of St. Joseph's Coll., 233 A.2d 718 (Me. 1967) (Stanton I).

84. *See* Stanton v. Trs. of St. Joseph's Coll., 254 A.2d 597, 599 (Me. 1969) (Stanton II) ("In the instant case the upstream use is nonriparian and hence the upstream riparian owner will not be allowed to assert the reasonable use doctrine against the lower riparian owners"); *see also* Kennebunk, Kennebunkport and Wells Water Dist. v. Me. Turnpike. Auth., 145 Me. 35, 71 A.2d 520.

85. M. DAWSON, WATER LAW IN MAINE: REPORT OF THE LEGAL FRAMEWORK SUBCOMMITTEE, 7-8 (1991) (collecting cases).

86. Kennebunk, Kennebunkport and Wells Water Dist. v. Me. Turnpike Auth., 71 A.2d 520, (1950) (noting that no action lies against an upstream proprietor where the claimant has no corresponding riparian right).

87. *See generally* Harris v. Brooks, 283 S.W.2d 129 (Ark. 1955).

to be a protected riparian right, the doctrine limits standing to co-riparians and thus makes a universal concern enforceable by only a relative minority of landowners.[88]

Furthermore, the standard of reasonableness, adapted as it is to settling disputes between competing commercial uses, fails to consider and preserve the hydrological characteristics that are prerequisite to the healthy functioning of any river. The balance struck in pure riparianism is between the reasonableness of an upstream diversion versus a downstream one; and not, as it needs to be, between the effective operation of forces in a drainage basin that control sediment delivery to channels and sediment transport from the basin. Just as the riparian doctrine failed to address concern for water quality, it has failed to apportion water usage in a way that is protective of Maine's valuable river ecosystems.

2. *Public Water Use Rights*

Riparian water rights are limited by the private rights of other riparian proprietors and, to a certain extent, by the rights of the public at large to use the water resources of a state for navigation and fishing. Public rights restrain both private and governmental parties from interfering with the public's use and enjoyment of navigable waters. Recently, legal commentators have suggested that common law public use rights might serve as a basis for requiring stable instream flow and lake levels.[89] This approach relies, however, on expanding the traditional sphere of protected public and primarily commercial rights, namely navigation and fishing, to include a right to ecological integrity. Courts in a limited number of jurisdictions have reformulated public water rights in terms of modern concern for the environment.[90] The possibility of adapting these arguments to Maine must be considered in the search for a means to control water withdrawal from the state's rivers.

The origin of public water rights in the United States is the public trust doctrine, a venerable common law doctrine with roots in Roman law.[91] In *Justinian's Institutes* it is declared: "'By natural law all these things are common, viz: air, *running water*, the sea and as a consequence the shores of the sea.'"[92] According to this civil law principle, resources such as flowing waters, the sea and its shore

88. Kennebunk, Kennebunkport and Wells Water Dist. v. Me. Turnpike Auth., 71 A.2d at 525.

89. *See* Richard Ausness, *Water Rights, the Public Trust Doctrine, and the Protection of Instream Uses*, 1986 U. ILL. L. Rev. 407, 424-25 (1986); Lynda L. Butler, *Environmental Water Rights: An Evolving Concept of Public Property*, 9 VA. ENVTL. L. J. 323, 331 (1990); Jan S. Stevens, *Current Developments in the Public Trust Doctrine and Other Instream Protection Methods in* WATER LAW: TRENDS, POLICIES AND PRACTICES 141 (1995).

90. *See* Marks v. Whitney, 491 P.2d 374, 380 (Cal. 1971) (holding that patentee of tidelands owns the soil, subject to easement of the public trust to enter upon for purposes of preservation and other uses); Nat'l Audubon Soc'y v. Super. Ct. of Alpine County, 658 P.2d 709, 729 (Cal. 1983); Aspen Wilderness Workshop, Inc. v. Colo. Water Conservation Bd., 901 P.2d 1251, 1261 (Colo. 1995) (construing the State Water Code to allow individuals greater power to seek relief from the Water Board); United Plainsmen Ass'n v. N.D. State Water Conservation Comm'n, 247 N.W.2d 457, 463 (N.D. 1976).

91. Patrick Deveney, *Title*, Jus Publicum, *and the Public Trust: An Historical Analysis*, 1 SEA GRANT L.J. 13, 16 (1976).

92. Samuel C. Wiel, *Running Water*, 22 HARV. L. REV. at 199 (quoting Justinian Inst., tit. I, § I) (discussing the expanding role of the public trust doctrine in environmental law).

were common to all and excluded from private ownership.[93] This view of the sea as a common resource passed into English common law where it persisted as a vague legal theory until, in 1667, Lord Chief Justice Matthew Hale revitalized it in his *De Jure Maris*.[94] Hale asserted that title to all land submerged below navigable tidal waters ultimately rested with the sovereign.[95] The crown could allow title to pass into private ownership, but it remained always subject to the *jus publicum*—the rights of the general public.[96] By the time England's common law traveled to the American colonies, the public was entitled to use navigable intertidal waters for navigation and fishing, and could enjoin private landowners from interfering with those uses.[97]

Nineteenth century American courts interpreted the *jus publicum* as creating a public trust in which navigable waters were held by the state for the benefit of the public:[98]

> Lands under tide waters are incapable of cultivation or improvement in the manner of lands above high water mark. They are of great value to the public for the purposes of commerce, navigation and fishery. Their improvement by individuals, when permitted, is incidental or subordinate to the public use and right. Therefore *the title and the control of them are vested in the sovereign for the benefit of the whole people*.[99]

In view of the country's vast freshwater resources, American courts expanded the reach of the traditional common law and included non-tidal navigable rivers, streams, lakes, and ponds within the public trust as well.[100]

Maine and Massachusetts law governing public rights in water resources was modified by the statutory and common law of the Massachusetts Bay Colony, and as such, is at variance with the rest of the states.[101] The Colonial Ordinance of 1641-47[102] altered traditional common law public rights in two ways: first, by removing the public's right to use tidal flats, and second, by extending public rights

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93. *See* Deveney, *supra* note 91, at 31.

94. "[T]here be . . . rivers, as well fresh as salt, that are common or publick use for carriage of boats or lighters. And these, whether they are fresh or salt, whether they flow and reflow or not, are *prima facie public juris*, common highways for man or goods or both. . . ." Lord Chief Justice Matthew Hale, De Jure Maris, *in* A HISTORY OF THE FORESHORE AND THE LAW RELATING THERETO 374, 374 (Stuart A. Moore ed., 3d ed. 1888).

95. *Id.* at 376.

96. *Id.* at 389-90.

97. Deveney, *supra* note 91, at 41.

98. *See, e.g.*, Arnold v. Mundy, 6 N.J.L. 1, 24-25 (1821); Martin v. Waddell's Lessee, 41 U.S. 367, 412-13 (1842); Ill. Cent. R.R. Co. v. Illinois, 146 U.S. 387, 458 (1892); Shively v. Bowlby, 152 U.S. 1, 48-50 (1894).

99. Shively v. Bowlby, 152 U.S. at 57 (emphasis added).

100. *See id.* at 18-26.

101. Jose L. Fernandez, *Untwisting the Common Law: Public Trust and the Massachusetts Colonial Ordinance*, 62 ALB. L. R. 623, 624 (1998).

102. *See* Bell v. Town of Wells, 510 A.2d 509, 512-13 (Me. 1986) (quoting LIBERTIES COMMON § 2, THE BOOK OF THE GENERAL LAWES AND LIBERTYES CONCERNING THE INHABITANTS OF MASSACHUSETTS 35 (Cambridge, Mass., 1648); (photo reprint, T. Barnes, ed. 1975):

> Everie Inhabitant who is an hous-holder shall have free fishing and fowling, in any great Ponds, Bayes, Coves and Rivers so far as the Sea ebs and flows, within the precincts of the town where they dwell, unles the Free-men of the same town, or the General Court have otherwise appropriated them. Provided that no town shall appro-

to "great ponds."[103] In both places the ordinance reserved to the public the rights of fishing, fowling, and navigation.[104] Although the Colonial Ordinance was effectively rendered void by the abrogation of the colonial charter, it continued as part of the common law of Massachusetts.[105] By virtue of section 6 of "the Act of Separation between Maine and Massachusetts," and Article X, section 3 of the Maine Constitution, the ordinance was incorporated into Maine's common law as well.[106] The result is an irregular pattern of public water rights that varies according to waterbody classification.

Public rights are greatest in the state's "great ponds," which is defined by the Colonial Ordinance as those with greater than ten acres of surface area.[107] Ownership of the great ponds lies exclusively with the state, which holds them in trust for public use.[108] For this reason, the Law Court has stated that the water level of the great ponds may not be altered "below [the] natural low-water mark, nor raise and hold them above their natural level" without legislative consent.[109] Maine courts have protected not only the traditional rights of fishing, fowling, and navigation originally guaranteed by the Colonial Ordinance,[110] but also modern recreational uses of the waterbodies as well.[111]

> priate to any particular person or persons, any great Pond conteining more then ten acres of land: and that no man shall come upon anothers proprietie without their leave otherwise then as heerafter expressed; the which clearly to determin, it is declared that in all creeks, coves and other places, about and upon salt water where the Sea ebs and flows, the Proprietor of the land adjoyning shall have proprietie to the low water mark where the Sea doth not ebb above a hundred rods, and not more wheresoever it ebs farther. Provided that such Proprietor shall not by this libertie have power to stop or hinder the passage of boats or other vessels in, or through any sea creeks, or coves to other mens houses or lands. And for great Ponds lying in common though within the bounds of some town, it shall be free for any man to fish and fowl there, and may passe and repasse on foot through any mans proprietie for that end, so they trespasse not upon any mans corn or meadow.

Id.

103. *See, e.g.*, Herbert E. Locke, *Right of Access to Great Ponds by the Colonial Ordinance*, 12 ME. L. REV. 148, 149 (1919); Lincoln Smith, *The Great Pond Ordinance—Collectivism in Northern New England*, 30 B.U. L. REV. 178, 178-79 (1950); Mitchell M. Tannenbaum, Comment, *The Public Trust Doctrine in Maine's Submerged Lands: Public Rights, State Obligation and the Role of the Courts*, 37 ME. L. REV. 103, 110 (1985). The effect of the Colonial Ordinance was confined to tidal water and great ponds and did not extend to rivers and streams which were, at the time, considered reducible to private property. *Id.*

104. *See* Tannenbaum, *supra* note 103, at 110.

105. *See* Storer v. Freeman, 6 Mass. (1 Tyng) 435, 438 (1810).

106. *See, e.g.*, Bell v. Town of Wells, 510 A.2d 509, 513-14 (Me. 1986) (discussing the history of the Colonial Ordinance); Conant v. Jordan, 107 Me. 227, 230-31, 77 A. 938, 939 (1910) (stating that the Colonial Ordinance was not merely an enactment, but a declaration of existing claim rights); Barrows v. McDermott, 73 Me. 441, 447-48 (1882) (holding that the Colonial Ordinance has full power throughout the state).

107. Opinion of the Justices, 118 Me. 503, 106 A. 865 (1919).

108. *Id.*

109. *Id.* at 506, 106A at 869.

110. *See, e.g.*, Barrows v. McDermott, 73 Me. at 449 (holding that the legislature has power over public and common rights, concerning the taking of fish from bodies of water); Conant v. Jordan, 107 Me. at 241 (holding that fishing and fowling are free in ponds greater than 10 acres).

111. *See, e.g.*, Brastow v. Rockport Ice Co., 77 Me. 100, 103-04 (1885) (holding that the right to ice-cut is free on ponds greater than 10 acres in size); Gratto v. Palangi, 154 Me. 308, 314 (1958) (holding that swimming and boating are obvious free uses of Maine's great ponds).

Because the Colonial Ordinance makes no mention of public rights in the state's non-tidal navigable rivers and streams, title to Maine's riverbeds has been held to lie exclusively with private riparian proprietors.[112] In spite of this, the strong demand for commercial use of the state's rivers, for log transport and navigation, resulted in the development of a "public servitude of navigation" within Maine common law.[113] This public easement does not place the public's right to use rivers on the same level with that of great ponds or tidal waters, however.[114] Maine courts have consciously rejected broad interpretations of public rights in rivers, choosing instead to create a strong distinction between tidal and non-tidal flowing waters—the latter being no more than mere "highways." [115] The Maine court did widen public rights slightly by including recreational boating within the definition of navigation.[116] That exception aside, Maine law recognizes no public right to any non-commercial use of the state's rivers.

Tidal waters and great ponds are held in trust by the state for the benefit of the people[117] while rivers are held by riparian proprietors subject to an easement held by the public.[118] Regardless of this distinction, both the state and individual members of the public may sue to enjoin others from interfering with public rights.[119] For this reason, public rights in navigable waters are an important consideration for water resource management in the state because they create a responsibility on the part of the state to preserve the public's interests[120]; and, although the legislature has authority to extinguish public rights for public purposes, statutes that do so are subject to heightened scrutiny.[121] Nonetheless, by modern standards, "the *jus publicum* may be of trifling value" unless public rights extend somewhat further than merely navigation and fishing.[122] The public must be entitled to the use of healthy as well as unobstructed rivers before public water rights will be of any use in preventing excessive diversion. Considering this, it becomes necessary that

112. *See, e.g.*, Opinion of the Justices, 118 Me. 503, 507, 106 A. 865 (1919) (holding that the only limitation upon riparian proprietors in non-tidal rivers relates to passage of fish, and to a lesser degree, boats and logs); Pearson v. Rolfe, 76 Me. 380, 385-86 (1884) (holding that a riparian proprietor owns the bed of the river to the middle of a stream in a non-tidal and floatable stream).

113. HARRIET HENRY & DAVID HALPERIN, MAINE LAW AFFECTING MARINE RESOURCES 222-24 (1970).

114. Opinion of the Justices, 118 Me. at 507, 106 A. at 869 ("The *only* limitation upon the absolute rights of riparian proprietors in non-tidal rivers and streams is the public right of passage for fish, and also for passage of boats and logs, provided the streams in their natural condition are of sufficient size to float boats or logs.") (emphasis added).

115. Veazie v. Dwinel, 50 Me. 479, 483-84, 485 (1862) ("Though in many States of the Union . . . the common law distinction between *navigable* [tidally influenced] rivers, and those which are simply recognized as *highways*, does not exist; in this State, as has been seen, the common law definition has been fully recognized.") (emphasis added).

116. Smart v. Aroostook Lumber Co., 103 Me. 37, 48-49, 68 A. 527, 531 (1907) (holding that a navigable stream is subject to public use as a highway).

117. State v. Leavitt, 105 Me. 76, 79, 72 A. 875, 876 (1909) (holding that the state owns the bed and the tidal waters themselves); Opinion of the Justices, 118 Me. at 503.

118. Smart v. Aroostook Lumber Co., 103 Me. at 47, 68 A. at 531.

119. G. Graham Waite, *Public Rights in Maine Waters*, 17 ME. L. REV. 161, 172-73 (1965) (discussing the possibility of a court awarding injunctive relief to a private individual).

120. *See, e.g.*, Brooks v. Cedarbrook, 82 Me. 17, 20-21 (1889) (discussing the sovereign right of the state to improve rivers as public highways without giving compensation).

121. *See, e.g.*, State v. Wallace, 102 Me. 229, 232, 66 A. 476, 477 (1906).

122. Dyer v. Curtis, 72 Me. 181, 186 (1881) (stating that "protecting the openness of navigable waters" is an important principle).

the Maine Supreme Judicial Court recognize the full range of public rights in Maine's rivers to include ecological preservation.

Although public rights in Maine waters have typically favored commercial uses, as demand for recreational use of the state's waters has grown, a body of caselaw has emerged in which the Law Court has been urged to adopt a broader view of the public's shared interest in Maine's rivers, lakes, and streams. These cases may serve as an indication of the court's willingness for further judicial development of public use rights.

In *Gratto v. Palangi*,[123] the Law Court reiterated the guarantees found in the Colonial Ordinance of "free fishing and fowling" on the great ponds and the public use rights to swimming, pleasure boating, and skating.[124] The court in *Smart v. Aroostook Lumber Co.*,[125] extended the public servitude of navigation, previously considered exclusive to commercial use of rivers, to recreational boating.[126] In its decision the court stated:

> *The existing conditions which create the purposes of the public use of the Presque Isle Stream are subject to change*, and the driving and temporary storing of logs now of principle importance, may become secondary in importance to the travel of summer residents and the transportation of merchandise for their accommodation. In this State, recreation is assuming features and incidents as valuable to the public as trade and manufacturing.[127]

More recently, however, the court has moved in the other direction. In *Bell v. Town of Wells*[128] (*Bell II*), the Law Court struck down the Maine Public Trust and Intertidal Lands Act, a statute that declared modern recreational use of the intertidal zone a public right.[129] In doing so, the court refused to update common law use rights and limited the public's right to use the intertidal zone to those activities specifically listed in the original Colonial Ordinance: fishing, fowling, and navigation.[130] Further, the court considered legislative attempts to expand on public rights in intertidal waters as an imposition of an easement for use by the general public, and therefore, an unconstitutional taking.[131] This rationale casts its shadow less on the state's great ponds, which are owned by the state according to common law, and more on the rivers, which are owned privately just as the intertidal zone. *Bell II* illustrates the court's reluctance to recast public rights in terms of contemporary modes of use. It is uncertain whether the court would consider the placement of a negative easement upon rivers, which would restrict the exercise of riparian water rights, as an imposition of an easement that "sharply differs in nature and magnitude from the easement for . . . navigation . . . that the common law alone reserved in favor of the public out of the fee [simple] ownership of . . ." rivers.[132] Perhaps the answer lies in the fact that *Bell II* was 4-3 decision with

123. 154 Me. 308, 147 A.2d 455 (1958).
124. *Id.* at 312, 147 A.2d at 458.
125. 103 Me. 37, 68 A. 527 (1907).
126. *Id.* at 48, 68 A. at 532.
127. *Id.* (emphasis added).
128. 557 A.2d 168 (Me. 1989) [hereinafter Bell II].
129. Bell II, 557 A.2d at 176-77 (holding that the Act facilitated unconstitutional taking without compensation).
130. *Id.*
131. *Id.* at 176-77.
132. *Id.* at 177.

dissenting Justice Wathen, who until recently served as Chief Justice, arguing strongly for a broader interpretation of common law public use rights more in line with public trust doctrine cases elsewhere in the country.[133]

Even if *Bell II* does not foreclose public rights to ecologically sound river habitat, it is important to note the limited usefulness of public rights in water resource management. To assess the effectiveness of public water rights as a check on water withdrawal, it is useful to turn to cases that have arisen in other states that have chosen to recognize a public right to expect riverine ecosystems to retain their natural character.

United Plainsmen Ass'n v. North Dakota State Water Conserv. Comm'n[134] was the first decision to consider the legal potential of the public trust doctrine as a check against water diversion.[135] The case arose out of a disputed application for a water appropriation permit.[136] The North Dakota Supreme Court determined that the public trust doctrine acted as a limitation on the actions of the state regarding water allocation.[137] The court reasoned that the doctrine's restraint on the alienation of trust lands extended not merely to the submerged lands below the disputed waters but to the waters themselves.[138] Substantively, however, the holding required nothing more than the resource agency's *consideration* of the effect of issuing permits in light of trust responsibilities: "[T]he Public Trust Doctrine requires, at a minimum, a determination of the potential effect of the allocation of water on the present water supply and future water needs of this State."[139]

The Supreme Court of California went one step further in *Nat'l Audubon Soc'y v. Super. Ct. of Alpine County.*[140] There, the court reviewed the validity of a water use permit issued to the city of Los Angeles forty years previously, in the context of the state's public trust duties.[141] The water permits in question authorized withdrawals from the non-navigable streams that fed Mono Lake.[142] The lake, formed from a volcanic caldera, is a unique ecosystem containing a number of endemic species and serving as a nesting ground for migratory birds.[143] The challenged permits authorized the appropriation of nearly the entire flow from the small streams and resulted in tremendous ecological damage to the lake.[144]

The court, in analyzing California's obligation to protect trust resources, held that the duties of the state, as a fiduciary of the navigable waters, also included an obligation to manage responsibly the *non-navigable* tributaries that feed the lake as well.[145] This responsibility, the court reasoned, included an on-going duty to consider the impact of water allocation decisions, not just initially at the time of

133. *See id.* at 191.

134. 247 N.W.2d 457 (N.D. 1976).

135. United Plainsmen Ass'n v. North Dakota State Water Cons. Comm'n, 247 N.W.2d at 460-61.

136. *Id.* at 458.

137. *Id.* at 460–61.

138. *Id.* at 461.

139. *Id.* at 462.

140. 658 P.2d 709 (Cal. 1983), *cert; denied*, 464 U.S. 977 (1983).

141. *Id.* at 712.

142. *Id.* at 711.

143. *Id.*

144. *Id.*; *see also* Ausness, *supra* note 89 at 424 (noting that the level of lake dropped 46 feet over thirty years due to these heavy withdrawals).

145. Nat'l Audubon Soc'y v. Super. Ct. of Alpine County, 658 P.2d at 720-21.

granting permits.[146] Accordingly, the court found that the responsible state agency had a duty to reexamine the permits in light of the trust duties imposed on it by the doctrine.[147]

More recently, in *Aspen Wilderness Workshop, Inc. v. Colorado Water Conserv. Bd.*,[148] the Colorado Supreme Court reviewed the public trust doctrine in settling a dispute involving instream flows and snowmaking.[149] There, the plaintiffs brought suit against a state resource agency for allowing a "permanent relinquishment of a public instream flow right . . . ."[150] The court found for the plaintiffs and held that the state's agencies were bound by a "fiduciary duty" to maintain "'such waters of natural streams and lakes as the [agencies] determine[] may be required for minimum stream flows or for natural surface water levels or volumes for natural lakes to preserve the natural environment to a reasonable degree.'"[151] Unfortunately, this language requires nothing more than serious consideration of ecological impacts and did not prompt Colorado resource agencies to adopt more stringent flowage protections.

In Vermont, an attempt to halt increased pumping for snowmaking at the Okemo and Sugarbush Ski Resorts by an environmental organization ended in failure when the Vermont Environmental Board announced that the statutes it administered did not authorize it to consider common law notions of public trust.[152]

In all of the cases mentioned above, the public trust doctrine has been used as a means of obtaining judicial review of agency decisionmaking; and in each case the remedy merely required state resource agencies to take a "hard look" at their decision-making process where trust waters were involved.[153] In other words, the public trust remedies are process remedies, not substantive (allocative) remedies, and cannot be relied upon to control water usage in the state.[154]

3. Statutory Modifications of the Common Law

The common law doctrines that govern water law in Maine do not form a basis for systematic, quantitative allocations of water between competing uses; they do not afford protection for a particular use as against another, and perhaps more valuable uses. They do not reach to hydrologically connected resources such as groundwater or diffused surface water. The state's legislature has been forced to compensate for these faults and imperfections in the common law with statutory and regulatory schemes. While the majority of action taken has been aimed at

146. *Id.* at 728.

147. *Id.* at 728-29.

148. 901 P.2d 1251 (Colo. 1995).

149. Aspen Wilderness Workshop, Inc. v. Colorado Water Cons. Bd., 901 P.2d at 1251-55.

150. *Id.* at 1255.

151. *Id.* at 1256–57.

152. *See, e.g.*, Donna Sheehan Fitzgerald, Note, *Extending Public Trust Duties to Vermont's Agencies: A Logical Interpretation of the Common Law Public Trust Doctrine*, 19 VT. L. REV. 509, 531–44 (1995) (asserting that recent Vermont decisions have misconstrued the common law Public Trust Doctrine).

153. *See, e.g.*, Michael C. Blumm, *Public Property and the Democratization of Western Water Law: A Modern View of the Public Trust Doctrine*, 19 ENVTL. L. 573, 589-90 (1989) (discussing Public Trust cases).

154. *Id.*

issues of water quality, a number of these statutes do, though somewhat secondarily, affect water quantity.

a. Maine Natural Resources Protection Act[155]

Section 480-C of the Maine National Resources Protection Act (NRPA) prohibits "draining or otherwise *dewatering*" and "construction, repair or alteration of any permanent structure" in, on, or over "any protected natural resource" without first obtaining a permit from the DEP.[156] The Act defines protected resources to include "great ponds . . . rivers, streams, or brooks."[157] Permits are to be granted only where the applicant is able to demonstrate, among other things, that: (1) "[t]he activity will not unreasonably harm any . . . aquatic habitat, . . . freshwater, estuarine or marine fisheries or other aquatic life"[158]; (2) "the activity will not unreasonably interfere with the natural flow of any surface . . . waters"[159]; or (3) "the activity will not violate state water quality law, including those governing the classification of the State's waters."[160]

Although, given the above, the NRPA would appear to govern consumptive withdrawals for irrigation, there are two obstacles to bringing that practice within its scope. The first is a technical detail. The term "dewatering" is not defined in the NRPA, its accompanying regulations, or as a matter of law.[161] The DEP has stated that although the withdrawal of water from a watercourse might hypothetically amount to "dewatering," this interpretation does not include irrigation practices.[162] Likewise, the term "permanent structure" has been interpreted internally by the DEP to exclude the equipment used for irrigation in the summer months.[163] Read together, these two policies completely exclude irrigation from the scope of the NRPA.

The second obstacle is jurisdictional in nature. Section 480-V of the NRPA provides that the permitting scheme applies "to all protected natural resources in the State" except "[t]hose portions of . . . great ponds, rivers, streams and brooks within the jurisdiction of [the LURC]."[164] Thus, even if "dewatering" were to be read in its ordinary meaning—the removal of water from a waterbody—the NRPA permits would not be required for pumping operations in the unregulated territories where the problem is greatest. Rather, as the Act suggests, irrigators pumping on unregulated lands would be subjected to the LURC's comprehensive land use plan.[165]

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155. ME. REV. STAT. ANN. tit. 38, §§ 480-A-480-Z (West 2001).

156. *Id.* at § 480-C (emphasis added).

157. *Id.* at § 480-B(8). These waterbodies are defined in §§ 480-B(5), (9).

158. *Id.* at § 480-D(3).

159. *Id.* at § 480-D(4).

160. *Id.* at § 480-D(5).

161. *Id.* at § 480-B; *see generally* 06-096 CODE ME. R. § 305-1-45 (1999-2000).

162. Letter from Edward O. Sullivan, DEP Commissioner, to Henry Nichols, Atlantic Salmon Plan Coordinator 2 (Aug. 13, 1998).

163. *Id.* This assertion is arguable. Cranberries and blueberries require spraying not only in the summer but during the winter as well. The pumping equipment that accomplishes this looks anything but "temporary."

164. ME. REV. STAT. ANN. tit. 38, § 480-VCD(B) (West 2001).

165. *Id.* "The commission, in consultation with the department, shall periodically review land use standards adopted by the commission . . . to ensure that the standards afford a level of protection consistent with the goals of [the NRPA]." *Id.*

b. *Maine Water Classification Program*[166]

As required by the Federal Water Pollution Control Act (FWPCA, the Clean Water Act),[167] Maine has constructed a water classification scheme for the state's surface and underground waters. This system of classifications is based upon "water quality standards which designate the uses and related characteristics of those uses for each class of water and which also establish water quality criteria necessary to protect those uses and related characteristics."[168] The scheme divides the state's fresh surface waters[169] and lakes and ponds[170] into Class AA, A, B, and C waters. Each water classification is outlined in terms of certain minimum standards that must be maintained by the DEP.[171] Where waters fall below their designated standards, those responsible for the decline are subject to a DEP enforcement action.[172]

According to the scheme, Class AA waters are to be managed in such a way that "[t]he aquatic life, dissolved oxygen and bacteria content . . . shall be *as naturally occurs*."[173] Additionally, they must support a habitat that could be "characterized as free flowing and natural."[174] Similarly, Class A waters must be supportive of a "natural" habitat such that aquatic life and bacteria content are "as naturally occurs."[175] Even Class B waters require at a minimum that "habitat for fish and other aquatic life . . . be characterized as unimpaired."[176]

According to the statute, the phrase "as naturally occurs" means "conditions with essentially the same physical, chemical and biological characteristics as found in situations with similar habitats free of measurable effects of human activity."[177] The statute goes on to define "natural" as "living in, or as if in, a state of nature not measurably affected by human activity."[178] Given these definitions, water quality standards would appear to be violated, at least as far as Class AA and Class A waters are concerned, wherever conditions in a river or stream are not pristine.

Current DEP regulations allow the agency to specify a minimum flow level "necessary to maintain [the] applicable classification[]."[179] No guidance is given regarding how these levels should be set and, thus far, no minimum flows have ever been required on any Maine river or stream. In place of setting such a minimum level, the DEP has instituted an informal policy that allows waters to be lowered to the so-called 7Q10 level.[180] This policy shows no consideration for either the natural hydrograph or the seasonal needs of the riverine ecosystem.

The lack of minimum flow standards, the informal policies of the DEP, and the present situation in Downeast Maine (which could hardly be characterized as pristine) collectively illustrate that the water classification program is not being

166. ME. REV. STAT. ANN. tit. 38, §§ 464-468 (West 2001).
167. 33 U.S.C.A. §§ 1251-1387 (West 2001).
168. ME. REV. STAT. ANN. tit. 38, § 464(1) (West 2001).
169. *Id.* § 465.
170. *Id.* § 465-A.
171. *Id.* § 451.
172. *Id.*
173. *Id.* § 465(1)(B) (emphasis added).
174. *Id.* § 465(1)(A).
175. *Id.* § 465(2)(B).
176. *Id.* § 465(3).
177. *Id.* § 466(2).
178. *Id.* § 466(9).
179. 06-096 CODE ME. R. § 581-2.
180. Defined as "the minimum seven day flow which occurs once in ten years." *Id.*

implemented to its fullest. Yet, even at its strongest, the remedy provided by the program (the enforcement action) is, like the remedy of riparian law, an after-the-fact solution. The Water Classification Program is not a permit-based, command and control management scheme like the other half of the Clean Water Act, the National Pollution Discharge Elimination System (NPDES).[181] This means that the DEP may enjoin activities as they degrade waters but not in anticipation of their impacts. The possibilities of promulgating regulations under the WQS program, and amending it, are discussed below.

c. The LURC Comprehensive Land Use Plan

According to its enabling statute, the LURC is required to enact a set of land use regulations for the unregulated territories of the state.[182] The land use rules promulgated by the LURC are required by statute to: (1) "[e]ncourage minimal adverse impact of one use upon the use of surrounding areas by setting standards of performance describing desirable and acceptable levels of operation"; (2) "[r]eflect a consideration of the availability and capability of the natural resources base, including soils, topography or sufficient healthful water supplies"; and (3) "[p]rotect and preserve significant natural, scenic and historic features . . . ."[183]

These standards have been incorporated into a comprehensive land use plan that controls the occurrence of certain activities.[184] Depending upon which land use district they occur in, the following activities may require a permit: (1) "agricultural management activities"; (2) "activities affecting the natural flow of rivers streams or brooks"; (3) "shoreland alteration"; (4) "water impoundment"; and (5) "cranberry cultivation."[185] Permits may include terms that work to reduce the impacts of the activities they authorize.[186] Although these activities would seem to cover irrigation one way or another, only one LURC permit has ever been issued limiting irrigation withdrawals. The fact that other irrigators within the unregulated territories are not similarly permitted, means that the comprehensive land use plan is either not being fully implemented, or does not have the necessary scope to properly handle water withdrawal.

A comprehensive land use plan could provide an adequate framework for water withdrawal regulation *if* it were truly comprehensive; but the LURC's control over land use does not extend into regulated territories. Nor does the Comprehensive Plan set quantitative minimum stream flow or lake levels, meaning that a permit's substantive terms are left to the discretion of the agency.

d. Maine River Policy Act[187]

The Maine Rivers Policy Act sets broad policy goals for the protection and restoration of "outstanding" rivers.[188] This Act declares that no new permits will

181. 33 U.S.C. §§ 1342-1346.
182. ME. REV. STAT. ANN. tit. 12, § 685-A (West 2001).
183. *Id.*
184. 04-061 CODE ME. R. § 010-1-187.
185. *Id.* § 10.02 (1-139).
186. *Id.*
187. ME. REV. STAT. ANN. tit. 12, §§ 401-407 (West 2001).
188. ME. REV. STAT. ANN. tit. 12, § 403 (West 2001).

be given for "any water diversion" project as that term is defined in the Maine Waterway Development and Conservation Act (MWDCA).[189] Although the Dennys, Pleasant, Machias, and Narraguagas Rivers all contain segments which are protected by this Act, section 403 limits the term "water diversion project" to mean only those diversions which are part of a "hydropower project."[190] Thus the scope of the Rivers Policy Act is confined to new hydropower developments only.

e. Maine Water Transport Law[191]

In 1987, the Maine Legislature declared, in enacting this statute, that: "the transport of water for commercial purposes in large quantities away from its natural location constitutes a substantial threat to the health, safety and welfare of persons who live in the vicinity of the water and rely on it for daily needs."[192] The statute works by prohibiting, without a permit, the "transport [of] water for commercial purposes by pipeline or other conduit or by tank truck or in a container, greater in size than 10 gallons, beyond the boundaries of the municipality or township in which water is naturally located or any bordering municipality or township."[193] The law is inapplicable to irrigators, however, because it excludes water transported for use in agricultural applications.[194] Even without the exception, the law would only apply in those rare cases where irrigators pumped beyond the confines of their neighboring township or municipality.[195]

The overview of statutes presented above illustrates the piecemeal nature of Maine's existing water law. The state's collection of single purpose water management laws does not connect to form a network of statutes offering the necessary range of management tools needed for controlling rising demand for commercial water use; they fail to address the relationships between different but interrelated resources such as surface water and groundwater. They embody no central strategy for managing the state's most valuable resources. Water law in Maine neither replaces nor supplements the outdated yet extant common law approaches to water allocation, developed in the latter half of the nineteenth century and intended to bolster the state's economy by promoting commercial use of Maine's rivers and streams.

The ecological impacts of low instream flows have been felt in Maine, both in the Downeastern and northern-most portions of the state. Recent events have shown us that during periods of drought, Maine's flowing waters are drastically overburdened by demand for water withdrawal. And yet, when periods of scarcity occur, water literally leaks out through the holes in Maine's water legislation. It is certainly time to plug those holes.

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189. *Id.*

190. *Id.*; ME. REV. STAT. ANN. tit. 38, §§ 630-637 (West 2001).

191. ME. REV. STAT. ANN. tit. 22, §§ 2600, 2660-A (West 2001).

192. *Id.* § 2660.

193. *Id.* § 2660-A(1).

194. *Id.* § 2660-A(2)(B).

195. *Id.* § 2660-A(1). Yet another obstacle to applying this law may be present in the form of the dormant commerce clause. *See, e.g.*, Orlando E. Delogu, *Maine*, *in* 6 WATERS AND WATER RIGHTS 399–400 (Robert G. Beck ed., 1991).

III. SHOULD MAINE ENACT WATER MANAGEMENT LEGISLATION?

A. Regulating Instream Flow Under the State's Water Quality Classification Statute

One possibility for regulating consumptive water use is to use the legislative authority of the state's water quality classification scheme to promulgate minimum stream flow regulations. In 1999, the DEP formulated a draft regulation using this approach and entered into rulemaking.[196] In the face of pressure from the agricultural industry and the governor, however, the agency recently withdrew the draft regulation.[197] As it is likely that this regulatory approach will be considered again as the state reevaluates the need to control water consumption in the future, it is worthwhile to discuss its merits.

As required by the Clean Water Act,[198] Maine has enacted comprehensive water quality standards for all of its intrastate waters.[199] Water quality standards are specific to particular classes of waterbodies and involve two elements: (1) designated uses of a body of water; and (2) numerical and narrative criteria to protect those uses.[200] Though the Clean Water Act was intended to prevent "discharges" of pollution into the nation's waters,[201] it has been established that a state may require compliance with minimum stream flow conditions in order to protect the designated uses of a water way.[202] The DEP's now withdrawn draft minimum flow regulation relied on this interpretation of the Clean Water Act to establish a framework that defined water quality for both rivers and ponds by setting forth minimum stream flow and lake level requirements. [203]

In order to maintain instream flow, the regulation established a numerical criterion known as Aquatic Base Flow (ABF).[204] The ABF is the minimum acceptable discharge per unit area of drainage basin[205] for a given seasonal period.[206] It is calculated from the median of low flows in a watershed or portion of watershed for a specific period of time, such as seven days. Where "adequate flow records" did not exist for a watershed, the regulation resorted to the instream flow suggested by the USFWS in its Interim Regional Policy for New England Stream Flow.[207]

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196. MRA-57 DEP p. 9. Maine Regulations Agenda, September 24, 1999.

197. Susan Young, *Federal Fish Fracas Continues Over Irrigation Policy Debate*, BANGOR DAILY NEWS (July 20, 2000).

198. 33 U.S.C. § 1313(a)(3)(A) (1994).

199. ME. REV. STAT. ANN. tit. 38 §§ 464-470 (West 2001).

200. 33 U.S.C. § 1313(c)(2)(A), (B).

201. 33 U.S.C. § 1251(a) (1994).

202. Pub. Util. Dist. No. 1 of Jefferson County v. Wa. Dep't of Ecology, 511 U.S. 700, 719 (1994).

203. 06-096 CODE ME. R. § 581(2).

204. *Working draft* of 06-096 CODE ME. R. § 581(5) (Mar. 14, 1999) [hereinafter *Working draft*].

205. This unit is known as *cfsm* (cubic feet per second per square mile of drainage area).

206. ABF values are assigned to four seasonal periods: July to September; September to March; March to May; and May to June. This allows minimum flow standards to mimic the natural hydrograph.

207. *See* VERNON LANG, U.S. FISH AND WILDLIFE SERVICE, QUESTIONS AND ANSWERS ON THE NEW ENGLAND FLOW POLICY, app. A (May 11, 1999).

A drainage area feeding a Class AA river segment was considered a "Class AA watershed."[208] The rule limited the total amount of consumptive withdrawals within Class AA watersheds (to less than 0.4 cfsm) and additionally prohibited any withdrawals that would lower instream flows below a specified threshold (4.0 cfsm).[209] Consumptive withdrawals from Class A waters outside of Class AA watersheds were to be increasingly restricted as instream flows decreased and approached ABF, and prohibited when instream flow fell below ABF.[210] Withdrawals from Class B and C waters outside of Class AA watersheds were simply prohibited when instream flow fell below ABF.[211]

The draft rule handled withdrawals from lakes and ponds in a similar fashion. It set forth "natural seasonal low water levels" which represented the maximum allowable level below a lake's normal high water line.[212] Water withdrawals were strictly prohibited where they would: (1) result in lowering lake water levels below the natural seasonal low water level; or (2) cause any outlet of the lake to fall below its ABF.[213]

Although the DEP's rule should be commended for attempting to preserve natural flow characteristics, it is an inadequate way of controlling water withdrawal. Its essential failing is that it does not identify current users, assess their withdrawal levels and allocate specific quantities of water to them. When periods of scarcity arise water users will have no way of knowing how to comply with the minimum flow standards because there is no quantitative measure of how much they are contributing to the problem. Additionally, there is no prospective means for ensuring compliance with the flow standards contained in the rule because the only enforcement mechanism would be an after-the-fact water quality enforcement action.[214] In other words, just like the riparian scheme it is meant to replace, this regulatory method does nothing to avert a tragedy of the commons during dry periods because it offers users no assurances that their competitors are not withdrawing more than their fair share.

If it is accepted that what is lacking is a method for allocating specific quantities of allowed withdrawal among identified users, the state's water quality legislation contains no authority to fill this regulatory gap. Regulations that exceed the rulemaking authority of an agency are subject to judicial review and invalidation under the Maine Administrative Procedures Act (MAPA).[215] Additionally, the Law Court has invalidated agency rules using the non-delegation doctrine[216] where

208. *Working draft* at (5)(A).
209. *Id.* at (5)(A)(1), (2).
210. *Id.* at (5)(B)(1).
211. *Id.* at (5)(C).
212. *Id.* at (1)(F).
213. *Id.*
214. ME. REV. STAT. ANN. tit. 38, § 451 (2001).
215. ME. REV. STAT. ANN. tit. 5, § 8058 (1989); *see also* Martin v. Comm'r of DHS, Kenn. Dkt. No. CV-94-260 (April 4th, 1996) (Maine DHS exceeded its rulemaking authority with overbroad definition of "abuse"); M.H.C.F.C v. Henrietta Goodall Hosp., Kenn. Dkt. No. CV-96-24 (Sept. 11, 1996) (MHCFC exceeded legislative mandate by requiring more information from patients then allowed by statute).
216. This doctrine charges that the delegation of legislative power to executive agencies violates the principle of separation of powers, except where there are legislatively defined "primary standards" specific enough to prevent abuses of agency discretion. Although the doctrine

rules extend, modify, or conflict with statutory authorization.[217] The grant of rulemaking authority contained in the water quality classification system simply does not contemplate the formation of a permit-based system for allocating water rights among multiple water users across the state.[218] Regulation alone will not be able to control consumptive water use in Maine.

B. The Legislative Solution: Regulated Riparianism

A more comprehensive, flexible and prospective approach to stream flow than that found in the water classification act is needed. The WQS program must be amended, or independent water management laws enacted, that are tailored to the particular resource issues facing Maine today, and adaptable to those conflicts that are fast developing.

1. Water Allocation Law in the Northeast: Water Management Policies "From Away"

As early as the 1950s eastern states began replacing their riparian common law with statutes requiring permits for certain water uses.[219] Currently, partial regulatory systems now exist in nearly every eastern state.[220] The primary impetus behind the development of these programs was the failure of riparianism to balance the exercise of private water rights with their impacts on the environment during times of shortage.[221] Across the east, systems of water management have evolved with surprising particularity due to the wide variety of demand, patterns of development and ecological characteristics from state to state. They form a broad spectrum, ranging from extremely focused ad hoc legislation targeting a single practice to comprehensive water allocations systems that regulate nearly every aspect of water usage.[222] The term "regulated riparianism" is used for these modi-

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was originally used to strike down legislation, it has been used to invalidate regulations as well. In both *City of Biddeford v. Biddeford Teachers Ass'n*, 304 A.2d 387, 398-403 (Me. 1973) and *Finks v. Me. State Highway Comm'n*, 328 A.2d 791, 795-800 (Me. 1974), the Law Court invoked the non-delegation doctrine to nullify an administrative action while leaving the statutory scheme in tact.

217. Anheuser-Busch, Inc. v. Walton, 135 Me. 57, 67–68 190 A. 297, 302 (1937) ("[The agency's] power to make rules and regulations extends only to such details of administration as are necessary to carry out and enforce the mandate of the legislature. . . . [Agencies may not engage in] flagrant usurpation[s] of [a] prerogative which belongs to the legislature."); Me. Sch. Admin. Dist. No. 15 v. Raynolds, 413 A.2d 523, 529 (Me. 1980) ("[T]here [must] be sufficient standards—specific or generalized, explicit or implicit to guide the agency in its exercise of authority . . . so that (1) regulation can proceed in accordance with basic policy determinations made by those who represent the electorate and (2) some safeguard is provided to assist in preventing arbitrariness in the exercise of power."); State v. Dube, 409 A.2d 1102, 1104 (Me. 1979) ("The agency must be given clear standards to prevent the exercise of authority beyond the scope intended by the legislature and to assure that the citizen is protected against arbitrary or discriminatory action. . . ."); Frank v. Assessors of Skowhegan, 329 A.2d 167,170 (Me. 1974) (a rule is only valid where the legislature has authorized its promulgation.).

218. *See* ME. REV. STAT. ANN. tit. 39, § 464(5) (West 2001).

219. 1 Beck, *supra* note 60 at 444.

220. *See id.* at 445 (collecting citations).

221. *See e.g.*, Robert H. Abrams, *Replacing Riparianism in the Twenty-First Century*, 36 WAYNE L. REV. 93, 93 (1989).

222. Am. Soc. of Civ. Eng'r., THE REGULATED RIPARIAN MODEL WATER CODE at V (Joseph Dellapenna, ed., 1997) [hereinafter RRMWC].

fications of common law water rights.[223] In facing the need to draft new water law in the State, Maine need not reinvent the wheel. Because of their hydrological similarity to Maine, the water management laws of some of the New England and North Atlantic states contain a number of regulatory components that may be adapted for use at home. These are discussed below.

a. Vermont

Stream flow regulation in Vermont developed primarily in response to the effects of artificial snowmaking and the demands for community water supplies. Snowmaking, in particular, has been the source of fierce battles between environmental organizations seeking to protect the state's freshwater ecosystems and one of the largest and most valuable industries in Vermont.[224] Environmental advocates pressured the Vermont Agency of Natural Resources (ANR) to draft a fully comprehensive water withdrawal regulation.[225] Their efforts led to a negotiated rulemaking process that failed to produce a consensus. Shortly after the breakdown of the negotiation process in 1994, the ANR adopted an interim procedure that addressed only withdrawals for snowmaking.[226] Two years later this procedure was promulgated as a regulation.

The regulation adopted by the ANR operates by specifying terms to be incorporated into a statutorily required stream flow alteration permit. This form of permit was initially intended to address flow modification from hydroelectric dams and gravel mining.[227] According to the permitting statute: "A person shall not change, alter or modify the course, current or cross section of any watercourse with a drainage area of greater than ten square miles at the location of the proposed change. . . ."[228] Permits to do any of these things may be granted where an investigation concludes that there will be no significant damage to fish or wildlife.[229] The permitting statute exempts "accepted agricultural . . . practices," effectively limiting only those water withdrawals from artificial snowmaking.[230]

The regulation's role is to define the parameters of the stream flow alteration permit by specifying a conservation flow defined as the February Median Flow (FMF).[231] New users are required to perform a hydrological study describing their needs, water availability, and any alternatives to their proposed flow alteration. Where permits are approved, withdrawals are limited to 50% of the FMF plus any portion of flow in excess of 1.4 cfsm during the months of October and November, or 1.1 cfsm from December to March.[232] The rule exempts any with-

223. *See* Joseph Dellapenna, *Eastern Water Law: Regulated Riparianism Replaces Riparian Rights, in* THE NATURAL RESOURCES LAW MANUAL 317, 323 (Richard Fink ed., 1995).

224. Joseph S. McLean, Comment, *Streamflow Policy in Vermont: Managing Conflicting Demands on the State's Waters*, 19 VT. L. REV. 191, 192–93 (1994).

225. Interview with Ken Womack, Vice President, Maine Chapter of The Nature Conservancy, in Brunswick, ME (July 6, 1999).

226. VERMONT AGENCY OF NATURAL RESOURCES, GUIDANCE DOCUMENT: ALTERNATIVES ANALYSIS (SUPPLEMENT TO RULES ON WATER WITHDRAWAL FOR SNOWMAKING) (Mar. 22, 1996).

227. *See generally* VT. STAT. ANN. tit. 10 §§ 1001-1032 (Lexis 1998 & Supp. 2001) (outlining permit requirements, public purpose and policy on water withdrawal for snowmaking).

228. *Id.* § 1021(a).

229. *Id.* § 1023(a)(2).

230. *Id.* § 1021(f).

231. VT. CODE R. § 16-03(2), (3). The FMF is site specific where there is adequate data to calculate it, otherwise a state-wide average is used (0.8 cfsm).

232. *Id.* § 16-06(2)(a),(b).

drawal system pumping under a *de minimis* level (0.005 cfsm), and recognizes the aggregate effect of many such systems as a single withdrawal.[233] Withdrawal systems that pre-date the regulation fall within its scope as they expand or within a period of four years after the promulgation of the rule.[234]

The essential features of this withdrawal regulation are: (1) a narrow scope including a single class of users; (2) applicability only to new users, with existing users phased in after a delay period elapses; (3) a threshold use level, or *de minimis* exception; (4) an ABF; and (5) a system for studying and recording hydrological data.[235]

b. New Hampshire

Hydroelectric dams, industrial manufacturing, snowmaking, agriculture and municipal water supply systems are the principal sources of stream flow alteration in New Hampshire.[236] The aggregate effect of so many different consumptive uses prompted the New Hampshire Legislature to enact the New Hampshire Rivers Management and Protection Program (RMPP).[237] Although this statute authorized stream flow regulations over 11 years ago, New Hampshire's Department of Environmental Services (DES) only began drafting regulations in 1999. The DES's proposed rule is currently in the notice and comment phase of public participation, and is expected to be promulgated within the year.[238]

The RMPP allows the state government to designate "significant river segments."[239] The statute authorizes the DES to adopt rules "specifying the standards, criteria, and procedures by which protected instream flow shall be established and enforced for each" of the various classes of protected river segments.[240] The protected instream flows that are established shall "be maintained at all times, except when inflow is less than the protected instream flow level as a result of natural causes."[241] Furthermore, "the maintenance of protected instream flows shall constitute a condition of any permit issued by the [DES] for any project or activity within [a protected segment]."[242]

Relying on this statutory authority, the DES has drafted instream flow rules that apply to consumptive withdrawals of both surface water and groundwater (within 250 feet of the river segment's boundaries)[243]; as well as the management

233. *Id.* § 16-06(5).

234. *Id.* § 16-08. (This means that all systems should theoretically have submitted their studies by July, 2000. The regulation does not specify whether existing systems with withdrawal levels in excess of those allowed by its terms will be acceptable after this date.)

235. *Id.* § 16-03-08.

236. *See* Robert Braile, *State Readies Regulation on River Flow*, THE BOSTON GLOBE, Apr. 11, 1999.

237. N.H. REV. STAT. ANN. §§ 483:1 to :15 (2001).

238. *See* DES, Revised Draft Instream Flow Rules (visited May 25, 1999) *available at* <http://www.state.nh.us/des/rivers/ instream/drftnotc.htm>.

239. *See* N.H. REV. STAT. ANN. § 483:6, 7 (2001).

240. *Id.* § 483:9-c(1). The actual grant of rulemaking authority is found at N.H. REV. STAT. ANN. § 483:11 (IV).

241. *Id.* § 483:9-c (IV).

242. *Id.* § 483:9-c (V).

243. DES, Annotated Draft Instream Flow Rules, Env-C 720.02(a)(1)–(2) (June 10, 2000) *available at* <http://www.des.state.nh.us/rivers/instream/archive/form2/form%20annotated%20rules.doc (last visited Feb. 16, 2002) [hereinafter Draft Instream Flow Rules].

practices of some hydroelectric energy facilities.[244] According to the draft rules, a use of water is consumptive, and thus within the scope of regulation, if: "(1) The return water flow is less than that withdrawn; (2) The water is returned to a location greater than 500 feet from the withdrawal location; or (3) The water is returned at a different time from the withdrawal."[245]

Under the draft regulation, the total amount of flow available for appropriation by affected users at any given moment is determined by the "trigger flow."[246] There are three different trigger flows specified by the rule: Phase I, II and III.[247] A phase I flow corresponds with the "seasonal Q60,"[248] or "the average daily river flow which is equaled or exceeded 60 percent of the time."[249] Similarly, a phase II flow is based on the Q80[250]; and a phase III, the Q90.[251] In order to account for seasonal variations the trigger flows are then divided up again: Summer (June to October); Autumn (November and December); Winter/Northern (January to March); Winter/Southern (January and February); Spring/Northern (April and May); and Spring/Southern (March to May).[252] Using this system, a Phase I, II, and III trigger flow is determined for the Summer, Autumn, Winter and Spring for each of the 110 watersheds in the state.[253]

The regulation would then give the DES the power to limit withdrawals in a variety of situations: (1) when the average daily flow falls below the phase I trigger flow for seven consecutive days, the total watershed-wide consumptive withdrawal is limited; (2) when stream flow falls below the phase II flow for more than seven days, withdrawal must be limited somewhat more sharply; (3) where instream flow falls below the phase III flow for more the seven days the DES must order all affected users to *cease* all "consumptive uses"; and finally (4) Commissioner, with certification from the New Hampshire Fish and Game Department, must order withdrawals ceased wherever he finds that significant adverse impacts will occur to aquatic life.[254]

Existing users are registered, rather than permitted, under this scheme. In the ordinary course of events, a registered user is allowed to continue withdrawing as much water as he always has. An order limiting consumptive water use, however, results in a reduction of the water available to each user proportionate to the amount of water that user has been withdrawing historically, according to records of his usage from the past two years.[255] Thus this system has been referred to as imple-

244. *Id.* at Env-C 720-02(a)(3). This last inclusion only applies to dams that do not store water for "peak" periods, *id.*, and excludes those dams which are operating under a FERC license at the time of promulgation, and those with minimum flow provisions in FERC licenses. *Id.* at 720.02(b), (c).

245. *Id.* at Env-C 720-03(a).

246. *See id.* at Env-C 722.01(c).

247. *Id.*

248. *Id.* at Env-C 723.04(a)(1).

249. *Id.* at Env-C 721.09. The number following the "Q" corresponds with the percentage of time the average daily flow is equaled or exceeded. *Id.* at Env-C 721.10 ("Q80"), 721.11 ("Q90").

250. *Id.* at Env-C 723.04(a)(2).

251. *Id.* at Env-C 723.04(a)(3).

252. *Id.* at Env-C 723.02(a)(1)-(6).

253. *Id.* at Env-C 723.02-04.

254. *Id.* at Env-C 722.02.

255. *Id.* at Env-C 722.06.

menting a "share the pain" approach to water shortage.[256] Finally, as new users come on the scene, the DES must decide how much additional water to allocate to them, on a case by case basis.

This water management system is characterized by: (1) a wide scope, inclusive of all consumptive water uses; (2) application only to special areas (protected river segments); (3) a watershed specific, seasonally varied ABF; and (4) an incremental response to periods of shortage.

c. Massachusetts

In 1985, Massachusetts responded to the intense pressure on its water resources, due in large part to cranberry cultivation, by enacting the Water Management Act. The Department of Environmental Protection (MDEP) subsequently promulgated and implemented regulations.[257] This regulatory system applies to anyone withdrawing over 100,000 gallons of water per day from any "water source," including groundwater.[258]

The program treats new and existing users differently.[259] An existing withdrawal, one with records extending back five years, may be registered with the MDEP, which has some limited power to place conditions on the registrant's withdrawal.[260] Existing withdrawals may then be re-registered every ten years, unless they lapse through non-use, in which case they lose their registration status and must be permitted.[261] Under this scheme, all of the withdrawals existing at the time the regulations came into effect are preserved.

The real impact of the system is on new users, who are required to obtain permits. The MDEP must calculate a "safe yield" for each water source, be it an aquifer, river or lake.[262] This figure represents the total amount of water that is available for withdrawal within a particular source. The safe yield for rivers must be protective of a minimum stream flow, although how this minimum flow is to be determined is not defined.[263] If, after consulting a laundry list of public interest factors, the agency decides that a permit applicant's proposed withdrawal will not adversely affect the minimum flow, they may issue a permit specifying the level, peak and allowable period(s) of withdrawal, and permit duration (not to exceed 20 years).[264]

By strictly controlling new users, the effect of the system is to "put on the brakes." Those looking to pump from a source with a safe yield that is completely allocated are not without hope, however. New users may obtain restrictive easements from registered or permitted users, limiting their withdrawals and freeing up some of the safe yield. Additionally, permitted and registered withdrawals are transferable in whole or in part.[265]

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256. Interview with Ken Womack, Vice President, Maine Chapter of The Nature Conservancy, in Brunswick, ME (July 6, 1999).

257. MASS. GEN. LAWS ch. 21G, §§ 1-19 (West 1994); MASS. REGS. CODE tit. 310, §§ 36.01-.44 (2001).

258. MASS. GEN. LAWS ch. 21G, § 4 (1994); MASS. REGS. CODE tit. 310, § 36.03 (2001).

259. *Compare* MASS. REGS. CODE tit. 310, § 36.04 *with* § 36.17.

260. *Id.* § 36.04.

261. *Id.* § 36.10.

262. *Id.* § 36.31.

263. *Id.*

264. *Id.* § 36.27.

265. *Id.* §§ 36.09, 36.36.

In times of scarcity, the MDEP may declare a "state of water emergency" which authorizes restrictions in withdrawal levels and institutes withdrawal priorities and conservation measures.

In short, the notable components of the Massachusetts Water Management Act are: (1) a threshold use level; (2) a means for dealing with a single user who is collectively pumping more than the threshold amount from several exempted withdrawals; (3) application to surface *and* groundwater; (4) a system for registering existing uses at their existing levels; (5) a permit requirement for new users; (6) a permit duration of 10 to 20 years; (7) an ABF level and allocation methodology; (8) permit transferability; and (9) a response to periods of shortage.

d. Connecticut

Connecticut's Water Diversion Policy Act, enacted in 1982, closely resembles the Massachusetts Water Management Act described above.[266] Connecticut's regulatory scheme applies to anyone withdrawing more than 50,000 gallons of surface or groundwater during a twenty-four-hour period; collecting discharge run-off within a watershed of more than 100 acres; or conducting an interbasin transfer of more than 50,000 gallons in one day.[267] There are more than eight exemptions excluding various different activities and classes of users from the scope of the Act.[268]

Similar to the Water Management Act of Massachusetts, those who were actively withdrawing water prior to the enactment of the statute are required to register their usage within a certain period of time, or else be subjected to a permitting process.[269] New users within the scope of the Act are required to submit a description of their proposed withdrawal along with an alternatives analysis.[270] The regulations are silent, however, on how water is to be allocated in a fashion that protects specific instream flows.

As in Massachusetts, permitted and registered withdrawals are transferable.[271] Finally, the Act provides for response to periods of shortage through the declaration of an emergency state, which allows the agency administering the Act to alter for periods of thirty days the terms of permits.[272]

The Act, and its implementing regulations, may be broken down into the following components: (1) a threshold use level; (2) numerous exempted activities and classes of users; (3) application to both ground *and* surface water; (4) a system for protecting the rights of pre-existing users; (5) a permitting scheme for new users; (6) a permit duration of 25 years – usually limited to 5 years; (7) a fee for withdrawal; (8) permit transferability; and (9) a response to emergency water shortages.

e. Delaware

The Delaware Environmental Protection Act (DEPA)[273] provides that: "No

266. CONN. GEN. STAT. ANN. §§ 22a-365-378 (West 1995).
267. *See* CONN. GEN. STAT. ANN. §§ 22a-377.
268. *Id.*
269. *Id.* § 22a-368.
270. *Id.* § 369.
271. *Id.* § 368.
272. *Id.* § 378.
273. DEL. CODE ANN. tit. 7, §§ 6001-6077 (2000) (implemented by Department of Natural Resources and Environmental Control (DNREC) Regulations Governing the Allocation of Water §§ 1.01-5.06 [hereinafter Allocation Reg.]).

person shall, without first having obtained a permit from the Secretary [of the Delaware Dept. of Natural Resources and Environmental Control (DNREC)], undertake any activity: . . . [i]n a way which may cause or contribute to withdrawal of ground water or surface water or both."[274] The regulatory scheme implementing the Act applies this mandate to anyone withdrawing over 50,000 gallons within twenty-four hours.[275] New and existing users are subjected to the same permitting scheme.[276] Withdrawal limitations are established by reference to a number of qualitative factors, rather than a defined value such as an ABF.[277] Permits are conditioned on a number of obligations such as: (1) maintenance of a monitoring and record keeping system; (2) development of a leak response strategy; (3) implementation of best management practices; and (4) development of a water conservation program.[278] An allocation permit is issued for thirty years and is transferable.[279]

The lack of minimum flow standards reflects the focus of the DEPA on ensuring an adequate drinking water supply rather than ensuring ecological health.

The important elements of this system are: (1) a broad scope covering all uses and all waters; (2) a threshold use level; (3) requirements that apply evenly to both new and existing users; and (4) a system for making allocation decisions based on qualitative factors.

f. Virginia

Although not a northeastern state, Virginia's water allocation system offers an interesting solution for dealing with small areas that have chronic water management problems.[280] Virginia's Surface Water Management Act[281] and associated regulations,[282] authorize the State Water Control Board (SWCB) to establish "surface water management areas" throughout the state. For each area the SWCB establishes a low water flow level.[283] When stream discharge falls below this triggering flow, conservation plans are activated which limit the consumptive water use of those permitted under the Act.[284] The Act exempts those who withdraw less than 300,000 gallons of water per month or whose withdrawals were in existence before the statute unless they have increased or lapsed.[285]

The essential characteristics of this program are: (1) application to surface water only; (2) a threshold use level; (3) applicability only to specified management areas; (4) "grandfathering" of existing uses; (4) a permit requirement for new

274. DEL. CODE ANN. tit. 7, § 6003(a)(3) (1991).

275. Allocation Reg. §1.03.

276. *Id.*

277. This system is still very close to traditional riparianism, as may be seen in its attempt to codify "reasonableness," or, at least, the analysis of reasonableness.

278. Allocation Reg. § 4.03.

279. *Id.* §§ 5.01, 5.04.

280. A similar solution is found in the North Carolina Water Use Act, which makes use of "capacity use areas" in the same way the Virginia Act uses "surface water management areas." N.C. GEN. STAT. §§ 143-215.11-215.22I (1999); VA. CODE ANN. §§ 62.1-242-253 (Michie 2001).

281. VA. CODE ANN. §§ 62.1-242-253 (Michie 2001).

282. 9 VA. ADMIN. CODE §§ 25-220-100—220-330 (West 2002).

283. *Id.* § 25-220-100.

284. *Id.*

285. VA. CODE ANN. § 62.1-243.27.

users; (5) a permit duration of 10 years; (6) transferable permits; (7) a trigger flow initiating conservation provisions; and (8) an ABF.

2. The Anatomy of a Water Withdrawal Permit System: A Legislative Suggestion

Dissecting the water management laws outlined above and assembling those features most suitable for use in Maine, yields a list of provisions that should be considered in drafting a future water allocation law for the State.

Common law water rights are fragmented by resource classification: groundwater, diffuse surface water, standing surface water, navigable running waters and non-navigable running waters. The disparate treatment of these classes of water ignores the hydrological connections between them. There are strong arguments for integrating the management of all of the water resources of the state.[286] As has been noted of Maine: "[The] treatment of surface and groundwater under incompatible legal doctrines, can stifle efforts to manage either type."[287] Many states recognized this problem and have integrated ground and surface water management.[288] Florida has also added diffuse surface water—runoff such as storm water—to its program as well.[289] Conjunctive or integrated management systems prevent users from shifting sources to evade regulation and ensure an effective response to water conservation during times of shortage.

A shift from surface to groundwater consumption has been proposed as a solution to the impacts of water withdrawal.[290] Although this tactic may prove beneficial to a certain extent, groundwater is hydrologically connected to surface water and over extraction will ultimately lead to the same ecological problems caused by surface water extraction. The proposed shift has important ramifications in view of the fact that use of ground and surface water are legally distinct under Maine law. Groundwater extraction is not subject to reasonable use requirements, except to the extent that it may not interfere with drinking water supplies.[291] Like many of those states reviewed above, Maine's water management system must integrate the management of ground and surface water.

Management scope may be defined geographically as well as by resource classification. Regions that consistently experience shortages may be targeted for use restrictions.[292] This method is useful in controlling hot spots. At first glance, regional targeting may appear useful for solving the problems in Maine's Downeastern region. Water management issues in Maine are not limited merely to

286. *See* DAWSON, *supra* note 85, at 18; Sherk, *supra* note 4, at 292. *See also* Regulated Riparian Model Water Code [hereinafter RRMWC] §§ 1R-1-15, 9R-2-01-05.

287. *See* DAWSON, *supra* note 85, at 18.

288. *See, e.g.*, FLA. STAT. ANN. § 373.403-373.466 (West 2000); CONN. GEN. STAT. § 22a-367, 368 (West 1995); DEL. CODE ANN. tit. 7 § 6003 (1996 & Supp. 2000); IND. CODE ANN. § 13-18-3-1 repealed (Michie 2000); IOWA CODE ANN. § 455B (West 1997); KY. REV. STAT. ANN. §§ 151.120, 151.150 (Michie 1996); MASS. GEN. LAWS ANN. ch. 21G, §§ 1 to 19 (West 1994); MINN. STAT. ANN. § 103F, 103G (West 1997 & Supp. 2001); N.J. STAT. ANN. § 58-4A-2 repealed (Supp. 2001); N.C. GEN. STAT. § 143-215.21 (1999).

289. *See* FLA. STAT. ANN. § 373.019(16) (West 2000).

290. Mary Anne Clancy, *King Pledges His Support For Blueberry Irrigation*, BANGOR DAILY NEWS (July 31, 1999).

291. *See* Chase v. Silverstone, 62 Me. 175, 188 (1873); Delogu *supra* note 195.

292. *See, e.g.*, VA. CODE ANN. §§ 62.1 to 62.247 (Michie 2001). ALA. CODE §§ 9-10B-3—1.B21-25 (Supp. 2000) ("capacity stress areas"); N.C. GEN. STAT. §§ 143-215.13-215.16 (1999) ("capacity use areas").

the Downeastern region of the State, however. As other forms of agriculture expand, additional consumptive uses such as snowmaking and industrial manufacturing grow, and municipal demands continue to increase, the state will soon be faced with an apportionment dilemma that is statewide. Additionally, such schemes are inflexible as they require fresh legislative or regulatory action to declare and develop management programs for new regions. This impedes the state's ability to respond to new resource conflicts as they form.

Another means of limiting management scope is to limit regulatory protections to specific river segments, lakes or aquifers. This approach allows the state to avoid regulating where it deems ecological considerations outweighed by the need for economic development. This method has, however, opened the door to contentious political battles over the classification of state waters in New Hampshire, where local governments have a large part of the responsibility for classifying their waters.[293] It is possible, and preferable, to avoid this situation by reaching all surface waters. In this way, the agencies charged with water management may reach all problem areas and still retain discretion to relax restrictions where necessary by adjusting minimum flow standards. Any scheme Maine adopts should provide for statewide coverage of surface and groundwater.

a. Scope of Uses Covered

Programs may be tailored to meet regional problems by limiting their application in terms of type and extent of use. Most regulated riparian states exclude withdrawals of water below a threshold level from the requirements of the permitting process (Massachusetts—100,000 gpd, lowered if the water supply is threatened; Connecticut and Delaware—less than 50,000 gpd; Virginia—10,000 gpd.[294] *De minimis* exceptions are subject to abuse, and statutes containing them must incorporate a provision that prohibits the accumulation of many exempted withdrawals by one user. Even with such a provision, threshold levels may result in cumulative effects.

Maine should strike the balance between an overbroad, and burdensome, regulatory system and one that is subject to abuse, by adopting a small *de minimis* exception expressed in terms of $feet^3/ml^2$ of watershed and not gallons/day. Additionally, threshold use levels should vary from watershed to watershed depending upon demand and hydrological features.

Frequently permit programs exclude whole classes of uses: livestock watering, certain forms of agriculture, domestic uses, public utilities, water for fire emergencies, and municipal or public water supply.[295] Alternatively, a permit scheme can single out certain uses for regulation, such as Vermont's snowmaking rule. In many states, exemptions result from political rather than practical considerations.[296] Courts in some jurisdictions have prevented the exemptions from swallowing the regulation by avoiding a finding of statutory preemption and allowing common

293. *See* Robert Braile, *Ski Areas' Agreement on Ecology Questioned*, BOSTON GLOBE, June 25, 2000, *available at* 2000 WL3332569.

294. Sherk, *supra* note 4 at 299-300. Florida, Georgia, Indiana, New Jersey, New York, North Carolina, Ohio, South Carolina, Wisconsin, and Michigan all have a 100,000 gpd threshold use level. Sherk, *supra* note 5, at 298 n.58.

295. 1 Beck, *supra* note 60, § 9.03(a)(3), 458-460.

296. TARLOCK, *supra* note 58, at § 3.96 (citing KY. REV. STAT. § 151.120, which exempts irrigation withdrawals, electric utilities, and water injected into the subsurface for petroleum recovery).

law principles to operate through gaps in the water law.[297] Inevitably, allowing any class of users to be excluded from the operation of a water management system opens the door to abuse and ad hoc amendments. The only exception worthy of such consideration is withdrawal by municipalities for drinking water supplies. Yet even municipal drinking water withdrawals should be required to comply with the reporting and data keeping provisions of a regulated riparian statute.[298]

As demand for consumption has risen, many states have limited access to water resources based on the nature and importance of a proposed use. The most basic form of this measure is the requirement that all consumptive water usage be "beneficial."[299] The beneficial use standard is generally so easy to meet that it is effectively useless as a screen. This has led some states to list classes of uses that are per se beneficial and then prioritize these uses—with municipal drinking water supply generally heading the list. The approach is useful where the level of demand is such that different types of uses are struggling against one another.

b. Mechanisms for Maintaining Instream Flows

There are generally three stages involved in setting instream flow restrictions: (1) setting the optimum flows to be maintained; (2) allocating the waters in excess of this optimum flow; and (3) developing a response to periods of low flow.

In the first stage, regulators find a basis, such as an historical average or an ecological study, for setting a quantitative optimum stream flow (Aquatic Base Flow, ABF). Seasonal variation in the natural flow regime is essential to the functioning of freshwater ecosystems. Accordingly, the ABF must vary seasonally in a way that mimics the natural flow regime. Seasonal variations may themselves vary geographically. New Hampshire's proposed regulatory system takes this dimension into account by setting different seasonal variations for different regions of the state.[300] Variations in geology, soil composition, microclimate, and vegetative cover make all hydrological units unique. For this reason, ABF should also vary by watershed, as reviewed above in the programs of Vermont, New Hampshire and Massachusetts.[301]

Waters that flow in excess of a watershed's ABF are available for allocation.[302] This quantity is often termed the "safe yield." Allocation is usually made by allowing existing users to continue using (at least a portion) what they have always used, and then dispersing the remaining water among new users in accordance with the reasonableness of, and benefits associated with, their proposed use.[303]

297. Wisconsin v. Zawistowski, 290 N.W.2d 303, 309 (Wis. 1980) (holding that even though water withdrawal for cranberry cultivation was exempted from regulation, the use was still subject to reasonable use limitations).

298. *See* RRMWC §§ 6R-1-06, 7R-3-05.

299. *See, e.g.*, FLA. STAT. ANN. § 373.016(4)(a) (West 2000).

300. Spring and winter are defined differently for the northern and southern parts of the state.

301. The alternative to calculating this huge matrix of base flows is to set a statewide or regional ABF, such as the one suggested by the USFWS in its Interim Regional Policy for New England Stream Flow Recommendations.

302. *See supra* Part III. B.1.c (material regarding Massachusetts' Water Management Act).

303. *Compare supra* Part III.B.1.e (materials concerning Delaware) *with* Florida, FLA. STAT. ANN. § 373.016(4)(a) (West 2000) (decisions regarding the issuance of permits to new users depend on a determination of whether the use is a "reasonable-beneficial" use) *and* Minnesota, MINN. STAT. ANN. § 105.4(I)(a) (West 1997) (water is allocated on the basis of a hierarchy of five prioritized uses).

Yearly variations in climate and precipitation will eventually bring periods of scarcity and reduced safe yields. For this reason any water withdrawal system must find some way to account for periods of drought where flows fall below ABF. The programs of Massachusetts, Connecticut, and Delaware, are examples of one approach to dealing with resource scarcity: the creation of a state of emergency in which unspecified restrictions are imposed upon consumptive users. These states give total discretion to the agency to limit water use. A more sophisticated method to deal with low flow periods has been proposed in New Hampshire's "share the pain" provision, which provides for an incremental response to varying degrees of drought, by proportionately decreasing the withdrawal level by each user. A similar program involving *pro rata* reductions is used in Alabama.[304] New Hampshire's proposed regulations would contain a dual system of protections: low flow "triggers" which work in tandem with biological ones activated by a monitoring agency.

Dams are one of the primary sources of flow alteration in the State. Any instream flow management scheme in Maine must be coordinated with the body of legislation that controls flow regulation below dams. This means that there should be no jurisdictional barriers dividing consumptive use decisionmaking and regulated flow decisionmaking. The best way to avoid this divide, is to allow a single agency, a separate administrative body composed of members of each concerned agency, to control instream flow policy.

c. Permits

The operative component of a regulated riparian system is the permit. Functionally, the permit is used to keep track of the available safe yield[305] and to provide a means of enforcement.[306] They are also useful for incorporating procedural requirements, attaching conditions, financing administrative costs and ensuring the availability of hydrological data.[307] Permits must be stable enough to provide expectations to those who obtain them and flexible enough to adjust for sudden ecological changes.

Permit duration has sparked much debate.[308] Proponents of long duration or even perpetual permits assert that they are necessary to stimulate investment in the water resources. Proponents of short term permitting seek frequent redistribution of the resources in order to accommodate new users and recondition permits to suit changing ecological needs. A balance must be struck that "provide[s] a sufficient period to enable investors to accomplish their goals, or at least amortize their investment, while preventing the monopolization of water by the earliest users."[309] Twenty years is the most common duration.[310] In Maine, where water management has only recently become a source of debate, and complete hydrological data

304. ALA. CODE §§ 9-10B-1-9-10B-30 (Supp. 2000).
305. *See* RRMWC § 3R-2-01-04, 7R-1-01(e) (1).
306. *Id.* § 5R-4-01-5R-4-04.
307. *Id.* § 7R-1-01.
308. 1 Beck, *supra* note 60, § 9.03(a)(4).
309. *Id.* § 9.03(a)(4), at 464.
310. This is the duration used in the RRMWC (§ 7R-1-02). *But see* Florida, FLA. STAT. ANN. § 373.236 (West 2000) (50 years); Georgia, GA. CODE ANN. § 12-5-97(a) (2001) (50 years); Mississippi, MISS. CODE ANN. § 51-3-9(1) (1972) (10 years); Maryland, MD. CODE ANN. ENVIR. §§ 5-510 (1996) (2 years); Arkansas, ARK. CODE ANN. § 15-22-215 (Michie 2000) (1 year). Other systems allow for permit durations that last for the period of the investment. *See* RRMWC § 7R-1-02; North Carolina, N.C. GEN. STAT. § 143-215.16(a) (1999).

is incomplete, it seems unwise to issue lengthy permits that will lock agencies into levels of use that may have not been correctly set.

Water monopolies may be avoided by making water rights transferable. Transfers may be encouraged or coerced in a variety of ways: (1) agencies may refuse to renew permits[311]; (2) agencies may alter permits upon renewal[312]; (3) water rights may be directly transferable under the regulatory scheme; or (4) new users may secure restrictive easements from existing permitted users in order to "free-up" water. Perhaps the most efficient method is to allow direct transfer of permitted rights within a watershed subject to environmental review by an agency such as the DEP.

Permits conditions may be used as an additional environmental safeguard. The issuance of a water allocation permit in Massachusetts' triggers that state's environmental impact review statute. Similarly, Delaware and Vermont require the completion of various environmental investigations and alternatives analyses. More common provisions require record keeping or the payment of fees. [313]

Finally, permits enable enforcement. Violating the terms of a permit may subject the permit holder to penalties, or legal action (civil and/or criminal), or result in suspension or revocation.[314]

In Maine, administration of the permit scheme is an important consideration. Traditionally, resource management has been jurisdictionally divided between the organized and unorganized portions of the State. For example, modification of a stream bank is subject to a DEP administered Natural Resources Protection Act (NRPA) permit in an organized municipality, and a LURC administered Comprehensive Plan permit in an unorganized township.[315] Consistent results are established, in theory, by requiring the LURC's plan to accord with the requirements of the NRPA. This traditional division of labor may make it more efficient to opt for shared administration of a water management statute between LURC and the DEP. In order to ensure consistency across the State a single agency, the DEP, should be responsible for setting and reviewing optimal flow levels. Aside from that function, both agencies would be equally responsible for issuing, monitoring and enforcing permits in their respective jurisdictions.

C. Constitutional Considerations: Private Property Limitations on Flow Regulation

1. The Federal Takings Clause

The Fifth Amendment of the United States Constitution stands as a barrier between public environmental concerns and private property interests.[316] The "takings" clause marks the boundary beyond which environmental restrictions on

311. 1 Beck, *supra* note 60, at 493-500 (noting that renewal is often premised on the continued reasonableness of the use).

312. *Id.* § 9.03(d), at 509-12; *see also* Delaware, Regulations Governing the Allocation of Water § 1.01 (1987) (making use of the doctrine of equitable apportionment).

313. 1 Beck, *supra* note 60, § 9.03(d) at 509-12. *See also* RRMWC § 4R-1-07 to 08.

314. *See* 1 Beck, *supra* note 60, § 9.03(d) at 509-12.

315. *Infra* Part II.C.3.C.

316. U.S. CONST. amend. V ("No person shall be . . . deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use, without just compensation.").

the exercise of private property rights may not be placed without the payment of just compensation. A permit based water allocation scheme places finite limits on the use of privately held riparian rights. Riparian rights are appurtenant to the ownership of real property and are, accordingly, viewed as a form of private property. Nonetheless, riparian rights are considered incomplete property interests, and the expectations held by a riparian proprietor are somewhat weaker than privately held interests in real property.[317]

Riparian rights are given less constitutional protection due to their usufructory nature. The right to use water has never been recognized as an absolute or complete property interest.[318] Similarly, the public's interest in water, as a shared resource, often prevails over private property rights to appropriate it. Justice Oliver Wendell Holmes put this limitation forward in the oft-cited *Hudson County Water Co. v. McCarter*:

> [I]t appears to us that few public interests are more obvious, indisputable and independent of particular theory than the interest of the public of a State to maintain the rivers that are wholly within it substantially undiminished except by such drafts upon them as the guardian of the public welfare may permit for the purpose of turning them to a more perfect use. The public interest is omnipresent wherever there is a State, and grows more pressing as population grows. It is fundamental, and we are of the opinion that the private property of riparian proprietors cannot be supposed to have deeper roots. Whether it be said that such an interest justifies the cutting down by statute, without compensation, in the exercise of police power, of what otherwise would be private rights of property, or that apart from statute those rights do not go to the height of what the defendant seeks to do, the result is the same. . . . The private right to appropriate is subject to not only to the rights of lower owners but to the initial limitation that it may not substantially diminish one of the great foundations of public welfare and health.[319]

Finally, public water use rights protected by the public trust doctrine limit private ownership of navigable waters.[320] These legal limitations on private ownership of water have, for the most part, discouraged federal constitutional challenges to water regulation on takings grounds among the eastern states.[321]

In spite of the lesser property status of water rights, the takings clause cannot be ignored. The current takings framework analysis that has formed from the series of relatively recent Supreme Court cases provides a number of considerations for states imposing environmental regulations: (1) the restriction must "sub-

317. *See* ROBERT MELTZ, DWIGHT H. MERRIAM & RICHARD M. FRANK, THE TAKINGS ISSUE: CONSTITUTIONAL LIMITS ON LAND-USE CONTROL AND ENVIRONMENTAL REGULATION 458 (1999) [hereinafter MELTZ ET AL., THE THE TAKINGS ISSUE].

318. Tyler v. Wilkinson, 24 F. Cas. 472, 474 (C.C.D.R.I. 1827) (No. 14,312) ("In virtue of this ownership he has a right to the use of the water. . . . But, strictly speaking, he has no property in the water itself; but a simple use of it while it passes along."); United States v. Willow River Power Co., 324 U.S. 499, 510 (1945) ("Rights, property or otherwise, which are absolute against all the world are certainly rare, and water rights are not among them.").

319. Hudson County Water Co. v. McCarter, 209 U.S. 349, 356 (1908).

320. *See* Jack H. Archer & Terrance W. Stone, *The Interaction of the Public Trust and the "Takings" Doctrines: Protecting Wetlands and Critical Coastal Areas*, 20 VT. L. REV. 81, 95 (1995). *See generally* Richard Ausness, *Water Rights, The Public Trust Doctrine, and the Protection of Instream Uses*, 1986 U. ILL. L. REV. 407 (1986).

321. *See* Omernik v. Wisconsin, 218 N.W.2d 734 (Wis. 1974) *(cited in* 1 Beck, *supra* note 60, § 9.04(a) note 734).

stantially advance legitimate state interests"[322]; (2) the presence of a "roughly proportional" [323] "essential nexus" [324] between the asserted state interest and the restrictions imposed; (3) the degree to which the restrictions imposed impair "investment-backed expectations"[325]; and (4) the level of economic devaluation of the property affected.[326]

Challenges to regulated riparianism are most likely to allege interference with investment backed expectations. To the extent that such a claim is colorable, states have tried to avoid such challenges by treating existing consumptive uses differently from new ones.[327] Interference with the economic expectations and obligations of existing users during the transition to regulated water use may be minimized by allowing current users to simply register withdrawals based on past levels of use within a given period of time after water restrictions take effect. Permits must then be obtained for all new uses. Where the safe yield is already fully appropriated by existing users, new users may be forced purchase transferable water rights from them. Registrations may then lapse after a period of time and be replaced by permits.

It is questionable, however, whether such precautions are necessary to guard against federal takings challenges. A significant exception to the Takings Clause involves uses of private property that violate "existing rules or understandings" of state law.[328] One such "existing rule or understanding" of Maine law is the public servitude for fish passage; and the public use rights of navigation, fishing and fowling.[329] Although non-navigable rivers are recognized by Maine common law as private (non-trust) property, land uses that interfere with state public use rights elsewhere may be restricted without incurring takings liability because the land was subject to "pre-existing limitation[s] upon the landowner's title."[330] Similarly, a state may invoke its police power to prevent nuisances without running

322. Agins v. City of Tiburon, 447 U.S. 255, 260 (1980).

323. Dolan v. City of Tigard, 512 U.S. 374, 391 (1994) (requiring a "rough proportionality" between the benefits derived from the regulation and its financial impact on those regulated).

324. Nollan v. California Coastal Comm'n, 483 U.S. 825, 837 (1987).

325. Penn Cent. Trans. Co. v. New York, 438 U.S. 104, 124 (1978).

326. Lucas v. South Carolina Coastal Council, 505 U.S. 1003, 1015-19 (1992) (holding that the deprivation of all economically viable use of land is a taking per se). *See also* Florida Rock Indus., Inc. v. U.S., 18 F.3d 1560, 1564-65 (Fed. Cir. 1994); Love Ladies Harbor, Inc. v. United States, 28 F.3d 1171 (Fed. Cir. 1994).

327. 1 Beck, *supra* note 60, § 9.04(a).

328. Lucas v. South Carolina Coastal Council, 505 U.S. at 1030. The *Lucas* Court stated the following:

> In light of our traditional resort to "existing understandings that stem from an independent source such as state law" to define the range of interests that qualify for protection as "property" under the Fifth and Fourteenth Amendments . . ., this recognition that the Takings Clause does not require compensation when an owner is barred from putting land to use that is proscribed by those "existing rules or understandings" is surely unexceptional.

Id. (internal citations omitted).

329. *See generally* Graham G. Waite, *Public Rights in Maine Waters*, 17 ME. L. REV. 161, 172-73 (1965).

330. Lucas v. South Carolina Coastal Council, 505 U.S. at 1028-29.

afoul of the Takings Clause.[331] Both exceptions would be applicable if Maine were to regulate riparianism. The imposition of a partial regulatory restriction on a qualified private property rights, such as riparian water rights, does not amount to a taking under the federal Constitution, because landowners acquired title to their land subject to *preexisting* restraints on its use.

2. *Protection of Water Rights Under The Maine State Constitution*

Constitutional guarantees of private property protection are largely the same under the Federal and Maine State Constitutions.[332] State and federal interpretations of these rights vary somewhat with respect to private property interests in water, however. Although the Law Court has said that a riparian proprietor "does not own the water itself . . ., but he has . . . the right to the use and benefit of it,"[333] it has also issued a number of other statements which afford riparian rights significant constitutional protection. In a 1917 advisory opinion to the State legislature, the Law Court stated:

> The only limitation upon the absolute rights of riparian proprietors in non-tidal rivers and streams is the public right of passage. . . . Subject to this qualified right of passage, non-tidal rivers and streams are absolutely private.
>
> . . . All the rights which the riparian proprietor has in the running streams are as certain, as absolute, and as inviolable as any other species of property, and constitute a part of his land as much as the trees that grow thereon, or the mill or the house that he builds thereon. He can be deprived of them only through the power of eminent domain constitutionally exercised.[334]

In *Hamor v. Bar Harbor Water Co.*[335] the Court considered the legality of allowing a State chartered corporation to divert water away from downstream riparians in order to supply a nearby town with drinking water. The Court held that:

> There can be no question but that the act granting the right to the defendants to take, detain, and use the water from the sources, and for the purposes therein specified, is constitutional. The decisions are numerous that private property may be taken by the sovereign power of the government, in the exercise of the right of eminent domain, for purposes of public utility. . . . In such case the interests of the public, from considerations affecting the health and comfort of densely populated communities, require that private property may be thus appropriated for uses which are deemed public. It is thus that the right of property of

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331. This is known as the "*nuisance exception* to the taking[s] guarantee." Penn Cent. Transp. Co. v. New York City, 438 U.S. 104, 145 (1978) (emphasis added). *See also* Mugler v. Kansas, 123 U.S. 623, 665 (1887) ("[A]ll property in this country is held under the implied obligation that the owner's use of it shall not be injurious to the community."). The *Lucas* decision, which dealt with the so-called "total taking," narrowed the nuisance exception's application to only those situations where it is necessary to prevent "grave threats to the lives and property of others." Lucas v. South Carolina Coastal Council, 505 U.S. at 1029 n.16. But, in doing so, the Court neither explicitly overruled or criticized *Keystone Bituminous Coal Ass'n v. DeBenedictus*, 480 U.S. 470 (1987), in which the Court expressly reaffirmed the exception in the context of partial takings. *See* MELTZ ET AL., THE TAKINGS ISSUE 189.

332. Me. Const. Art. I, § 21 ("Private property shall not be taken for public uses without just compensation; nor unless the public exigencies require it.").

333. Opinion of the Justices, 118 Me. 503, 507 (1917).

334. *Id.*

335. 78 Me. 127, 3 A. 40 (1886).

> private individuals, whether it be in lands, or the usufructory interest in flowing water, is made to subserve the public exigencies, *and for which, under the constitution, "just compensation" is guaranteed and must be made.*[336]

Nearly a century later, in *Kennebunk, Kennebunkport and Wells Water District v. Maine Turnpike Authority*,[337] the Law Court again considered the constitutionality of state interference with the rights of riparian proprietors: There is no reason why the same requirements should not apply equally to the taking of water from a stream in which the plaintiffs have valuable riparian rights as to the taking of land. Both are equally the subjects of property and of compensation. . . ."[338]

> It is true that the waters of such streams may be taken for a public use. This may be done by the State itself [or] by a public Agency created by the State. . . . Such taking *and diminution of the rights of the riparian proprietors*, be they either upper or lower proprietors, however, is the taking of private property for a public use, and this can be accomplished only in the manner prescribed by law and then only when fair compensation is paid therefor[e].[339]

In 1966, shortly after deciding the *Kennebunk* case, the Law Court was called upon once more, in its advisory capacity, to consider the legality of a proposed piece of legislation that would have resulted in depriving riparian proprietors of their usufructory rights to estuarine waters.[340] In its opinion the Court reaffirmed "[t]hat the State may take such riparian rights . . . by eminent domain proceedings" but only on the condition of payment of just compensation.[341]

The state actions challenged, or discussed, in the cases cited above are distinct from the enactment of a water management scheme. In both the *Hamor* and *Kennebunk* cases, the State was appropriating water to its own use, significantly curtailing water rights in the process. Moreover, both cases involved uses of the appropriated water that benefited but a single locality. By proposing to regulate stream flow on Maine rivers, the State is not appropriating water for its own use, but acting to prevent an adverse impact of a particular class of land uses, something which results in diffuse public benefits. There is no "taking" in such a case, because landowners never possessed a right to withdraw water to the detriment of the waterbody.

Further, in the Law Court's 1966 advisory opinion, it reviewed an absolute deprivation of riparian rights. By comparison, regulated riparianism does not completely extinguish the water rights of private landowners. Rather, it limits these rights in an attempt to coordinate competing resource demands and to safeguard one of Maine's most valuable natural resources.

More recently, the state has developed a takings analysis that is designed to determine when a state "has gone too far." This analysis was first expressed in *Seven Islands Land Co. v. Maine Land Use Regulation Commission*[342]: "The proper procedure for analyzing takings questions is to determine the value of the property at the time of the governmental restriction and compare that with its value after-

336. *Id.* at 132, 3 A. at 41 (emphasis added).

337. 145 Me. 35, 71 A.2d 520 (1950).

338. *Id.* at 50, 71 A.2d at 529 (quoting Hamor v. Bar Harbor Water Co., 78 Me. 127, 134, 3 A. 40, 42 (1886)).

339. *Id.* at 48, 71 A.2d at 528.

340. Opinion of the Justices, 216 A.2d 656 (Me. 1966).

341. *Id.* at 660.

342. 450 A.2d 475 (Me. 1982).

wards, to determine whether the diminution, if any, is so substantial as to strip the property of all practical value."[343]

A similar approach may been seen in recent statutory attempts to establish clear cut rules for takings, by requiring compensation for state actions that result in losses of value of greater than a certain percentage.[344] It is difficult to see how partial limitations on riparian water rights could result in such a significant loss in property value.

Put simply, fear of incurring takings challenges, grounded in either the Maine Constitution or the Federal Constitution, should not be the overriding concern of regulators contemplating the transition to managed water consumption.

IV. CONCLUSION

The flow of Maine's fresh water is controlled by a system of common law rights that applies unevenly to surface water and groundwater, running water and standing, navigable and non-navigable. The venerable doctrine of riparian rights, premised on sharing and reasonable use, operates only where water is consistently abundant and relatively untapped. In times of scarcity, however, the riparian system inevitably leads to a tragedy of the commons, damaging the State's most critical ecosystems. A patchwork of single purpose statutes has been erected that flatly ignores the hydrological connections between related resources. Water management, to the extent that it exists at all, is fragmented not only across water classification, but also across jurisdiction. Large-scale irrigation is unrestricted in one location while only a few miles away, on the other side of a county line, water withdrawn from the same river is controlled by permit. This type of management is not only ecologically irresponsible, it is patently unfair to those involved.

Developing administratively unenforceable flow standards for Maine's rivers by rulemaking under statutes that are ill-suited for the purpose will only add to the *ad hoc*-ery and inconsistency that characterizes the present state of Maine water law. By developing, instead, a comprehensive scheme for managing instream flow and groundwater withdrawal the State will better serve its future, especially in light of recent spurts of growth in both population and industry. The hesitation thus far is mainly due to the misconception that all environmental protections necessarily lead to economic hardship. This misunderstanding is especially unwarranted in Maine where flowing waters foster instream uses of rivers and ponds that have traditionally been one of the backbones of Maine's rural economy. Until that mindset is discarded, however, those species that rely on, and those people who use, value and appreciate, water *in* a river will be at the mercy of those who, merely by virtue of their location, can siphon it *out* in any way and in any amount they choose.

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343. *Id.* at 482.

344. *See* L.D. 1990 (119th Legis. 1999), AN ACT TO REQUIRE ECONOMIC AND TAKING IMPACT ANALYSES TO PROTECT INDIVIDUAL RIGHTS.