TOWARD A WATER QUALITY MANAGEMENT STRATEGY FOR THE FLATHEAD BASIN

by

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ABSTRACT

The Flathead Basin illustrates the problem of an area rich in scenic and recreational value that attracts development which, in turn, threatens those values. Flathead Lake and its pristine water quality provide the centerpiece for the Basin's appeal. The challenge, therefore, is to protect the Basin's water quality.

The Flathead Basin consists of many political jurisdictions with varying mandates and regulatory authority. In 1983, the Montana State Legislature created the Flathead Basin Commission to address water quality concerns in a regional context. Other regions have experienced water quality problems similar to the ones facing the Flathead; therefore, the areas of Dillon, Colorado, and Lake Tahoe, California/Nevada are studied to lend insight as to the nature of the problem and possible solutions. The case studies measure the importance of technical monitoring, citizen involvement, variations in regulatory authority, and varying perceptions of property rights. Both case studies reveal that, to be effective, water quality management must achieve a proper mix of these elements.

Using the Dillon and Tahoe examples and an investigation into certain aspects of property rights, elements of a water quality management strategy are suggested for the Flathead Basin, with the Flathead Basin Commission as the lead agency. The strategy suggests a multi-faceted approach incorporating technical monitoring, citizen participation and regulation. The citizen involvement process includes participation in regulation design, and education of the "commons" dilemma. Effective regulation would require interagency coordination and the use of incentives. The strategy elements are designed not only to protect the Flathead Basin's water quality, but also to equitably distribute the costs of water quality protection.

CHAPTER 1

THE FLATHEAD BASIN

Introduction

Flathead Lake is recognized as one of the most attractive locations in America (see map, Figure 1). The setting of crystal-clear waters, majestic mountains and abundant fish and wildlife has held Montanans and visitors spellbound for centuries. It is no surprise that the Flathead Basin has experienced an influx of development and has felt the accompanying pressures on its natural resources.[1] But society's demands have begun to compromise the Flathead's aesthetic values and ecological resources. Symptomatic algal blooms have made unprecedented appearances in the past six years, thus threatening fish, water supplies and recreational values.[2] Area limnologists[3] have said that unless corrective measures are promptly installed, the lake will lose its present pristine water quality within a generation.

Basin residents are searching for ways to preserve their precious resource. In the mid-1970s, concern over a prospective coal mining operation in the headwaters of the North Fork of the Flathead across the Canadian border spurred activists to create the Flathead Coalition. However, it soon became evident that the threat of the Cabin Creek mine in British Columbia was not the

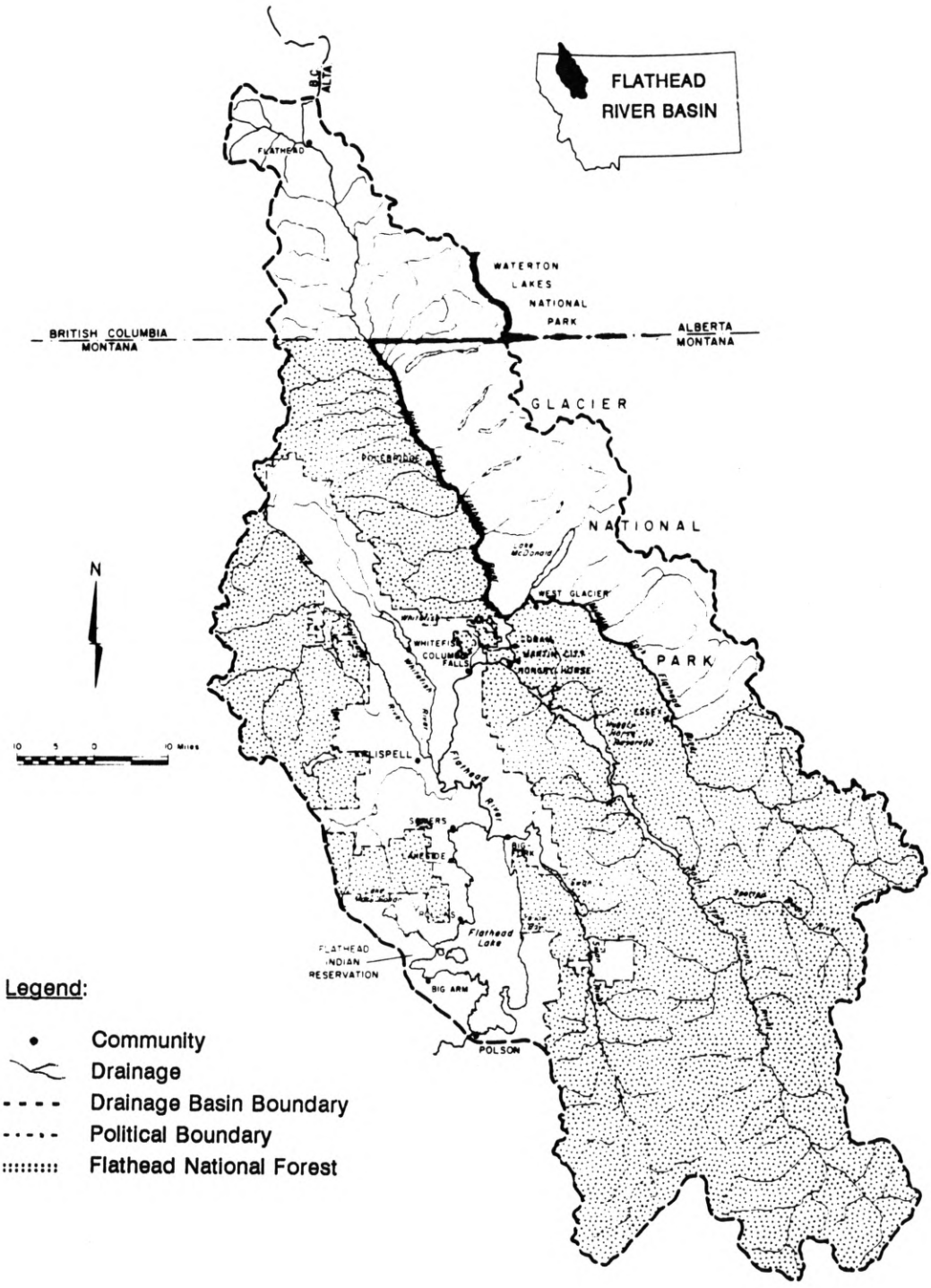


Figure 1. Map showing location of Flathead Lake.

only problem confronting the Flathead Basin.[4] Management practices at Hungry Horse Dam on the South Fork of the Flathead River and at Kerr Dam below Flathead Lake drew fire. Subdivisions and other lakeshore development seemed to grow by geometric proportions. Logging and mining activities increased. Conversely, fish populations dropped and the lake's water clarity declined noticeably. Everyone was cashing in on the opportunity for profit -- at the lake's expense.

Early Lake Protection Efforts

Recognizing that action was necessary to protect the lake, area residents convinced the Environmental Protection Agency (EPA) that baseline studies of the lake's characteristics were needed before remedial actions could be recommended. In 1976, the EPA initiated a 208 Water Project Study[5] to determine water quality in the basin. In 1978, the EPA enlarged the 208 concept and appointed a steering committee to look beyond the manifestations of diminished water quality to the activities causing them. This steering committee, called the Flathead River Basin Environmental Impact Study (FRBEIS)[6], reviewed all activities affecting the basin, including population growth, economic projects, government structures, climate, recreation use and fish and wildlife populations. FRBEIS focused on the inter-relationships among these activities as crucial to comprehensive water quality management.

The FRBEIS study inventoried the basin's natural resources in order to establish a baseline of resource conditions against which future changes could be measured. The study also identified the environmental conditions needed to maintain the region's human and natural values.

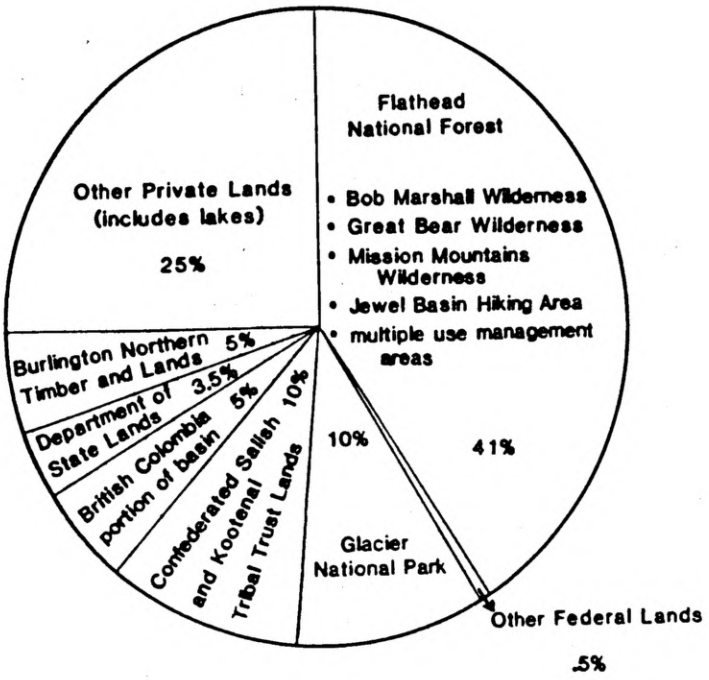
As a result of the FRBEIS efforts, the 1983 Montana Legislature established the Flathead Basin Commission as a permanent government entity to remedy the issues confronting the Flathead. The Flathead Basin Commission was directed to encourage cooperation and coordination among the various land management jurisdictions[7] throughout the basin (see Table 1 and Figure 2). These agencies regulate activities which cross an international border, various state, federal and private lands, two county lines, and the boundary of the Flathead Indian Reservation. The area contains proposed coal mines, oil and gas leases, timber sales, recreational subdivisions and urban expansion.

These development pressures and the tangled jurisdictional network present both challenges and opportunities for the Flathead Basin. First, the nature of the problem must be understood; the sources of pollution must be revealed, as must the rationale of the lake basin's users. Once these have been identified, various management strategies can be explored, with an eye on which ones can work most effectively in tandem with evolving perceptions of property rights and heretofore thought of "free-goods" such as Flathead Lake.

Table 1. Flathead River Basin land ownership.

	Acreage	Percent Ownership
U.S. Portion of Basin		
Private Lands:		
Burlington Northern Timber and Lands	274,372	
Other private (includes lakes)	1,567,022	2.5
Confederated Salish & Kootenai Tribal Trust Lands:		
Mission Mountain Tribal Wilderness	89,500	1.5
Other Trust lands	484,128	8.5
State Lands:		
Department of State Lands		
Coal Creek State Forest	15,064	
Stillwater State Forest	93,815	
Swan River State Forest	38,345	
Other state forest lands	41,749	
Other state lands	1,722	3.5
Department of Fish, Wildlife & Parks	3,025	
Federal Lands:		
Glacier National Park	614,882	10.0
Flathead National Forest		
Bob Marshall Wilderness	709,356	
Great Bear Wilderness	286,700	
Mission Mountains Wilderness	73,877	
Jewel Basin Hiking Area	15,000	
Multiple-use management areas	1,264,999	41.0
U.S. Fish & Wildlife Service		
National Bison Range	18,540	
Pablo Wildlife Refuge	2,500	
Ninepipes Wildlife Refuge	2,023	
Swan River Wildlife Refuge	1,576	
Other federal wildlife lands	4,555	0.5
Subtotal	5,405,550	
British Columbia Portion of Basin	274,280	5.0
Total	5,679,830	100.0

(Source: U.S. Environmental Protection Agency, Flathead River Basin Environmental Impact Study, 1983.)



(Source: U.S. Environmental Protection Agency, Flathead River Basin Environmental Impact Study, 1983.)

Figure 2. Flathead River Basin land ownership (based on Table 1).

A Lake's Aging Process

Eutrophication is the aging process by which all lakes progress from clear, nonproductive bodies (oligotrophic), to algae-laden lakes, to very shallow and marshy bogs, eventually turning into meadows. The eutrophication of a lake can be greatly accelerated by man when certain nutrients (needed for algal growth but naturally present in only limited quantities) are added to a water body. Flathead Lake has been termed by area limnologists[8] as presently an oligotrophic water body, but moving dangerously closer to a mesotrophic (in

transition from a clear, nonproductive lake to a murky, less attractive one). These scientists fear that recently increased nutrient-loading is hastening this transition.[9]

In Flathead Lake and most of the lakes in the Flathead drainage, the limiting nutrient is phosphorus.[10] Excess phosphorus can encourage algal blooms, hastening the lake's evolution into marshland. Phosphorus enters the lake from point and nonpoint sources. It can be carried on sediment particles eroded from forested, agricultural or urban lands. It may be introduced from dairies, septic tanks, fertilizer and sewage treatment plants or from cattle. Phosphorus can also come from natural sources such as the decaying bodies of spawned-out salmon.

The bulk of the phosphorus load comes with the sediment in the spring run-off from the streams that feed the lake. The exact relationship between sediment and phosphorus is not fully understood, but it is clear that increased sediment loads accelerate the rate of aging of valley lakes and cause premature death.

Sources of Pollution

Activities both around the shore of Flathead Lake and along upstream drainages are accelerating Flathead Lake's eutrophication. This degradation has been documented by a number of studies[11] that suggest two sources of water

pollution, point and nonpoint, contribute significantly to the problem. Controversy continues over the nature and extent of each of these types of pollution.

Sources of water pollution are categorized under two general types: point source and nonpoint source. The Federal Clean Water Act[12] defines "point source" as:

> . . . any discernable, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, well, conduit, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating facility, from which pollutants are or may be discharged. [Section 502(14)]

The same law defines "nonpoint source" as:

> . . . agriculturally and silviculturally related nonpoint sources of pollution, nonrelated sources of pollution, including new, current, and abandoned surface and underground mine runoff, and construction activity related sources of pollution. [Section 208(b)(2)(F,G,H)]

Point source pollution is exemplified by inadequate municipal wastewater treatment, failure of septic systems and unchecked industrial effluents. Nonpoint source pollution is illustrated by runoff from land under a variety of land-management practices including forestry, agriculture, subdivisions and commercial development. The distinction, in practice, between the two sources is not always clear.

In general, point sources of water pollution can be more easily remedied than nonpoint sources, although the technical solutions can be extremely costly.[13] Point sources can be more easily identified, located and treated. Point source problems usually occur within a single political jurisdiction, such as factories or

sewage treatment plants in a municipality. Once identified, authority to limit them can be readily established. The Federal Clean Water Act provides specific standards for point source water quality, and enforcement can be carried out with a minimum of political and jurisdictional problems. Sophisticated technologies[14] can provide secondary and tertiary sewage treatment for urban sewage and industrial effluents. Advanced wastewater treatment plants (AWTs) are either already in place or will soon be installed in the communities on Flathead Lake, yet nutrient loading still occurs at an alarming rate.

Nonpoint sources of water pollution are the result of a variety of land uses; consequently, land use management practices must be used to control nonpoint sources. Many efforts have been attempted in this area, but in a fragmented, disjointed fashion. The basin's land management agencies -- the Forest Service; the Conservation Districts; the Soil Conservation Service; the county planning boards; the Department of Highways; State Lands; Fish, Wildlife and Parks; Health and Environmental Sciences; and the Confederated Tribes, to name a few -- have adopted water quality management practices.[15] However, little formal or systematic coordination takes place among these agencies. The lack of reliable data underscores the need for more inter-agency cooperation to determine the extent of nonpoint source water pollution in Flathead Lake.

Endnotes

[1]U.S. Environmental Protection Agency, Flathead River Basin Environmental Impact Study Final Report (Helena, MT: Author, 1983).

[2]Ibid.

[3]Abraham Horpstadt, Montana Department of Health and Environmental Sciences, Helena, MT, personal communications with author, June 1984-August 1985; and Jack Stanford, Flathead Lake Biological Station, Yellow Bay, MT, personal communications with author, June-August 1984.

[4]David K. Wilson, "Cabin Creek and International Law: An Overview," Public Land Law Review 5 (Spring 1984): 110-127.

[5]Montana Department of Health and Environmental Sciences, Water Quality Bureau, "Montana Statewide 208 Surface and Groundwater Quality Assessment and Management Alternatives: Preliminary Draft," mimeograph (Helena, MT: Author, 1978).

[6]U.S. Environmental Protection Agency, op. cit.

[7]Ibid.; and Montana Department of Health and Environmental Sciences, Water Quality Bureau, Strategy for Limiting Phosphorus in Flathead Lake (Helena, MT: Author, April 1984).

[8]Horpstadt, op. cit.; and Stanford, op. cit.

[9]U.S. Environmental Protection Agency, op. cit.; and Montana Department of Health and Environmental Sciences, Water Quality Bureau (1984), op. cit.

[10]Montana Department of Health and Environmental Sciences, Water Quality Bureau (1978), op. cit.

[11]Ibid.; U.S. Environmental Protection Agency, op. cit.; U.S. Forest Service, Northwest Region, "A Forest Service Assessment of Water Pollution Problems on National Forests in Montana," mimeograph (Missoula, MT: Author, 1977); Montana Department of Health and Environmental Sciences, Water Quality Bureau, "An Evaluation of Potential Water Pollution Problems from Subdivisions in Montana's Statewide 208 Study Area," mimeograph (Helena, MT: Author, 1977); Montana Department of Health and Environmental Sciences, Water Quality Bureau, Water Quality Inventory and Management Plan for the Flathead River Basin (Helena, MT: Author, 1976); and Steven Bodmer and N. Stark, "Final Report on Studies of Non-Point Pollution in the Upper Flathead Drainage," mimeograph (Missoula, MT: University of Montana, March 1980).

[12]Federal Clean Water Act, U.S. Government, Public Law 92-500.

[13]Mark Spratt, Flathead Drainage 208 Project Director, Kalispell, MT, personal communication with author, April 1985.

[14]E. Dersch and E. Hood, "Watershed Organizations: Impact on Water Quality Management," mimeograph (Lansing, MI: Department of Natural Resources, Michigan State University, 1974); Montana Department of Community Affairs, "An Analysis of State Programs Relating to Land and Water Planning and Management in Montana," mimeograph (Helena, MT: Author, 1978); Montana Department of Health and Environmental Sciences, Water Quality Bureau (1978), op. cit.; Steven Potts, U.S. Environmental Protection Agency, Helena, MT, personal communications with author, June-December 1984; and Steven Pilcher, Water Quality Bureau, DHES, Helena, MT, personal communications with author, July 1984-August 1985.

[15]U.S. Forest Service, Northwest Region, op. cit.; Peter Husby, Montana Department of Natural Resources and Conservation, Conservation Districts, Helena, MT, personal communication with author, July 1984; Kathy Jones, Flathead Conservation District, Kalispell, MT, personal communication with author, July 1984; Henry Oldenburg, Flathead County Planning Office, Kalispell, MT, personal communications with author, June-August 1984; and Jerald Sorensen, Lake County Planning Office, Polson, MT, personal communications with author, June 1984-December 1985.

CHAPTER 2

NATURE OF THE PROBLEM

Some problems facing the Flathead Basin are technical: identifying and monitoring the sources of water pollution require scientific expertise and data collection. Some problems are political: state and local representatives worry about how their constituents will accept water quality controls. Some problems are legal and administrative: a confusing layering of political jurisdictions, conflicting agency standards and ambiguous laws defy an easy remedy to water quality problems. Some problems are economic: who will bear the costs? Loggers, dam operators, or lakeside lot owners will not undertake water quality control efforts without assurance that the costs of the controls have been fairly apportioned and that they will be effective.

Tragedy of the Commons

The economic aspect is perhaps the fundamental, underlying problem. Clean air and clean water are often taken for granted and considered free and abundant goods. But this attitude toward these resources leads to the situation that ecologist Garrett Hardin calls the "tragedy of the commons."[1] Hardin describes a process by which land is degraded, when each herdsman tries to

maximize individual gain by grazing additional cows on a common pasture. No individual feels that one additional cow grazing on the pasture will ruin the land, but when all the shepherds add one more animal, the pasture is indeed ruined. This "commons" analogy is appropriate to the situation at Flathead Lake. Each additional lakeshore summer home means profits for developers and pleasure for owners. The septic system of a single lakeshore home will not cause the lake's demise. One more clear-cut or new logging road on national forest land will not by itself contribute significantly to the basin's nutrient input. However, the decline in water quality caused by steady, incremental lakeshore development is shared by all basin residents, just as overgrazing threatens the common pasture. The capacity of the basin's water to absorb pollution is finite; use of the basin's water as a "commons" must end.

Paradigm Lost: The Flawed Premise of Abundance

Historically, citizens have taken for granted an abundance of natural resources. Western civilization's view of the right to property is based on this premise. Indeed, the existence of the New World's ecological abundance supported the libertarian doctrines of Adam Smith and John Locke, doctrines which are generally accepted as the basis of the institutions of our society. Political ecologist William Ophuls explains Locke's ideas about property as follows:

> For example, Locke (1690, paras. 27-29) justifies the institution of property by saying that it derives from the mixture of a man's labor with the original commons of nature. But he continually emphasizes that for one man to make part of what is the common heritage of mankind his own property does not work to the disadvantage of other men. Why? 'Because there was still enough and as good left; and more than the yet unprovided could use' (para. 33).[2]

Although this assumption of abundant resources may have been reasonable 300 years ago, we are beginning to face the limits of natural abundance. Documented incidents of overtaxed natural resources point to the reality of natural resource scarcity. In the Flathead Basin example, recent toxic algae blooms on Flathead Lake are symptomatic of an increased burden on its carrying capacity and thus of a scarcity of clean water. Clearly, the commons abundance premise of philosophers like Adam Smith and John Locke[3] can no longer be supported.

Aristotle said, "What is common to the greatest number gets the least amount of care."[4] The Flathead Basin provides economic and recreational uses for a variety of interests, but the commons around which virtually all of these activities center is Flathead Lake and its associated pristine water quality. Accordingly, this commons appears to get the least amount of care.

Unfortunately, the notion of resource abundance continues to be a popularly-held social view. William Ophuls explains the connection between the idea of abundant "common" resources and individual actions that result in destruction of those resources:

> Pollution also exemplifies the self-destructive logic of the commons, for it simply reverses the dynamic of competitive over-exploitation without altering its nature: the cost to me of controlling my emissions is so much larger than my proportionate share of the environmental damage they cause that it will always be rational for me to pollute if I can get away with it. In short, it profits me to harm the public.[5]

The logic of this point of view is difficult to dispute unless the underlying assumptions are challenged. The paradigm of abundance must change if the problems of resource scarcity are to be successfully met.

However, according to Ophuls, democratic principles do not lend themselves well to dealing with problems of ecological scarcity. Authority and regulation will be increasingly relied upon.

> To sum up, scarcity [Flathead's diminishing water quality] in general erodes the material basis for the relatively benign individualistic and democratic politics characteristic of the modern industrial era; ecological scarcity in particular seems to engender overwhelming pressures toward political systems that are frankly authoritarian by current standards, for there seems to be no other way to check competitive over-exploitation of resources and to assure competent direction of a complex society's affairs in accord with steady-state imperatives.[6]

We in the United States have espoused our democratic principles in terms of economic growth. Our growth has been premised upon ecological abundance. As we reach our ecological limits, our standard of living will drop because of scarcity-induced inflation and the internalization of environmental costs. The costs will increase across the board for ecologically scarce goods. Maybe the question should be not only who will bear the costs (someone certainly must), but also how will we accept and apportion these increased costs?

Unfortunately, all ecological resources, like the Flathead's watershed, are viewed as common property resources. Yet we usually fail to see that resources that seem to be private property are in fact part of the ecological commons and thus part of the problem. The lakeside home builder, the Christmas tree grower, the dam operators and the loggers all strive to maximize profits without paying the costs of their cumulative actions -- downstream flooding, siltation, and the decline of the watershed's water quality.

Why Voluntary Compliance Won't Work

The limitations of voluntary compliance to best management practices (BMPs) exemplifies the tragedy of the commons. A logger, rancher or farmer who pays the costs for water quality maintenance efforts at his own expense will be at a competitive disadvantage unless everyone else undertakes the same efforts. It simply does not follow that all would voluntarily comply with pollution prevention practices. It is entirely rational for individuals to try to make others pay for the costs of a public good that benefits everyone equally. If our country had to depend on voluntary taxes for defense expenditures, the results would be predictable. Following the logic of this example, compulsory, not voluntary, adherence to best management practices would best provide for the common property resource of pristine water quality. Ophuls claims that destruction is inevitable unless government intervenes:

> It therefore appears that if under conditions of ecological scarcity individuals rationally pursue their material self

> interest unrestrained by a common authority that upholds the common interest, the eventual result is bound to be common environmental ruin. In that case, we must have political institutions that preserve the ecological common good from destruction by unrestrained human acts.[7]

The deterioration of Flathead Basin's water quality resource has been demonstrated. Voluntary self-restraint is not enough to protect the common property resource. Even if people were more aware of the nature of the problem, government regulation would still be necessary. As Thomas Hobbes points out, scarcity necessitates regulatory authority:

> The life of man in an anarchic 'state of nature' is solitary, poor, nasty, brutish, and short; to prevent the perpetual struggle for power in a war of all against all, there must be a civil authority capable of keeping the peace by regulating property and other scarce goods. Scarcity thus makes politics inescapable.[8]

The implication of the Hobbesian argument is clear. If resources, to which Flathead Lake's water quality can claim membership, are scantier than human wants, they will have to be allocated by governments; otherwise serious conflict would result.

The Challenge for Authority

The governments involved in the Flathead Basin in this resource allocation include federal, state, county, municipal and local jurisdictions. However, none of them has a central, overriding mandate to protect the basin's water quality. To some degree the Montana Water Quality Bureau[9] and the Flathead Basin Commission do, as they are respectively mandated to uphold water quality

standards and to serve as a forum on water quality issues, but they lack the authority to coordinate the multiple jurisdictions.

Choosing the appropriate political institutions will be difficult. Recognition that authority is necessary to protect the Flathead Basin's water quality must be achieved. To attain this recognition, technical data must first be collected to document any changes in the basin's water quality. To be effective, governments and other regulatory authorities must recognize the social, political and economic constraints to any approach taken toward the previously conceived "free good." How well these constraints are considered and how well the authority is mandated will determine the success of political institutions in governing common property resources like the quality of the Flathead Basin's water. Ophuls sums up:

> All that remains is to alter the rational, self-seeking behavior of the individuals and groups using the commons. This must be done by collective means, for the dynamic of the tragedy of the commons is so powerful that individuals are virtually powerless to extricate themselves unaided from its remorseless working. We must indeed be 'forced to be free' by our political institutions.[10]

The challenge to a government authority given the task of protecting Flathead Lake's water quality is twofold. First, it must dismiss the myth of abundance. This will involve educating the public on the nature and causes of the lake's pollution and establishing acceptable limits. Second, to be effective, it must develop a management strategy that equitably distributes the costs of pollution abatement among all users.

Recent Water Quality Management Efforts

Technical Efforts

In recent years, more studies[11] have been completed to refine the technical nature of the problem by pinpointing polluting sources and studying the relationships among various water management practices. Summarizing the results of these technical studies, the most recent report[12] concludes that the waters in the Flathead Basin remain in good condition, but are threatened by significant water quality problems. The technical studies[13] continue to affirm that dam flow regulation, phosphorus loading, the introduction of non-native fish species and food sources, potential mine impacts, and forest practices are the main threats to the basin's water quality.

Jack Stanford, Director of the Flathead Lake Research Station, asserts that these problems must be treated in holistic fashion to reveal interrelationships and effectuate solutions.

> Problems related to regulation of water volume in the Flathead are not going to be solved unless flow management is arranged from an ecosystem perspective. . . . The main problem, however, is not a lack of understanding of the ecological problems or corrective actions. Rather, the mitigation process is presently not conducive to an integrated approach, owing to differing jurisdictions and mitigation mandates. . . .[14]

Technical activities monitoring the basin's water quality have been extensive and the Flathead Basin Commission has assumed a lead role in promoting the importance and continuance of these efforts.[15] But it remains

apparent, as Stanford recognized, that technical monitoring, though essential, will not of itself lead to management action.

Regulatory Efforts -- The Phosphorus Detergent Ban

From 1985 through 1987, the Flathead Basin Commission played an active role in the adoption of a phosphorus detergent ban in the two basin counties. In 1985, through intense lobbying efforts by the Commission, state legislation was passed that enables counties meeting certain criteria to prohibit the sale of phosphorus detergents. The criteria required that counties have a natural lake with a documented nutrient-loading problem, and that other efforts were being undertaken in the county to reduce the amount of phosphorus entering surface waters.[16] The bill's passage was opposed vigorously by the detergent industry, and received extensive press coverage over the debate.

After the county option to ban the sale of phosphorus detergents became law, the individual counties held public hearings to determine whether or not to exercise the option. Again, the detergent industry lobbied hard to prevent county adoption, and extensive testimony was submitted by both sides of the issue. Advertisements were placed in local newspapers, and local television stations aired the hearings. Both Flathead and Lake County commissions passed resolutions to ban the sale of phosphorus detergents from store shelves, over the strenuous objections of the detergent industry but with support from the local populace.

The phosphorus ban debate can be instructive relative to how a water quality management strategy might be pursued. The regulation prohibiting the sale (not the use) of phosphorus detergents, by itself, represents only a token effort in the reduction of nutrients, because phosphorus detergents contribute only a minute portion of the total phosphorus input to the basin.[17] However, the debate at both the state and county levels served to raise citizen awareness about the nature of the Flathead Basin's water quality problem. Even though opposed by large corporate interests, the ban's adoption revealed that regulation will be more readily accepted by an informed citizenry.

Other Efforts

In addition to supporting legislative and technical efforts, the Flathead Basin Commission began a formal public education program in 1986.[18] With the help of grant monies, the Commission hired a public education coordinator who developed a series of events, projects, and publications regarding the maintenance of clean water in the Flathead Basin. (A schedule of these activities is listed in Appendix B for comparison with this paper's suggested citizen involvement program outlined in Appendix A.) Unless new grant monies are forthcoming, this program will sunset in 1990.[19]

Other efforts made to date toward halting deteriorating water quality in the basin involve either more technical studies or are directed towards point source treatment. Both Flathead and Lake Counties have attempted to incorporate

water quality preservation in land use plans, but public acceptance of land use planning has been low.[20]

The point source treatment efforts to regulate nutrient loading to Flathead Lake have concentrated on the installation of municipal sewage treatment plants. Municipal wastewater treatment is most often a starting point for solving water quality problems because:

(1) the point source nature of the problem is easily identified;

(2) the technology exists for curtailing the problem;

(3) the political jurisdiction is site-specific;

(4) the enforcing agency received federal funding, outside of state coffers, and, most importantly,

(5) the brunt of the costs is not borne by the local citizenry.[21]

The citizens of Kalispell, for instance, will pay only a small fraction of the cost of an upgraded water treatment plant; the federal government through the Environmental Protection Agency (EPA) picks up the lion's share. The Montana Water Quality Bureau, which determines the need for upgrading municipal treatment, also receives federal funding. None of the Bureau's money comes from the state or local sources.

Solutions do not come as easily for nonpoint sources. A lot owner may resent restrictions on lakeshore building or real estate speculation. The costs of building an adequate septic system may be prohibitive. Water quality protection would increase costs for hydropower developers, logging interests,

subdivision developers, oil and gas lessees, farmers and ranchers, and many others. Who should be required to pay the costs of land-use regulations designed to benefit the whole community? Why should long-time residents have to shoulder costs created by new land developers whose incremental projects are exacerbating the water quality problem? How can these costs be equitably distributed? To what extent is the inability to distribute costs part of the problem?

Future Possibilities for Authority

Although these questions are not easily answered, a legal framework exists for a coordinated, regional approach to water quality management in the Flathead Basin.[22] Appropriate laws, including the Federal Clean Water Act[23] and the Montana Water Quality Act,[24] provide the necessary enabling authority. But the laws do not always include a mechanism for implementation. The challenge is not simply to provide a legal basis for action, but also to provide social and economic incentives within the laws.

Effective solutions to the distribution of costs incurred by environmental regulation depend on citizen education and involvement throughout the planning process. Guided by an innovative, regional administration specifically mandated to protect the Flathead Basin's clean water, a coordinated approach to water quality management options could lead to an equitable apportionment of costs in the Flathead Basin.

Since its creation in 1983, the Flathead Basin Commission has concentrated on promoting technical studies, serving as an information source, and acting as a forum for discussion on basin water quality issues.[25] Technical studies and citizen education activities are undeniably essential elements to a successful strategy. If management efforts are expanded, however, a strategy may have a greater chance for success.

Endnotes

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CHAPTER 3

CASE STUDIES

Regional basin water quality problems are not unique to Flathead Lake. Other drainages have struggled to maintain high standards of water quality, using different approaches with varying results.[1] Case studies of Lake Tahoe, California, and Dillon Reservoir, Colorado, show problems similar to the Flathead. Proceeding in marked contrast to one another in their pollution abatement efforts, the two case studies provide clues for an effective course of action for the Flathead Basin.

Lake Tahoe

Lake Tahoe is the centerpiece of the Sierras, famous for its crystalline blue water, steep granite slopes and pine forests. The lake is half in California and half in Nevada and faces pressures from population growth and development associated with gambling and tourism. Although it is not as large as Flathead, the pressures of visitation and development have been even greater. Authorities in the area have struggled to protect its scenic values.[2]

EPA Study Results

Recognizing a threat to Tahoe Basin water quality, the EPA funded a 208 Water Project Study of Lake Tahoe in 1976.[3] The study identified nutrient sources and limits and recommended a monitoring program. A water quality summary was developed, and the authority of relevant agencies delineated.

The studies indicated that nutrients from sewage and erosion posed the biggest problems, with land-use trends directly tied to algal growth. Surface runoff was identified as the dominant source of nutrients; nutrient loads were estimated to be from 5 to 16 times greater than would be found under natural conditions. Algal growth had to be prevented to maintain the crystal-clear, oligotrophic characteristics of Lake Tahoe. This meant reducing the nutrient load to the lake, principally nitrogen and phosphorus. Sewage has been exported from the basin since 1969, but nutrient loading to the lake is still increasing rapidly. Point source nutrients represent only 15-25 percent of the total load. Precipitation, runoff and natural sedimentation contribute well over 50 percent of the total nutrients. But approximately 25 percent of the nutrient yield comes from man-induced, nonpoint sources such as impervious surfaces including roads, pavement, parking lots, houses and other non-vegetated areas.

Tahoe Regional Planning Authority

Several attempts were made to establish regional authority over the basin's water quality problems. The first of these, the Tahoe Regional Planning Authority (TRPA),[4] developed proposals to control identified water quality

problems in the basin; however, it did not require strict adherence to the plan. The TRPA identified four key areas of concern: (1) erosion and urban runoff control projects, (2) on-site surface runoff control projects, (3) prevention of pollution from new development, and (4) improvement of forest management practices. The TRPA sought to prohibit, or at least curtail, any new subdivision development and to limit the use of impervious surfaces on individual land parcels. It also proposed halting construction in riparian zones and stopping all basin development unless projects were implemented to offset erosion and control urban runoff. The TRPA depended on voluntary compliance from a wide range of interests: California and Nevada, gambling interests, land speculators, tourists, environmentalists and others.[5]

The TRPA, however, disapproved of only five percent of the development proposals it reviewed, and it became apparent that a more effective authority was needed. Disputes between Nevada and California created a split over the basin's management. No longer willing to cooperate, both states went in separate directions -- California forming the California Tahoe Regional Planning Authority and Nevada falling back on existing jurisdictions.

The TRPA did accomplish some important tasks. It organized the Tahoe Basin Association of Governments, which had the power to enforce existing land-use controls and to provide various public services such as erosion control projects. Through monitoring and associated studies, the TRPA found that the impact of land development depends on the carrying capacity of a given area.

The TRPA used this information to develop a land capability classification system[6] dividing Lake Tahoe Basin lands into three categories: high, moderate and low erosion hazard. The respective carrying capacities of each category would determine the nature and extent of development permitted.

Unfortunately, the TRPA has not been able to coordinate Tahoe Basin development with the land capability classes.[7] If development continues at its current pace, suspended sediments will increase by 27 times the natural rate.[8] Attempts to coordinate voluntary management practices in the Tahoe Basin met with little success. But even without regulatory authority, the TRPA and its successor, the California TRPA, laid much of the foundation for management options for Lake Tahoe.

After the TRPA's demise in 1978, the California Lahontan Regional Board was given authority to develop a water quality management plan for the Tahoe Basin.[9] The plan's implementation was pursuant to a memorandum of understanding among the relevant land-use managers. These entities formed a Mitigation Task Force which sought to obtain federal grants for sewage plants and to develop an environmental impact fee structure. The main purpose of the fee structure was to purchase lots unsuitable for development. A development priority system of transferable development rights was also established, which would provide further compensation to owners of lots in areas unsuitable for development. If a landowner owned lots unsuitable for development, he could either request payment from the impact fee fund or sell his development right

from that property to another owner who could increase his permitted development density accordingly.

The draft plan was distributed for possible adoption to the various agencies with program authority, including the Department of Highways, Fish and Wildlife and county planning boards. A 20-year schedule of compliance was adopted, and several state agencies took the initiative and started soil erosion control projects and on-site surface runoff controls. The Lahontan Regional Board's CTRPA plan adopted other measures. It recommended changing zoning ordinances to prohibit development in excess of land capability in stream environment zones. It proposed rezoning unsubdivided lands now zoned for urban use as general forest land to prevent new subdivisions. The Federal Clean Water Act requires the U.S. Forest Service to comply with all state, interstate and local water pollution control laws, and the CTRPA has taken advantage of this provision by adopting several ordinances to control forestry practices.

An Incentive

Another interesting provision of the Lahontan plan outlines an "offset" policy. The offset provision prevents new development unless accompanied by offsetting remedial erosion control projects. Offset schedules must be adopted, phasing in new development as erosion and urban runoff control projects are built. A permit quota system based on the carrying capacity of the basin was developed, and performance bonds are required to assure compliance and

enforcement. Voluntary offset fees, similar to performance bonds, give a developer the option of paying the fee and being reimbursed by local government after installing remedial erosion projects, or waiting until local government makes the necessary commitments for development to go forward. The Lahontan's offset fee formula is intended to accomplish several tasks. It determines the total cost of erosion and urban runoff control projects and the anticipated local share of these costs, considering the availability of state and federal grants. It also ensures fairness to all taxpayers by not rapidly increasing taxes to pay for increased protection measures needed by new development, while taking into account the extent of the increased erosion at the site by placing the costs of remedial projects squarely on the developer causing the problem.

The transferable development rights concept, incorporated with a land acquisition and offset policy, allows for a controlled rate of growth, compensating landowners who will not be allowed to develop. According to the Lahontan Plan, "The prohibitions do not directly prohibit construction of new subdivisions, development of environmentally sensitive lands, or development which is not offset by remedial erosion control measures. Rather the discharge of sediment and nutrients which results from such development is prohibited."[10]

Conclusion for Lake Tahoe

The Tahoe example shows several innovations, and it also reveals pitfalls to avoid. Tahoe incorporated a novel idea in property rights; an ability to

transfer a right to develop from one land parcel to another. It also developed an offset policy; if a development causes erosion, the developer must either contribute toward future remedial projects, or withhold development until the governing body pays for such projects according to a capital improvements program. Tahoe, however, failed at establishing an effective authority that could implement these tools. Tahoe residents may now know that they have a water quality problem, but they were not offered enough incentives or enough regulation to effectuate a solution. The developers did not like restrictions placed on their rights to develop, and the various authorities could not agree on what regulations should be adopted. As a result, few mitigation tools are in place and Lake Tahoe's water quality continues to deteriorate.

Lake Tahoe's example illustrates that it is not enough to simply make the local citizenry aware of the problem. The process of redefining property rights will be a long one, and ultimately it may be the best solution. In the meantime, a combination of regulations, incentives, citizen education and involvement -- a "carrot and stick" approach, if you will -- will be required in order to curb water quality deterioration.

Dillon Reservoir

Dillon Reservoir, Colorado, provides another example of an area rich in scenic value threatened by the pressures of development. Located high in the Rockies 40 miles west of Denver, the five-mile-long, two-mile-wide reservoir

supplies 40 percent of Denver's drinking water. An estimated 84,000 visitors travel to the area in the winter.

Built in 1963, the Dillon Reservoir drains elevations from 13,000 to 8,500 feet and enjoys oligotrophic status. The reservoir's crystal clear water results from granitic soils low in nutrients; the consequent beauty has attracted a proliferation of lakeside dwellers. But this development has had its impact. Recent summers have witnessed fish kills, increasing algal blooms, odors, and a loss of water transparency.[11]

Citizen Initiative

Area residents acknowledged the threat to their lake and began to organize. Most of the basin's inhabitants, including developers and environmentalists, recognized the need for action. Ski area operators joined with lakeside dwellers as well as county planners, mine operators, fishermen, developers and hikers. It was apparent that the degradation of the lake's water quality would mean higher water treatment costs for the city of Denver, lower property value to lakeside residents, and a loss of aesthetic appeal for watershed residents and tourists. A study was initiated to pinpoint the problems and suggest remedial measures to maintain the lake's oligotrophic status.[12]

The six municipalities in the Dillon basin already had built or were building advanced wastewater treatment systems (AWTs). Research indicated that the AWTs were dealing with only 25 percent of the nutrient load and at maximum efficiency were eliminating only 85 percent of that portion. The Dillon study,

as in the Tahoe case, found that 75 percent of the phosphorus and nitrogen loads originated from nonpoint sources, both natural and man-induced.[13]

Because the water quality problem transcended jurisdictional boundaries, area citizens adopted a coordinated regional approach. A Summit Water Quality committee, consisting of developers, scientists, environmentalists and lay persons, convened to develop a plan. The Committee understood that any plan's success would hinge on how it addressed economic growth. Prohibitions on development or costly conditions to growth would prevent the achievement of a consensus, so the committee developed objectives that would satisfy all parties. The objectives were:

(1) to maintain existing uses;

(2) to keep the lake in at least a mesotrophic state;

(3) to use state-of-the-art nonpoint source controls;

(4) to use state-of-the-art point source controls; and

(5) to allow point source discharges of phosphorus in the basin to expand as existing nonpoint sources are reduced.[14]

The fifth objective provided the crucial impetus for plan acceptance; the "trade bubble" concept[15] which has been used extensively for air pollution control. Under the "trade bubble" concept, polluters "trade" remedial control efforts for the rights to pollute from another source. Maximum acceptable pollution levels are established, and these ceilings may not be exceeded within the area or "bubble." Rights to pollute are traded back and forth within the

bubble, with some activities permitted to create more pollution, while other activities must achieve a corresponding reduction in pollution. For example, a factory may wish to expand production. This will mean more smokestack emissions, and these may exceed acceptable levels. However, if the factory installs sediment traps on adjoining parking lot drainages, it might reduce a quantifiable amount of pollutants to nearby water bodies. If the factory can demonstrate a net reduction or no increase in certain pollutants, it can "trade" its parking lot efforts for expanded smokestack emissions.

Point source controls such as AWTs have been required for several years; however, further reduction of phosphorus loads from point sources will be increasingly expensive and technologically complex. Nonpoint source control methods such as detention ponds and infiltration pits are far less costly, and many studies at Dillon Reservoir and elsewhere[16] have shown that nonpoint sources are the major nutrient contributors. The "trade bubble" gives counties, developers and municipalities an incentive to install nonpoint source controls, and still allows growth.

Phosphorus has been identified as the principal nutrient contributing to the eutrophication process in Dillon Reservoir.[17] A total phosphorus limit for the lake was determined. Basin development can expand at any rate provided that the phosphorus limit is not exceeded. For example, Frisco city commissioners might review a subdivision proposal and find that it would increase the phosphorus inflow beyond the capability of their city's AWT. Frisco could approve

the subdivision only if phosphorus loads were reduced elsewhere through nonpoint source controls. For instance, the State Highway Department could channel the nearby interstate highway's surface runoff into detention ponds where sediments containing phosphorus would settle out. The amount of phosphorus removed would be monitored so that the goal of limiting the total load to the lake could be achieved.

The "trade bubble" idea circumvents changes in existing land-use regulations; this could be why the concept was embraced by land-use agencies, citizens and developers alike. The "trade bubble" represents a carrot-and-stick approach, or regulation tempered with incentive. A developer faces restrictions to development only if he is unwilling to make corresponding phosphorus reduction efforts elsewhere. Because development can proceed and the lake's quality is maintained, developers, land-use managers and citizens all have incentive to participate.

The inclusion of a citizen committee in the Dillon water quality plan process and the "trade bubble" concept guarantee citizen involvement in controlling lake pollution. The Summit Water Quality Committee developed an Intergovernmental Agreement for Summit County Water Quality[18] and distributed it to all relevant parties for approval: ski areas, the U.S. Forest Service, the principal mine in the area, the Colorado Water Quality Bureau, and the citizen committee members. All parties agreed to participate in a coordinated approach to the protection of water quality in the area.

Under the agreement, a Phosphorus Policy Committee was created to coordinate point and nonpoint source control activity. The state Water Quality Control Board already had point source authority, and local governments were allowed to develop their own nonpoint source controls. Each government entity was allocated a certain poundage of phosphorus discharge per year. For every two pounds of phosphorus controlled, one pound of credit would be granted. For example, if Frisco's AWT reached its treatment capacity, the city would construct infiltration pits to collect parking lot, roof and sidewalk runoff, measure the pounds of phosphorus controlled, and permit growth which previously would have been unacceptable. The Breckenridge ski area could clear more trees and expand base development by providing vegetative cover to previously cleared slopes. This policy would encourage cheaper nonpoint source controls to be built at the same rate as point source growth.

Administration

Mechanisms for the control of water quality in the lake were both political and technical; the proper mix of these had to be determined to get the most cost-effective results. Through the technical expertise of the phosphorus policy committee, proposed developments were ranked according to their cost effectiveness. An intergovernmental agreement[19] between the designated enforcement authority (the Water Quality Board of the Colorado Department of Health) and the implementing agency (highway department, municipality, sewer district, ski area, or other) was signed before a project could begin.

Upon entering agreement with the Summit County Board, the implementing agencies were expected to adopt land use, zoning, subdivision and building code controls which closely adhered to the Board's goal of not exceeding a specified annual nutrient load limit to the reservoir. If they failed, these agencies would be found in default and could no longer participate in the "trade bubble" incentive program.

The Dillon Reservoir case also demonstrates a unique method for funding water quality protection. Each Summit Water Quality Committee member's contribution to funding for monitoring and phosphorus removal is based upon the proportion of its wastewater flow into the lake. This allocation is possible because the total nutrient load limit of the lake has been identified.

The agreement succeeded because it recognized the need for citizen involvement and included incentives for participation and backup enforcement authority. However, the Board can exclude those participants that do not conform to its policies. Summit County's public had been actively included in every stage of planning; therefore, all the appropriate governing bodies consented to enter this agreement. All parties agreed that water quality improvement is worthwhile, and herein lies the agreement's strength. The exclusion of a defaulting member will prove effective if participation of other members remains at full strength. The defaulting member can either be fined heavily or not permitted to expand polluting activities.

The Paradigm Redefined

The case studies of Lake Tahoe and Dillon Reservoir illustrate varying levels of success in solving their respective water quality problems. Tahoe defined methods for achieving their goal of a clean lake, but they are still struggling to get those methods to work. On the other hand, Dillon spent more time defining the end -- the maximum allowable levels of nutrients -- and did not tarry as much with the means to achieve it. Rather, they incorporated the "trade bubble" concept to sort out the methods.

Underscoring both of these attempts were the levels of public awareness. The combination of defining an end and allowing the public to participate in a variety of ways to achieve that end appeared to be effective in the Dillon example.

The Flathead 208 project, precursor to the Flathead Basin Commission, failed to establish effective solutions largely because it did not adequately provide for citizen input. A political scientist who studied environmental issues and policy, Dennis Pirages, said that:

> For participation to be relevant to policy questions, it must manifest itself in relation to them. The meaningfulness of participation to achieve a society of restraint and moderation depends in important ways on two information flows. The first must provide specialists and executives with accurate information about the preferences of participants including intensity of support and opposition to different germane policy alternatives. The second must provide the participant citizenry with evidence that policy has responded to their preferences.[20]

Dillon Reservoir's citizens recognized their problem, were introduced to policy alternatives, participated *en masse* in generating solutions, and reached consensus on a water quality management plan.

A much larger area than Dillon in terms of both population and land area, Lake Tahoe did not achieve consensus as did Dillon. Some regulatory authorities in Lake Tahoe chose rather to advance methods like transfers of development rights and offset policies. By leaning heavily on defining ways to reach an end rather than simply defining an end, Lake Tahoe chose a course not popularly accepted by its citizens.

Why did Tahoe fail where Dillon did not? Inadequate incentives were offered, and Americans are unlikely to accept regulation without incentives. Until a paradigm change involving property rights evolves, regulation of the commons must be tempered with incentive. Another expert on environmental policy, Peter Rowe, stated:

> Attitudes about property rights and a fear of governmental violation of those rights are significant influences . . . . Because of these attitudes, it is unlikely that a greatly expanded local role will be realized until the general level of knowledge about the purpose of and benefits to be gained from environmental management activity has been raised considerably.[21]

To raise the general level of knowledge, an informed public and its participation is essential.

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CHAPTER 4

TOWARD A MORE COMPREHENSIVE WATER QUALITY MANAGEMENT STRATEGY

Elements of a Strategy

The case studies reveal a relationship between the public's awareness of water quality problems and changes in their perspective on their land use activities (i.e., property rights) that cause them. For the Flathead Basin to succeed in solving a water quality problem, it must initiate a four-front attack, with each of the fronts advancing concurrently. One front must identify the sources and nature of the lake's pollution. This highly technical first step involves the least public resistance. Predictably, this is where most efforts have been directed.[1] Another step must involve informing and receiving input from Flathead Lake's citizens about the sources of pollution and the activities causing them. A third step must include regulations with incentives offered to make them effective. A fourth front of the attack combines steps two and three; as part of the public involvement process, citizens need to reevaluate their beliefs about property rights, and the limits which can be imposed on their rights to do certain things with their property.

The 208 Study Findings

The first attempt to develop a water quality plan for the Flathead Basin was the EPA-funded 208 project. Although this project compiled a large amount of data, identified pertinent agencies and established multi-agency coordination, there was no effort to continue cleanup efforts after its funding expired. More important, citizen involvement was not recruited at crucial stages in the planning process, limiting the incentive for the public to accept a managed economic growth plan.

The 208 project revealed some important lessons about the utility of public participation. The project found:

> One feature that seemed to be characteristic of the planning process (especially at the local level) was the desire to avoid controversy. The solution of choice was usually to plan to build improved sewage treatment facilities rather than grappling with the larger pollution problem which might require a more complicated solution (land-use plans, etc.). In addition, although public involvement was mandated, environmental and consumer interest groups were usually under-represented. Public involvement often took the form of public education rather than public input.[2]

Agencies with a technical emphasis such as the State Water Quality Bureau and the EPA concentrate on technical solutions to pollution problems. They seldom curry local support until their plans near completion, and even then such efforts are perfunctory. Little effort is made to involve affected individuals and organizations in the early stages of the process.

The 208 water quality management strategy failed largely because it did not include local citizens as partners in the planning process, particularly county

representatives.[3] Although agricultural organizations, local environmental groups and state agencies were generally well represented, county government was given only cursory attention. Perhaps county government was not considered relevant to a regional strategy or was feared as an obstruction to any proposed plan. Bypassing county participation, 208 project coordinators realized their mistake too late. A study on the interorganizational aspects of the 208 process noted that: "This is a significant institutional factor, because the regional agencies had no real enforcement powers, and any implementation of a water quality management plan would almost certainly involve county government as well as the state government."[4]

The 208 legacy teaches an important lesson. The 208 study also found that: "While there is a need to develop technical knowledge of water quality, there is also a need to develop a constituency to support such monitoring activity and to support action for alleviating problems."[5]

A Citizen Involvement Program

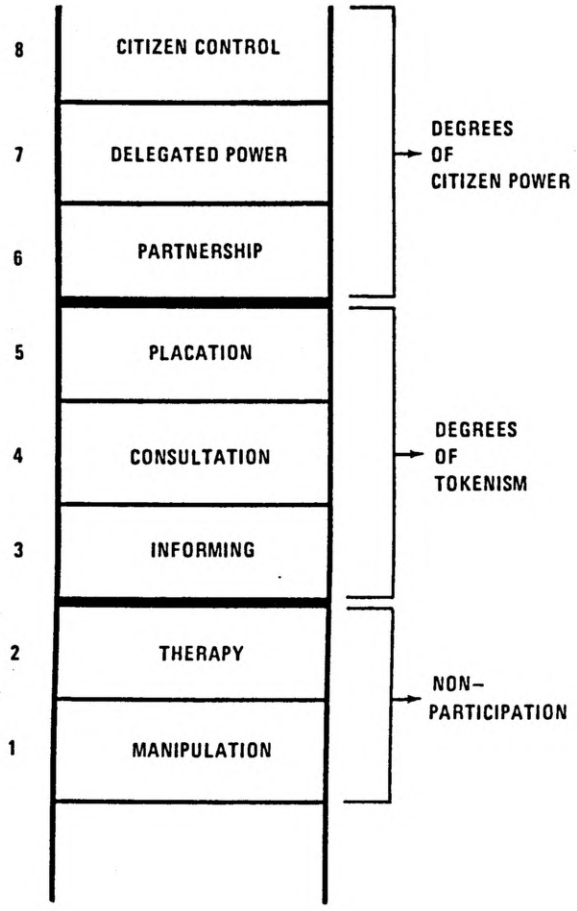
The development of an effective citizen involvement program may be the most important element of a water quality management strategy for the Flathead Basin. Citizen participation at all levels of strategy formation gains added importance because it will provoke re-thinking about land use regulations and beliefs on private property rights. A. Allen Schmid, a contemporary political observer, remarked:

> It makes a difference whether in the process of considering a new rule, perceptions are changed. Perceptions may be even more affected if the person has some sense of participation in the creation of the rule; even if the rule change involves substantial learning, the analyst needs to take this into account.[6]

It is also not enough merely to pay lip-service to the inclusion of public participation in developing a management strategy. The participation must be meaningful, detailed, and specific for each level of strategy development. Sherry Arnstein, a social planner, noted:

> Informing citizens of their rights, responsibilities, and options can be the most important first step toward legitimate citizen participation. However, too frequently the emphasis is placed on a one-way flow of information -- from officials to citizens -- with no channel provided for feedback and no power for negotiation. Under these conditions, particularly when information is provided at a late stage in planning, people have little opportunity to influence the program designed 'for their benefit.' The most frequent tools used for such one-way communication are the news media, pamphlets, posters, and responses to inquiries.[7]

Too often, efforts to allow for citizen participation have not reached meaningful levels of two-way communication, such as the 208 study example. Arnstein prepared a typology (shown in Figure 3) which illustrates levels of citizen participation. Her eight-rung ladder is a simplification, but it suggests levels of input that might be required to make a strategy effective.



Source: Sherry R. Arnstein, Citizen Participation: Effecting Community Change, eds. Edgar S. Cohn and Barry A. Passett (New York: Praeger Publishers, 1971), p. 77.

Figure 3. Eight rungs on the ladder of citizen participation.

A water resources research study[8] also stressed the importance of emphasizing all levels of citizen involvement. Not unlike Arnstein's typology, the study recognized the need for emphasis on two public participation functions: (1) education/information, and (2) reaction/review. The study concluded that to be effective, water quality management strategies need to: (1) involve publics

in the earliest stages of the planning process; (2) provide structured opportunities for two-way communication exchanges; (3) provide continuous, updated information; and (4) incorporate public input into any proposed strategy.[9]

The task of involving the public in the manner stated above must be further broken down into identifying just who that "public" is to assure effective citizen participation. This task becomes further complicated by the interjurisdictional nature of Flathead Basin's water quality problem, with its attendant different "publics" in the various jurisdictions. First, a strategy must be developed to identify an effected public, regardless of their jurisdictional residence. Second, key citizens and organizations among that affected public must be identified and contacted. Although a mass outreach program to all affected citizens appeals to our democratic nature, in practice only certain segments of that affected citizenry will respond and participate.[10] Studies[11] of participation in the United States have shown that certain citizens "who are bothered and do care will, in this view, join together with like-minded others to form voluntary interest groupings, and will seek out and use whatever opportunities are provided or can be found to influence public policy."[12] For this reason, it is essential that private associations and local organizational units be informed and included.

Once the public has been identified, informed, and educated as to the nature of Flathead's problem, then an opportunity for meaningful exchange must be provided. Traditionally, policy options have involved citizens through

advisory groups, public meetings, and workshops. These must be expanded to include surveys, referenda, one-on-one interviews, gaming simulations, two-way cable or telephone linkages, consensus-building sessions such as nominal group, charettes and delphi techniques, and task force creation. Care should be taken to assure that any of the mechanisms chosen are representative of affected citizens.[13] Central to whatever exchange process is selected will be the opportunity for that exchange from the beginning of policy formulation to the final selection process.

An example of a successful two-way dialogue in policy determination is the procedure adopted by the California Coastal Zone Conservation Commission.[14] This Commission solicited citizen input at every stage of the development of a coastal management plan. Volumes of public comments and the results of many different citizen input mechanisms were used to prepare initial drafts of a management plan. These drafts were, in turn, distributed to the citizen groups who reviewed and commented on them. This process continued until a final plan materialized. Whatever participation mechanisms are chosen, one common element must be used as a standard for an effective citizen participation strategy. That common element will be the respect for the input and intelligence of the Flathead Basin's public.

After the public has been given the opportunity to participate in the formation of a water quality management plan, it must also have the opportunity to test that policy decision. This can be accomplished through a public

referendum or by placing the plan before various governing bodies for adoption. It can also be tested through judicial review requested by affected citizens. Other means of testing citizen acceptance of a plan could be through the creation of a citizen's advocate or ombudsman, or arbitration or mediation. In the Flathead's case, popular election of Flathead Basin Commission members could assure continued sensitivity to citizen concerns.

The point becomes clear that an effective citizen involvement program must go beyond traditional efforts to inform the Basin's citizens. Brochures, news releases, pamphlets, and posters are still important components (see Appendix B), but they must be integrated with two-way contact and feedback mechanisms throughout strategy formulation. Because citizen involvement is the cornerstone of an effective strategy, an outline for a citizen involvement program has been appended to this paper (see Appendix A).

Regulations and Incentives

Developing a comprehensive citizen involvement program will not be a quick process. In the meantime, regulatory and incentive measures, in addition to the phosphorus detergent ban, must be installed until and if such time arises that all parties will agree to stop polluting activities. Such agreement is not likely to occur in the short-term. Changing people's views on their rights to do as they wish with their property and the "commons" property like Flathead Lake will be an evolutionary process, and efforts to protect Flathead Lake's water quality cannot wait that long.

Private interests likely will resist restrictions on their rights to develop, unless offered economic or social incentives. The challenge, therefore, lies with the agreement of these interests to accept regulatory and other features of a master water quality management plan. Such a plan must provide incentives as well as regulation for all participants to guarantee cooperation. Compliance with regulations almost always means added expense, time and effort, and unless those asked to comply can see the economic benefits of improved water quality, adherence is unlikely.

The "trade bubble" used in the Dillon example poses an intriguing possibility. A maximum acceptable limit of nutrient loading to Flathead Lake must be established first, and technical monitoring efforts continue toward this goal.[15] After this has been done, nonpoint or point source remedial methods could be approved and incorporated in a "trade bubble" policy. Development would be permitted, but only with acceptable results. The important point to remember is that defining the upper end of pollution permitted to Flathead Lake is important, but the means of reaching that end need not be strictly defined and should remain flexible for the developer. This flexibility gives the developer discretion in the selection of pollution reduction techniques.

Trade development rights (TDRs) represent another incentive to preserve open space and watersheds while channeling growth into designated areas. The incentive provided to the developer is his ability to develop designated areas at an increased density over what would normally be allowed if no transferred

development rights were used. The TDR is removed from the area considered critical to watershed protection and is restricted from ever being developed. TDR programs can be promoted through existing county planning offices or through a public land credit exchange institution. The program would identify sensitive watershed areas for protection and growth areas for development. Property owners in areas requiring protection would be provided credits, representing lost development value, which could be sold to a developer in a growth area who could then build to higher densities than would otherwise be allowed.

This system will work only if there is a market for the TDRs or if there is a land bank brokerage available to purchase them. A clean lake will ensure the free market pressures to make TDRs viable, especially if developable land is in short supply. Some regions have included TDRs as part of their comprehensive management plan and have funded "exchange boards"[16] to promote the sale of development credits without necessitating public purchase.

Public Acquisition

Public ownership of critical watershed areas allows for complete control of land use activities and protection of water quality values. In certain areas, public acquisition may be the only way to prevent contaminating activities. Priority protection areas requiring acquisition would be determined by both ecological and hydrological value. Land acquisition would be used for preservation, but once acquired, this land would be under a public agency's

supervision. Provision would have to be included that ensures emphasis on preservation in management.

Following the designation of priority parcels for acquisition, potential funding sources must be identified. Federal, state and local governments can purchase watershed lands independently or jointly through cooperative or matching arrangements. The private sector can contribute through foundation grants, land bequests to public jurisdiction or acquisition by private conservation organizations. The public can also initiate bond issues for acquisition of specific parcels or for establishment of a watershed preservation fund. Finally, a water surcharge imposed by water suppliers could be considered. The surcharge would establish a fund for acquisition of priority parcels of watershed lands to benefit present and future water consumers.

Because there are financial limitations to any acquisition program as a watershed preservation strategy, other tools, such as land-use regulation, must play a pivotal role in watershed management planning. Land-use controls and incentives can be used to direct growth out of critical areas and to control discharges in developed areas as well.

Planning and zoning can facilitate many land-use management strategies. Adopting master plans which include watershed protection plans, identifying critical watershed areas, changing zoning ordinances to reflect downzoning in designated growth areas and upzoning in preservation areas, mandatory

clustering laws (concentrating subdivisions in clusters to prevent build-out on environmentally sensitive lands) all can help.

Conservation easements also may be used to provide scenic natural areas and watershed protection without land purchase. These legal agreements between landowners and the organization receiving the easement can provide significant property and federal income tax benefits to the landowner. Because conservation easements are voluntary they might lead to piecemeal effects and make it difficult to implement land-use plans. Still, they give a tax benefit as an incentive and should be included in the array of options available for water quality management.

Economic incentives and disincentives can include infrastructure investment and tax incentives for infrastructure work such as roads or sewers. Public funds should be invested to discourage private development in areas that need protection while promoting development in designated growth centers. Public funds for major projects should be contingent upon compliance with area watershed protection plans. Tax incentives should encourage maintenance of large land holdings to minimize the effects of haphazard subdivisions. A fairer allocation of tax dollars toward watershed and open space acquisition management programs also would help.

Legal and Administrative Framework

The Flathead Basin Commission can learn from the administrative arrangements presented in the Tahoe and Dillon examples. But first, the Commission

must recognize the legal parameters facing it with existing state, federal and local enabling law before it can work to expand the effect of the law. The mix of federal and state laws, local, federal and state comprehensive soil erosion and sediment control laws, comprehensive agricultural practices, subdivision rules, agency administrative rules, recommended best management practices and generally accepted behavior concerning water quality presents a complicated array of directives.

The objective of the Federal Clean Water Act[17] -- to make all streams fishable and swimmable by 1983 -- provided no mechanism for funneling all the various agencies' authority into this objective. Cooperation among the agencies is largely voluntary. The lack of a forest practices act, the lack of agency funding or initiative and the problems among conflicting basin interests will not be overcome by simply pointing to the statutes.[18] The disjointed and disparate laws and regulations need to be reassessed, and this must be done with ample opportunity for citizen input. The Flathead 208 Project concluded that:

> So far-reaching are its implications that a [water quality] planning program properly executed may very well shift the focus of a community's comprehensive planning away from the traditional planning department. Questions of economic growth and land use must certainly be brought into focus before water quality planning can be brought to a meaningful conclusion. These, in turn, may involve a complete reexamination of a community's growth policy as a whole. It will certainly challenge some traditional concepts of agricultural, silvicultural, mining and construction practices and management. Successful water quality management will not happen automatically and, in the final analysis, will depend upon both citizen activists and those who are not necessarily environmentally oriented, to make certain that the areawide plans are both meaningful and implementable.[19]

A telling difference between the Tahoe and Dillon examples lay with the use of an interlocal, or interagency, agreement. Tahoe developed a plan for protecting their lake's water quality, but it was not successful in bringing Nevada, California, and other state and local agencies to the table and getting them to agree on regulatory tools and incentives. There were various reasons for this failure, including poor citizen awareness at the outset, too much regulation proposed and not enough incentives offered. Dillon, however, was successful in having all affected parties sign an interagency agreement.

Interlocal agreements among local and state agencies involved in water quality management could eliminate reliance on voluntary compliance with pollution mitigation efforts, and specify responsibility to meet the end goal already called for in state and federal law.[20]

There are several possibilities for an interagency agreement:

(1) Under a formal agreement, each agency would work toward implementation of the management plan in its own area of statutory authority. Enforcement would be administered by each agency according to its mandate.

(2) An interagency agreement could establish a joint administrative board with enforcement authority over those agencies which do not exercise and enforce their authority.

(3) The Flathead Basin Commission could be designated the regional management authority.

This third solution would be within the requirements of the Federal Water Pollution Control Act[21] and would be similar to Summit County's Dillon Reservoir Phosphorus Committee. The Phosphorus Committee has the authority to require participation by the state and local governments in a formal, legally binding, intergovernmental agreement.

Before interlocal agreements can be successful, it is instructive to again look at the differences between the Tahoe and Dillon examples. Dillon involved citizens at the outset and advanced progressive, flexible regulations. Tahoe's choice of a strict regulatory approach was not as popular. This demonstrates that to be successful, interlocal agreements must be preceded by citizen participation and the introduction of acceptable regulatory tools and incentives. These agreements represent the culmination of a long, detailed process, and their presence will demonstrate that the multifaceted strategy has succeeded.

Implications for Flathead

The key to a successful water quality management strategy lies not with the regulations imposed, but with how successful efforts have been to encourage individuals to take more responsibility for solutions. Citizens must first be aware that a problem exists; then they must participate in developing solutions, and be educated on various tools and incentives available. During this process, the Flathead Basin Commission must introduce new concepts of property rights, in addition to other strategy elements. If citizens are led to understand that their

long-held views on property rights (i.e., right to develop and use public and private property) are contributing to the accelerated deterioration of their lake, then they might change their views and accept certain solutions that otherwise may not have been popular. These concepts, and others like them, will greatly assist a water quality management strategy as the property rights paradigm evolves.

Pirages' comment on redefining property rights could be instructive for the Flathead Basin Commission:

> When property-related issues are conceptualized in terms of legally defined property rights, then it can be seen that many reforms are matters of property rights, that is, the expanding or contracting of the number or conditions of the rights to use, exclude, and alienate. Thus, some means whereby to reform a society from being a resource-squandering 'cowboy' economy to an ecologically sound limited or no-growth economy, and some ways for maintaining that economy, are to extend, reformulate, and -- where necessary -- limit property rights.[22]

The Flathead Basin Commission has the opportunity to present the merits of other ideas on property rights to the basin's citizenry. The following concepts are examples of innovative changes that may contribute to an evolving concept of property rights.

A first example is the concept of "amenity rights," or a right to a pollution-free environment. An amenity right gives the right to exclude, or to sue, if a person's right to exclusion is infringed upon, resulting from pollution from power plants, noise, or other activities which transcend property lines. "Modifying the right to alienate" is a second concept. This concept would insist that a producer

of pollution of any sort may not "alienate" himself from the pollution he has produced, but would continue to own the pollutants. He would thus be responsible for any damage done by the pollutants. Exact liability being difficult to prove, suit could be brought against a class of polluters.

Another idea is "standing to sue," which involves part of the right to use. If a property owner thinks his rights are being infringed, he or she can sue. In any case where the public trust may be threatened with misuse, an individual user of the trust in question can be found, and he or she can serve as the formal plaintiff in the suit.[23]

The "public trust" doctrine touches upon the "commons" problem facing the Flathead Basin. Rather than air and water being unrestricted common property which each and all have the property right to use, it is necessary to establish some limits on the right of use, in order both to limit population and to assure that all users have the effective right to use. In order to guarantee continuing rights of use to its citizens, the government limits the right of use to polluters by holding the common property in trust.

An adjunct to the public trust doctrine would be the elimination of the existing "commons." The commons is open to exploitation by all. If property rights were somehow extended to the commons, this would help limit degradation. It is rational to pollute if it is free and adds to an individual's well-being. Conversely, it would not be rational to pollute the commons if its property rights were infringed and penalties ensued.

Another concept worth noting is that of "new property." The "new property" concept involves rights or privileges that an individual can claim from the government or its agencies because a property owner holds a certain status. For example, among these "new property" rights, one crucial right for a limited or no-growth society necessarily concerned with the distribution of income is the right to a guaranteed annual income. Another could be the right to a pollution-free environment. Almost equally important, "new property" rights that involve governmental relaxing of ecological laws or allowing pollution must explicitly be rights of limited, not eternal, duration.[24]

In addition to the above, other limitations to property rights could be explored.[25] These might include taxes on windfall gains from government action, restrictions on inheritance, expanded zoning techniques, limiting powers of corporations, and land-use reformulations in addition to trade development rights, and tax benefits for renewable energy ventures and pollution control efforts.

Ideas offering a different perspective on property rights will not be accepted overnight. But their introduction to the citizens of the Flathead Basin will raise the people's level of awareness of the water quality problem facing their lake, and may help them formulate solutions. In the meantime, the Flathead Basin Commission can lay the scientific and philosophical foundation for dealing with the ecological scarcity of pristine water quality. Until area citizens have been enlightened to the point that a paradigm change on property

rights has occurred, the Commission must be careful to avoid too much emphasis on means to achieve an end, or too much regulation. Rather, the Commission must establish appropriate design criteria -- certain parameters around which basin citizens are free to do as they wish -- within certain bounds that they can accept.

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[17]Federal Clean Water Act, U.S. Government, Public Law 92-500.

[18]Ibid.; Title 75, Chapter 7, Section 301, Montana Codes Annotated (Flathead Basin Commission enabling legislation); and Clean Water Quality Act, Title 75, Chapter 5, Montana Codes Annotated (Water Quality Bureau enabling legislation and mandate).

[19]Montana Department of Health and Environmental Sciences, Water Quality Bureau, Water Quality Inventory and Management Plan for the Flathead River Basin, op. cit., p. 177.

[20]Federal Clean Water Act, op. cit.; and Clean Water Quality Act, Title 75, Chapter 5, Montana Codes Annotated, op. cit.

[21]Ibid., Federal Clean Water Act.

[22]Dennis Clark Pirages, ed., The Sustainable Society (New York: Praeger Publishers, 1977), p. 225.

[23]Ibid., p. 227.

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[25]T. O'Riordan, Environmentalism (London: Pion, Limited, 1981).

CHAPTER 5

CONCLUSIONS

All of the strategies explored here have been attempted on a piecemeal basis in various areas of the United States with varying degrees of success.[1] No single element will solve all the water quality problems of such a large, diversified basin as the Flathead. The successes and failures of the case studies and examples in their area, such as the phosphorous detergent debate, can prove invaluable to the Flathead. The studies demonstrate that, to succeed, a basin management plan must coordinate different strategy elements so that they converge in an equitable solution. Technical studies are necessary to establish acceptable upper limits of pollution and the nature and source of the pollutants. Citizen education must be effective and public participation by all interested parties is mandatory. Regulatory tools and incentives must be introduced, and administrative authority must be established.

Created to serve as a public forum for discussion of basin water quality issues, the Flathead Basin Commission has the opportunity to effectuate regulation, incentives and paradigm change. It must recognize that, to succeed, it must investigate new concepts, inform and be informed by area citizens, and dare to attempt innovative solutions.

A successful water quality management plan for the Flathead Basin is possible. How well it succeeds will depend upon how well it can encourage basin residents to take responsibility for solutions through a blend of regulations, incentives and citizen involvement. For Flathead Lake, the tragedy of the commons must end, and this can only be achieved when solutions are accepted by those who ultimately decide on the future of the Flathead's water quality -- the citizens of the Flathead Basin.

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APPENDICES

APPENDIX A

CITIZEN INVOLVEMENT PROGRAM OUTLINE

AN OUTLINE FOR A CITIZEN INVOLVEMENT PROGRAM:

Toward the Development of a Water Quality Management Strategy for the Flathead Basin

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I. PURPOSE

To ensure a reasonable correspondence between public policy and public preferences in the Flathead Basin and to prevent arbitrary and capricious transgression by government upon fundamental individual rights.

II. STRUCTURE

A. Public Preparation

1. Purposes

   a. To provide educational background on basic concepts and governmental organization for decision making.

   b. To notify citizens and distribute information about current policy issues.

2. Educational Task Components

   a. Prepare questionnaire to assess area residents' knowledge of the problem and possible solutions; mail to as many residents as possible.

   b. Organize a speaker's bureau to meet with key citizens, lay citizens, and all civic, school and church groups.

   c. Prepare informational brochures on the nature of the water quality problems facing the basin; distribute to the public.

d. Organize coverage on the nature and extent of Flathead Lake's problem by the news media -- TV, radio, newspapers.

e. Prepare a simplified curriculum on lake characteristics available through schools, adult education, civic groups, educational television, public radio, and workshops.

f. Open Yellow Bay Research Station to the public as an interpretive center.

g. Construct educational signs at road turnouts and parks.

h. Provide phosphate ban literature in stores and other public places.

i. Prepare a videotape and handbook on lake basin issues and characteristics, to be distributed to the public.

j. Develop mobile exhibits to promote water quality in basin.

k. Rent billboards to promote water quality in basin.

3. Notification Task Components

a. Place public notices for course offerings, advisory group meetings, media events, and public meeting dates in public places.

b. Publish calendar of events in media -- PSAs, newspaper, TV, etc.

c. Publish monthly agenda of local government and agency activities involving Flathead Lake.

d. Develop mailing list of key citizens and organizations.

B. Citizen Participation

1. Purposes

a. To identify feasible policy options from an informed and educated public.

b. To estimate aggregate support among the affected public for each alternative.

2. Task Components

a. Identify all citizens affected by Flathead Basin water quality policy.

b. Contact or create interest groups, existing advisory groups, and key individuals to participate in policy formulation.

c. Conduct interviews and contact responses with survey respondents.

d. Conduct public meetings with advisory groups, interest groups, and general public to formulate management alternatives.

e. Incorporate consensus building techniques with various groups such as nominal group, charette, and delphi.

f. Invite publics to participate in gaming simulations.

C. Government Accountability

1. Purposes

a. To explain rationale of policy decisions to the Flathead Basin public.

b. To provide means for the Flathead Basin public to test the fairness and responsiveness of decisions.

2. Task Components

a. Through notification procedure and hearings schedules, give all publics the opportunity to comment -- both written and oral -- on each draft of policy formulation.

b. Conduct open meetings and public hearings throughout basin to take comments on each successive draft of a management plan.

c. Conduct special "mark-up" sessions with identified key groups at public hearings.

d. Summarize changes for each draft and distribute to public.

e. Place draft policies on referendum for public vote.

f. Establish a management district for the Flathead Basin, with provisions for a popular election of commissioners (this could be the Flathead Basin Commission).

APPENDIX B

THE FLATHEAD BASIN COMMISSION'S

PUBLIC EDUCATION PROGRAM

THE FLATHEAD BASIN COMMISSION'S PUBLIC EDUCATION PROGRAM

One of the primary responsibilities of the Flathead Basin Commission is to provide a regional forum for the discussion of water quality and related issues. Another key responsibility is to serve as a credible information source and information synthesizer.

With these objectives in mind, the FBC began a formal public education effort regarding threats to the basin's water quality in 1986. In establishing this program, the FBC recognized that both land management and regulatory agencies have identified the steps that need to be taken to protect the Flathead's water resources. Strong public understanding, and hence support, is what is now needed if these management decisions are to be implemented. Building public support for protecting basin waters is one of the FBC's primary objectives.

To implement the Public Education Program, the FBC secured private funding from the Minnesota-based Freshwater Foundation, which had received a grant from the Northwest Area Foundation to assist the FBC. The grant enabled the FBC to open an office in Kalispell and to staff it with two part-time employees. Funding for compensation of this staff for the second year of the Public Education Program has been raised from a variety of private and public sources in Montana. Office space in Kalispell was donated by Flathead County. . . .

The Public Education Program consists of a series of events, projects, and publications regarding the maintenance of clean water in the Flathead Basin and its relationship to the area's economic viability. These programs are described below.

Slide Show

A slide show with narration has been prepared that portrays the relationship between clean water and the basin's economy and quality of life. . . . The slide show is being used by the Public Education Coordinator and by FBC members in presentations to interest groups, civic organizations, schools, and other groups. Since the Public Education Program was initiated, over 65 group presentations utilizing the slide show have been conducted. In addition, approximately 1,200 high school students have heard presentations by the Public Education Coordinator.

Breakfast Seminars

Three out-of-state speakers have been brought into the basin by the FBC to give breakfast seminars. The purpose is to inform community leaders of how other states are successfully addressing complex water quality problems similar to those facing the citizens in the Flathead Basin. Seminars have been given in each of the five principal basin communities.

The first speaker was Bill Morgan, the Director of the Tahoe Regional Planning Agency. Mr. Morgan presented information about the planning efforts that his agency is responsible for enforcing in the Lake Tahoe Basin of California and Nevada. Such efforts are designed to protect Lake Tahoe's water quality.

The second speaker was Ken Lustig, the Environment Health Director for Idaho's Panhandle Health District. Mr. Lustig described how sewer management agreements have been effectively used to protect groundwater quality while encouraging orderly urban development in Idaho's Prairie-Rathdrum aquifer area.

The third speaker was Robert Herbst, the Executive Director of Trout Unlimited in Washington, D.C. Mr. Herbst's talk focused on the economic importance of water-based recreation in areas such as the Flathead Valley. Mr. herbst also discussed his experiences regarding innovative actions to protect or improve water quality in other regions of the country.

In addition to the breakfast seminars, the three speakers each participated in other workshops or panel discussions while they were in the basin. Over 350

Flathead area residents attended the breakfast seminars, workshops, and panel discussions.

Brochures

Two informational brochures on key water-related issues facing basin residents have been written and distributed by the FBC. These included: *Phosphorus and Water Quality in the Flathead Basin* (published by the Flathead Basin Commission and Freshwater Foundation, 1987), and *Understanding Your Septic System* (published by the Flathead Basin Commission and Freshwater Foundation, 1987).

Three other brochures will be completed in 1989. These have been tentatively entitled, *Nonpoint Pollution in the Flathead Basin, The Economic Value of Water Quality,* and *Water Quality and Land Use Planning.*

Phosphorus and Water Quality in the Flathead Basin was designed to state the dimension of the phosphorus problem in Flathead Lake and its potential impact on water quality in the lake. This brochure has been distributed to 5,000 basin residents. . . .

Understanding Your Septic System explains the operation and maintenance of septic systems and their potential for contaminating groundwater and surface water when not properly maintained. Septic systems in certain areas around Flathead Lake, Whitefish Lake, and other lakes in the basin are leaking nutrients, including phosphorus, into the lake. Not only is the water quality of Flathead Lake adversely affected, but the potential for local groundwater contamination is also significant. Over 3,000 of these brochures have been distributed throughout the basin. . . .

Public Service Announcements

Four public service announcements (PSAs) have been prepared and shown on area television stations since the summer of 1987. These 60-second messages have focused on how septic systems work and sometimes fail, the economic value of water resources protection, Flathead Lake water quality, and groundwater quality. . . . It is the FBC's intent for these PSAs to be periodically rebroadcast.

Water Quality Conference

In April 1988, the FBC hosted a major two-day conference during which 30 distinguished speakers discussed water issues facing the basin's citizens. The conference was entitled, "Our Clean Water --Flathead's Resource of the Future," and was attended by 215 people. . . .

The conference began by examining the state of the region, including a review of past water quality efforts and a discussion of the current status of water conditions in the basin. It also included a panel presentation that focused on the effectiveness of governmental regulations designed to protect water quality. Experts from neighboring western states presented case studies that showed how water quality conflicts are being resolved in their areas.

The relationship between clean water and the Flathead area's economic future was the speakers' major focus during the second day of the conference. The conference ended with participants making recommendations to the FBC regarding where it should focus its future actions.

These recommendations included:

- Expand the membership base of the FBC. Define more clearly the role of the FBC and how the composition of the FBC serves that role.

- Develop a funding program for the FBC that places a greater share of the FBC's program costs on the citizens of the Flathead Basin. The challenge is not to create another bureaucracy, but instead to develop a network procedure that uses the strengths of groups and agencies that already exist in the basin.

- Continue the existing role that the FBC serves in providing people with current and accurate information regarding the water issues in the basin.

- Provide support for responsible land use planning and regulation in the basin. Many of the current water quality problems in the basin can be tied to past land use planning efforts that were either inadequate or nonexistent. If the Flathead Basin is to experience both economic growth and a quality environment, it can't expect this to happen "by chance." The Flathead Basin Commission can be a facilitator for responsible, citizen-supported land use regulation.

- Continue and expand the FBC's existing efforts to monitor and evaluate the condition of water quality in the basin. The FBC, with the assistance of research scientists and government agencies, should serve as a source of public information regarding changes in the basin's water quality, and the reasons for such changes. The FBC's current program should be expanded to include groundwater, landfill sites, forestry practices, pesticides, and other nonpoint water pollution sources. . . .

Copies of the conference proceedings are available from the FBC offices in Kalispell and Helena, as well as in area libraries.

Source: Brace Hayden and Craig Hess, Flathead Basin Commission Biennial Report (Helena, MT: Office of the Governor, December 1988), pp. 4-1 - 4-4. [Note: Appendix B, in its entirety, is a direct quote from this source.]