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Date December 4, 1981

STATE WATER QUANTITY AND QUALITY MANAGEMENT AND PLANNING WITH RECOMMENDATIONS FOR MONTANA

BY

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A professional paper submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF PUBLIC ADMINISTRATION

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MONTANA STATE UNIVERSITY
Bozeman, Montana

December 1981

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ABSTRACT

This paper identifies and analyzes problems of water management and planning in Montana. It focuses on the overlapping responsibilities of the Montana Department of Health and Environmental Sciences, responsible for water quality, and the Department of Natural Resources and Conservation, with jurisdiction over water allocation. A detailed analysis is made of the legal, institutional, and managerial framework within which these two agencies operate. Recommendations are made whereby the water quality and quantity responsibilities would be integrated. Such an integration would appear to forestall predicted degradation of Montana water resources. Recommendations include those that suggest that a public interest criterion be included in water appropriation permit criterias, the legislature seriously view alternatives to conserve water through legislation, and the water quality functions of the state be merged with water quantity functions under the same department -- the Department of Natural Resources and Conservation.

CHAPTER I

INTRODUCTION

The objective of this paper is to identify problems and conflicts with the planning efforts and management programs of the Department of Health and Environmental Sciences (DHES) and the Department of Natural Resources and Conservation (DNRC) as they relate to water quality and water quantity functions in Montana. The identification of problems and conflicts is the first step in the process that will lead to eventual recommendations later in the paper.

BACKGROUND - THE PHYSICAL PROBLEM

The United States is blessed with a bountiful supply of water. Precipitation, in its many forms, is responsible for the abundant supply of water that is available to our nation. Precipitation for the 48 contiguous states averages about 30 inches a year, enough for most purposes, but it is neither evenly nor regularly distributed. "Annual precipitation varies from over 100 inches in coastal regions of the Pacific Northwest to less than 4 inches in parts of the Southwest."[1]

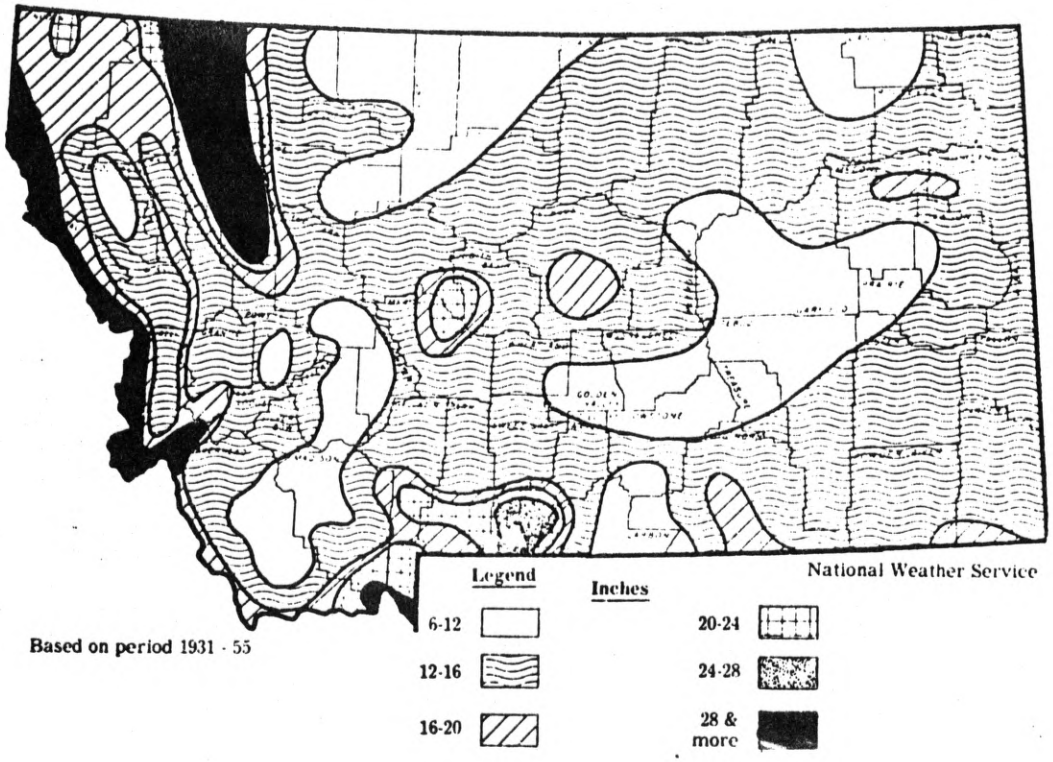
1 U.S. Department of the Interior: Geological Survey, The National Atlas, (Washington: Government Printing Office, 1970), p. 97.

Figure 1 depicts the average annual precipitation for Montana. As the map shows, Montana is predominantly characterized by low annual rainfall. Most of Montana's precipitation accumulates west of the Continental Divide in high Rocky Mountain elevations. Almost two-thirds of the state receive less than 20 inches of precipitation annually.

To get a more complete picture of Montana's precipitation, one must take into account other factors in the hydrologic cycle. For example, measurements of surface runoff, soil infiltration and evaporation all contribute to the characterization of a particular area and climate.

FIGURE 1

AVERAGE ANNUAL PRECIPITATION IN MONTANA



SOURCE: NATIONAL WEATHER SERVICE

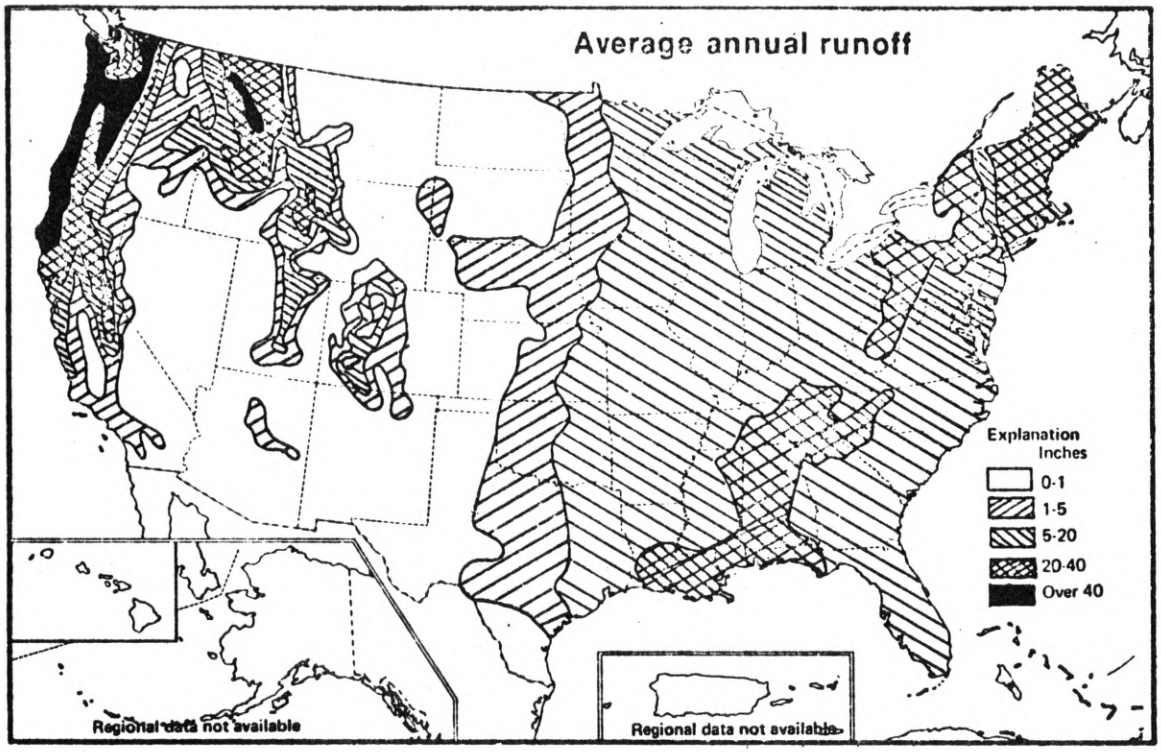
One of the most important indicators of climate is runoff. "Runoff is...the water remaining from precipitation after the losses from evaporation, transpiration, and seepage into the ground water."[2] Because only a portion of total precipitation flows from watersheds into streams or ground water basins, the "runoff from a watershed is more variable than precipitation because consumptive use [including irrigation] in the watershed is satisfied before runoff occurs."[3] Figure 2 depicts the average annual runoff in the U.S. One can readily tell that most of Montana easily fits into the category of an arid land--the consumptive use factor in the soil is not being satisfied in approximately 5/8 of the state.

2 Foster, Edward E., Rainfall and Runoff, (New York: MacMillian Co., 1948), p. 293.

3. Ibid., pp. 308-313.

FIGURE 2

AVERAGE ANNUAL RUNOFF IN THE U.S.



SOURCE: U.S. WATER RESOURCES COUNCIL

The Importance of Water to Montana

The amount of precipitation is known to fluctuate greatly in the Rocky Mountain West and there are historical evidences for prolonged periods of climatic change within the region.[4] Clearly, a prolonged climatic shift that brought warmer weather and less precipitation to the Rocky Mountain States would leave drastic consequences for areas already slighted by various forms of precipitation.

It is little wonder that water is one of Montana's most precious resources, since Montana is a state whose prime industry is agriculture. Table 1 depicts the relative importance of agriculture when compared with other major Montana industries.

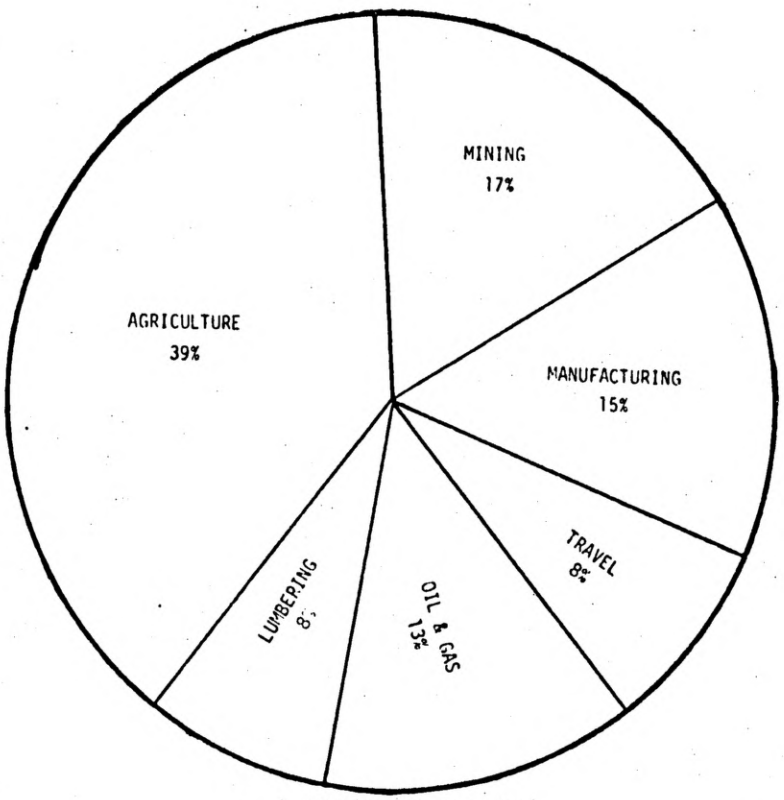
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4 See Bradley, Raymond S., Precipitation History of the Rocky Mountain States, (Boulder: Praeger Publishers, 1976), pp. 5-24.

TABLE 1

RELATIVE IMPORTANCE OF SELECTED MAJOR MONTANA INDUSTRIES

Percent of Total



VALUE BY GROUPS

Industry	Basis	Year	Value in Millions
Agriculture[1]	Cash Receipts	1979	1,371
Mining[2]	Gross Value	1979	588
Manufacturing[3]	Value added (excluding lumber and wood products)	1977	515
Travel[4]	Estimated value	1979	263
Oil & Gas[2]	Value of Production	1979	460
Lumber & Wood Products[3]	Value added	1977	287
Total of above industries			3,484

[1]USDA, Economics, Statistics, & Cooperative Service.
[2]Montana Department of Revenue
[3]Census of Manufacturers, Bureau of Census
[4]Montana Department of Highways (travelers from out of State)

SOURCE: Montana Agriculture Statistics, 1979

Agriculture accounted for over 1.3 billion dollars in cash receipts alone in Montana in 1979. It amounts to more than two and one-half times the receipts from the next largest Montana industry--mining. Statistics have also shown that the number of acres being irrigated each year in Montana is increasing, along with the total number of acres of land harvested.[5]

Clearly, the availability of water for agricultural use (primarily irrigation) is of paramount concern for all Montanans. Water slighted areas of the West depend on water withdrawals to foster agricultural pursuits in relation to other areas of the country which depend largely on water for manufacturing uses, and the production of food and fiber places a greater demand on total water resources than any other sector of the United States economy. "Irrigation is the major water withdrawal use in the U.S.... more than 159 billion gallons per day or 47.5 percent of all water withdrawals in 1975 were attributed to irrigation."[6] By comparison,

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5 See Montana Dept. of Agriculture, Montana Agricultural Statistics, Vol. XVIII, 1979, pp. 18-21.

6 U.S. Water Resources Council, The Nation's Water Resources: 1975-2000, Vol. 1: "Summary", (Washington: GPO, 1975), p. 30.

the average total annual supply of surface water in Montana is estimated to be 44 million acre-feet. Total consumption averages about seven million acre-feet annually; irrigation accounts for more than 80 percent of this loss, or about six million acre-feet a year.[7] As might be expected, agriculture also accounts for the most consumption of water in the U.S. with "82.8 percent consumption of all water that was withdrawn--in 1975 over 87 billion gallons a day."[8] In the Missouri River Basin (in which Montana is located) water use for irrigation is expected to climb 18 percent in the next 25 years over the amount used in 1975; a whopping 88 percent of available water in the Missouri Basin will be used for agricultural use.[9]

7 Department of Natural Resources and Conservation, Yellowstone River Basin: Draft Environmental Impact Statement for Water Reservation Applications, Vol. 1, (Bozeman: Colorworld, Inc., 1976), p. 22.

8 U.S. Water Resources Council, The Nation's Water..., Vol. 1, op. cit., p. 43.

9 See Department of Agriculture, Food and Fiber Production and Related Resource Considerations, (Washington: GPO, 1977), p. 32.

Assuming the past trends in the rate of population growth and food consumption hold true for the next twenty-five years, the food producing regions of the United States will require vast amounts of water to irrigate more and more acres of farm and range land. Growth in world population and increases in demand for United States food and fiber products over the next 25 years will require astute management of agricultural water uses to meet domestic and export needs. Exports will be dependent on world production and international trade conditions in the future. Important implications of agricultural exports are indicated by the fact that U.S. exports of food and fiber increased from $7.6 billion in 1971 to $25.7 billion in 1979.[10] According to most experts, changes in crop yields will be a major determinant of water and land use for agricultural production. It is projected that millions of acres of new irrigated land will be developed in the future for

10 U.S. Department of Commerce (Bureau of the Consensus), Statistical Abstract of the United States: 1980, (101st Ed.), (Washington: GPO, 1980), p. 878.

agricultural and crop production.[11] How well will Montana adapt to new stresses on her water resources?

Historically, agricultural expansion has depended on key factors:

> The use of present and prospective production technology to increase yields on land; more intensive use of land that presently lies idle or is improperly managed; and development of land through drainage, irrigation, clearing, and so on. These various options may be heavily constrained by environmental factors such as the amount [and quality] of water that remains in streams [our subject for concern in this paper], the quantity of unused cropland, the extent of clearing and draining wetlands, and the degree of soil erosion. 12

Physical Parameters of Reduced Streamflows

The following is a short discussion of several different physical parameters that affect the quality of water at any given time -- total dissolved solids, salinity, sediment -- and a resultant condition that stems from these parameters: dewatering. A rudimentary knowledge of the interrelationships of these important parameters is essential in order to properly grasp the importance of the physical problem.

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11 See U.S. Water Resources Council, The Nation's Water...Vol. 2: "Water Quantity, Quality and Related Land Considerations", (Washington: GPO, 1975), pp. 90-110.

12 Ibid., emphasis supplied.

"Pure" or "polluted" water is a function of a number of different water quality parameters, and to completely describe the water quality of any given aquatic system, analyses of water samples must include a large number of physical and biological parameters. Characterizations of certain aspects of a water's quality can be made from the data gathered for selected parameters. For example, the concentration of total dissolved solids (TDS) is a measure of salinity and is often selected as the most critical indication of overall water quality.[13] TDS concentrations are measured in milligrams per liter (Mg/1) and can often provide a good indication of the suitability of water for agricultural and municipal uses. Very high TDS levels can render water completely unfit for irrigation and at lower levels water is only useable for irrigation of salt-resistant crops or regular crop use, but with very careful and sometimes costly management practices.

13 Many more parameters are used, however, in determining overall water quality. For example, analyses of cation-anion ratios, critical nutrients, metals, and field parameters such as: dissolved oxygen, pH, specific conductance, temperature, turbidity, fecal coliforms, biochemical oxygen demand, hardness, inorganic toxicants, and aesthetics.

High TDS concentrations can reduce yields and increase irrigation costs, thus having a major impact on agricultural profits. TDS concentrations tend to fluctuate over the seasons. These fluctuations depend on precipitation, the timing and nature of consumptive uses and soil and watershed characteristics. Irrigation diversions tend to adversely impact TDS levels more than other consumptive uses because the return flows dissolve salts as they move back into the streams.

The major problems resulting from irrigation are due to the basic fact that plants are large consumers of water resources. Growing plants extract water from the supply and leave salts behind, resulting in a concentration of the dissolved mineral salts which are present in all natural waters. In addition to having a greater concentration of salts in the return flow resulting from evapotranspiration, irrigation also adds to the salt load by leaching natural salts arising from weathered minerals occurring in the soil profile, or deposited below.[14] Agriculture-related salinity

14 Radosevich, George E., Western Water Laws and Irrigation Return Flow, (Office of Research and Development, EPA, August 1978), p. 2.

impacts are caused by irrigation water returned to streams, deep percolation of salts from saline seeps into the shallow groundwater aquifers, and surface runoff carrying salts to surface waters, also from saline seeps.[15]

Some irrigation returns carry excessive salts, sediments, and nutrients to the receiving streams and contribute to elevated instream temperatures. Increasing use of irrigated agriculture in Montana contributes as much as one-half to two tons of salt to streams every year.[16] The threat of increased stream salinity is real, particularly in basins such as the Musselshell, Teton, lower Yellowstone, Milk, and Marias drainages where salinity levels are already marginal.

Agricultural land use and associated practices are considered to be the most significant sources of

15 See Cooperative Extension Service, Saline Seep Control Symposium: Proceedings of Regional Meeting, (Montana State University; Bulletin 1132, April, 1976), pp. 91-98.

16 Ibid.

nonpoint pollution in Montana[17] and of the nonpoint source pollutants associated with agriculture (which includes sediment, salts, pesticides and nutrients), sediment is considered the most critical problem.[18] Highly related to sediment pollution is dewatering, which is Montana's priority nonpoint source pollution problem.[19] Although water supplies are generally adequate in most Montana basins, locally intense irrigation severely reduces in-stream flows, especially in low water years. Dewatering has been most noticeable in the mainstreams and tributaries to the Beaverhead, Bitterroot, West Gallatin, Big Hole, and Jefferson Rivers, but many other stream segments are also affected

17 "Point" source pollution is pollution that is characterisitically released from a single point, e.g., sewage released from a municipality by means of a pipe. "Nonpoint" source pollution means literally the opposite. It denotes pollution that is "diffused" in nature, e.g. runoff from mine spoils, or more to our point, erosion of agricultural lands due to bad practices and dilution of clean water remaining instream due to excessive irrigation withdrawals.

18 See Department of Health and Environmental Sciences, Statewide Water Quality Management Plan: Recommendation of the Statewide 208 Water Quality Management Planning Project, July 1979, pp. 7-10

19 Department of Health and Environmental Sciences (Water Quality Bureau), Water Quality in Montana-1980, June 13, 1980, pp. 3, 114.

annually. The major impact of excessive withdrawals on western Montana streams is a reduction in fisheries potential caused by low dissolved oxygen (DO) levels. Preliminary fishery resource value data compiled by the Montana Department of Fish, Wildlife and Parks identifies 95 stream segments throughout the state where excessive irrigation withdrawals adversely effect fish populations.[20] The conservation district inventory for the Statewide 208 pollution control program identifies 873 miles of streams with severe annual irrigation dewatering.[21]

TDS concentration and flows also tend to be inversely related. High TDS levels occur more frequently during low flow periods than high flow periods. This occurs because depletions can serve to concentrate the solution in the remaining water and (as we have seen) because certain uses, notably irrigation, generate wastewater flows which are more concentrated than the irrigation diversions.

20 See DHES, 208 Plan...pp. 8-13.

21 Ibid.

Thus, TDS concentration in return flows are generally higher than in irrigation diversions. Several treatment processes are available to reduce TDS concentration; however, all are very expensive so treatment is generally not worth the cost. Although the impacts of irrigation on groundwater quality are virtually unknown, the large and variable acreages under irrigation and the variety of operating techniques make groundwater contamination highly probable in some areas.

In summary, since TDS concentrations can severely limit different consumptive uses, and treatment costs are often prohibitively expensive, programs or policies which help reduce TDS levels can greatly improve the value of water in numerous uses.

STATE SURFACE WATER ALLOCATION SYSTEMS

Traditionally, water quantity allocations has been primarily the responsibility of the States. Congress reaffirmed this state role in Section 101(g) of the Clean Water Act as did President Carter in his national water policy.[22] In order to understand the nature of the

22 "Carter Steers Middle Course on Water Policy", U.S. News and World Report, Vol. LXXXIV, No. 24, June 19, 1978, p. 74. See also, "Water Projects Dispute: Carter and Congress Near a Showdown", Science, Vol. 196, No. 4296, June 17, 1977, pp. 1303-5.

State's responsibility in water quantity allocation, it is necessary to understand the legal systems pursuant to which water is allocated by the States, including the reasons for their evolution and their basic tenets.

Two basic systems of law, the riparian doctrine and the prior appropriation doctrine, govern allocation of surface water by the States. The following is a brief discussion and general overview of these two systems.

Riparian System

The eastern United States saw the advent and the development of the riparian doctrine in the 19th century. It was originally evolved in England and the English version was carried over to the new world.

Principles

> Simply stated, the English version of the doctrine provides that each person owning land along a stream is entitled to the flow of that stream 'undiminished in quantity and quality.' Although later modified to provide that 'reasonable use' could be made of the water in the stream, the doctrine continues to rest on two fundamental principles -- (1) ownership of land along a body of water [riparian ownership] is essential to the existence of a water right; and (2) each riparian owner has an equal right to make a reasonable use of water, even if that right is presently unexercised. 23

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23 Gould, George, State Water Law in the West: Implications for Energy Development, (Informal Report, University of California, Special Issue 1979), p. 3.

Ownership. Waters in the humid states and regions that adhere to the riparian doctrines are a public resource, held in trust by the people of the state. Thus, a landowner whose land borders a stream does not have an ownership right to the waters of the stream, but rather has a fundamental right by virtue of his land location to a reasonable use of the water and to be free from unreasonable uses of others that cause him harm. The climate, along with restrictions on place of use, plus the requirement that the use be a "reasonable" one, when coupled with a naturally abundant supply and low demand, served to limit conflicts over water. Therefore, it was unnecessary to develop a more sophisticated allocation system.

Natural Flow Theory. Under English law, every landholder whose property was adjacent to a stream or body of water was entitled to have the water flow past his land (or maintain a natural lake level) undiminished in quantity or quality. This rule is generally called the natural flow theory. The presumption here is that each riparian owner on a watercourse was entitled to have the stream flow through his land in a condition

that approximated natural conditions -- not perceptibly retarded, diminished or polluted by others. Several eastern states still follow this doctrine although most have abandoned it for the reasonable use doctrine or a combination of the two doctrines.[24]

Reasonable Use. To resolve some of the problems associated with natural flow theory, the American rule of reasonable use came into being. Under this rule, riparian landowners can divert a reasonable amount of water with respect to all other riparians on the stream, and non-riparian lands may, under certain conditions, make a reasonable use of the available waters.

> The determination of reasonableness is made on a case-by-case basis. Priority of use or extent of riparian frontage are not necessarily determinative in considering what is a reasonable use. In spite of the correlative nature of their rights, each riparian is not necessarily entitled to a proportionate share of the available water. Where water supply is insufficient to satisfy all users, an otherwise reasonable use may be determined to be unreasonable under the circumstances and be prohibited. 25

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24 Several expositions are available that follow the demise of natural flow theory in riparian law; more discussion in this paper would be superfluous.

25 EPA, Water Quality/Water Allocation Coordination Study, Draft, (EPA Water Planning Division, Washington D.C., August 1979), p. IV-4. Hereinafter referred to as "EPA, Water Quality...".

Several factors contribute to the determination of a reasonable use. For example, particulars such as rainfall; climate; season of the year; customs and usages; size, velocity, and capacity of the watercourse; nature and extent of improvements on the watercourse; amount of water taken; place and method of diversion; place or use; previous uses; the object, extent, and type of use; its necessity and importance to society; the uses, rights, and reasonable needs of other riparians; and the use's location on a stream add to the finding of reasonable use, which gives preference to "natural" uses over "artificial" uses.[26]

Summary

In summary, the basic concept of the English riparian system is that riparian landowners are entitled to use the water as long as their use does not substantially reduce the quantity and quality of the water available to other riparians. The two basic principles of the doctrine are: (1) that ownership of land along a stream is essential to the existence of a water right,

26 Water for drinking, bathing, household purposes, watering household and farm animals, etc., are all "natural uses" and are accordingly allowed for under the natural flow doctrine. A riparian owner is entitled to withdraw as much water as is fit for those purposes. "Artificial" uses include irrigation, power generation, large-scale stock watering, manufacturing and mining operations.

and (2) each riparian owner has an equal right to make use of the stream, even if that right remains unexercised. These rights cannot be lost through non-use; further, it is a correlative right, which means each landowner must consider the rights of the other riparians. "In times of shortage, theoretically, under a pure riparian system each riparian would be required to cut back water use to the same degree, although in practice this may not be the case."[27]

Prior Appropriation System

"General consensus indicates that in the American West, the initial use of water in large amounts was for working mines; and later widespread irrigation use became dominant."[28] Water often had to be conveyed over long distances from streams, thus making the restriction of use on riparian lands unworkable. Conflicts were common over the use of water in the West because the uses for water were often consumptive in nature and a

27 EPA, Water Quality..., op.cit., p. IV-5.

28 Gould, op.cit., pp. 4-6. Judicial recognition of this miner's custom occurred in California as early as 1855, and it blossomed into a full-fledged legal doctrine in the historic case of Coffin v. Left Hand Ditch Co., decided by the Colorado Supreme Court in 1882.

substantial portion of the water was never returned to the stream. "In resolving disputes over the use of water, the miners applied the same rule which they applied to the minerals they sought -- 'first in time is first in right', that is, the rule of prior appropriation."[29] The evolution of the first in time, first in right doctrine from mining concerns to other more consumptive uses, (i.e. agriculture) logically followed in the course of western history.

> As mining became more competitive, many miners and newcomers to the area began farming. The doctrine protected the first settler to use water on his land. Later settlers had to respect the prior ownership of land and the amount of water which the prior settler was using. 30

Principles

The appropriation doctrine details two concepts or fundamental principles: (1) beneficial use is the basis, limit and measure of the water right and (2) the person first using the water has the better right (i.e., priority).

29 Ibid.

30 Radosevich, op.cit., p. 48.

Beneficial Use. The prior appropriation system requires that water appropriated must be put to a beneficial use.[31] The corollary to that is that water may not be wasted. Appropriative law supports the concept of "maximum utilization" of the water resource.[32] The amount of water an appropriator may take is always limited by the amount he can put to beneficial use. This included the amount consumed as well as the quantity used to transport the water from the point of diversion to the point of use. The requirement for beneficial use will result in the loss of a water right (be it abandonment or forfeiture) if the right remains unused for too long. Different states define beneficial use differently. "The determination of whether a use is beneficial is initially an administrative determination and ultimately a judicial function, although in certain states statutes have listed uses which may be beneficial."[33]

31 Accordingly, there had to be a diversion from a natural stream or body of water. This has been relaxed in most western states during the last decade to allow for in-stream uses for fish and wildlife protection and recreation.

32 Radosevich, op.cit., pp. 40-52

33 EPA., Water Quality...op.cit., p. IV-9

The concept of beneficial use is not static; it has changed as needs, policies, priorities and circumstances have changed.[34]

Priority. The concept of priority can be best visualized through an example. Let us assume that eight people have water rights on the same stream reach. They have all diverted water and have put it to beneficial use. The earliest applicant of the eight will be assigned the highest priority, the next earliest will have the next highest priority, and so on, until the last applicant's water right has been accounted for. When drought conditions occur, water use may be cut back or curtailed, but unlike riparian states, where everyone that possessed a water right on the stream would be cut back the same amount, the prior appropriation system would cut back on the water right of lowest priority first and the next lowest second and so on, so that the earliest water rights on the stream are protected by the right of priority.

34 For example, during the period of time in which the West was being settled, the primary criterion for determination whether a use was beneficial was economic, Thus, such uses as irrigation, public water supply, stock watering, mining, and industry power have traditionally been considered beneficial.

Under the prior appropriation system, a junior appropriator is entitled to water whenever it is not needed by a senior appropriator. He can also insist that a senior appropriator not take more than his appropriation allows.

Mechanics of the Process

Traditionally, five steps were necessary to initiate an appropriative water right:[35]

(1) The intent to appropriate water,

(2) Notice to others of the appropriation,

(3) Compliance with state prescribed formalities,

(4) A diversion of water,

(5) Application of the water to beneficial use.

Under riparian common law, water rights are not lost through non-use. However, in prior appropriation systems, non-use of a water right (usually for three to ten years) can result in abandonment of the right. Only that portion of the water right not used would be lost.

> The purpose of abandonment or forfeiture of unused water, often referred to as the 'use it or lose it' doctrine, is to ensure that the available water supply picture is not distorted,

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35 EPA., Water Quality...op. cit., p. IV-7.

> that certainty is fostered and that speculation in paper water rights is discouraged. 36

Several of the Western States also set forth preferences in their statutes to be utilized generally either in granting initial appropriations or in distributing water during times of shortage. Generally, policies governing the actions of planning agencies may require that certain uses must be given preference over others in the formulation of projects for the development and use of water. Ordinarily, first preference is given to domestic use and second to agriculture, regardless of priority in time. Instream uses are either not mentioned or are at the bottom of the list, because historically they were considered to be of limited economic value.[37]

The territorial extent of these doctrines is not easy to map. Some of the states west of the 94th meridian have pure appropriation systems and some are combined with riparian systems. Figure 3 shows the extent of water law systems in the western states.

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36 Ibid., p. IV-11.

37 In all jurisdictions domestic (household) use is beneficial and is given a preference over other uses. In recent years instream values have begun to be recognized. Further energy development may further impact the determination of what is a beneficial use.

General Overview of Montana's Water Allocation System

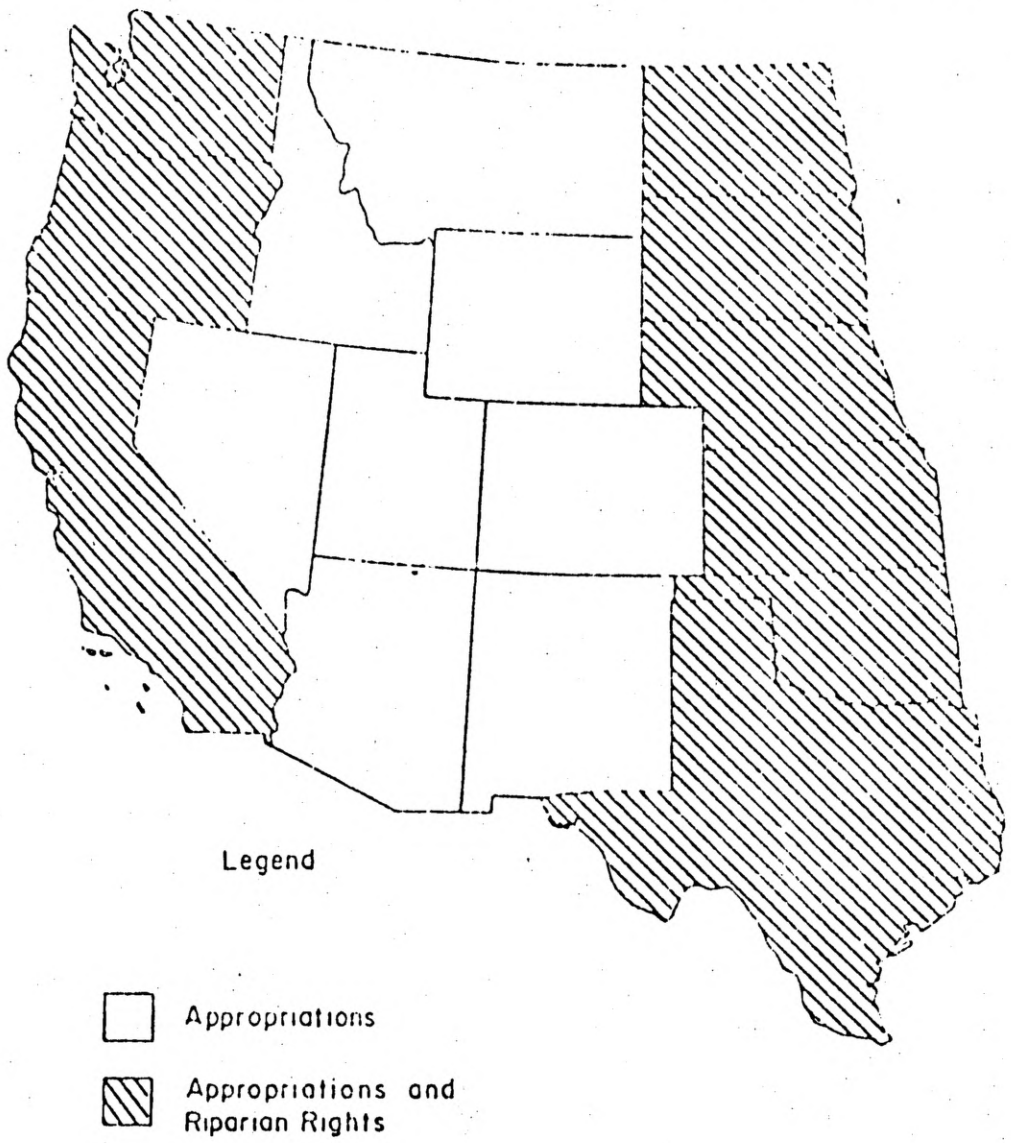
Montana was quick to adopt acceptance of the appropriation doctrine with statutes enacted as early as 1865 at the First Territorial Legislative Assembly in Bannock; an 1885 procedural statute for making an appropriation; the Montana Constitution, which in 1889 proclaimed appropriations of water to be a bona fide public use; and a 1921 statute that rejected riparian and mixed riparian rights in Montana.[38] The 1885 statute provided that a notice was to be posted at the proposed point of diversion by an intended appropriator and within twenty days thereafter file a verified notice with the county clerk of the county in which the appropriation was being made. This apparently meant that no valid water rights could exist without a public notice. However, in 1897 the Montana Supreme Court held that an appropriation could still be initiated simply by taking water and applying it to use.[39]

38 See Gould, op.cit., pp. 198, 199.

39 Ibid., pp. 185-205.

FIGURE 3

SURFACE WATER LAW SYSTEMS IN THE WESTERN STATES[40]



40 From Radosevich, George E., op.cit., pg. 40

This literally meant that valid rights could exist without there being any record of those rights.

Montana encountered other problems with trying to adjudicate rights on streams between 1885 and 1973. For example, statutes for determining respective rights on streams were often times unwieldy, extremely cumbersome, and did not provide the certainty they were intended to provide. Despite early acceptance of the appropriation doctrine, Montana was extremely slow in enacting comprehensive legislation to regulate the initiation of water rights and the distribution of water. In fact, it was not until 1973 that such legislation was enacted.[41]

In any case, it took a new Constitution to prod the Montana Legislature into modernizing Montana's system of water rights administration. Montana adopted the new Constitution in 1972 and in addition to declaring all waters in the state to be the "property of the state, subject to appropriation for beneficial use", directs the legislature to "provide for the administration,

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41 See Chapter Two, under Montana Water Use Act.

control, and regulation of water rights" and to establish a system of centralized records.[42] This, in effect, brought Montana into the 20th Century as far as the initiation and adjudication of water rights is concerned.

CONCLUSIONS

As demands come close to and in some regions even exceed supplies of water, it becomes necessary to seek ways to increase efficiency in the use of water. There is also a great and proper national concern that water be used in ways compatible with its vital role in sustaining a helpful and esthetically pleasing natural environment.

Montanans have always placed a high value on clean water. The state is also famous for its water based recreation and that recognition contributes substantially to the state's economy. The conservation of water is an issue that is sure to be touted in future years as demand for good clean water approaches supply. Evidences in the rate of growth of past water demand strongly suggest the possibility that future water use may be sharply curtailed by environmental factors; such as pollution.

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42 Constitution of the State of Montana, Art. IX, Sec. 1, Chpt 3, Adopted Mar. 22, 1972. Ratified June 6, 1972.

It is impractical, however, and in fact undesirable, to attempt to forecast precise levels of future water use solely on the basis of past water use.

> Water use is responsive to many variables in policy and technology as well as to rates of growth in the population and the economy which cannot be forecast with any assurance. Thus, any projection of the future need for water based only on past trends is quite likely to be wrong. What must be done is to study a variety of alternative futures in which the factors affecting water use are explicitly considered. 43

Estimates of future resource uses are affected by policy assumptions in areas of conservation, energy, and the environment; how much water will be used, where, and for what purpose will depend to a large degree on public policies that are adopted. If it is anticipated that concerted public policy, comprehensive planning, and larger social considerations will shape the important role that water is to have in our society, it should follow that our most important goal be the wise use of our nation's waters: to insure that our water supply is, and will remain of good quality.

This paper advocates the integration of the water quantity and quality functions within the State of Montana. The author feels that this integration will

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43 Trelease, Frank J., Cases and Material on Water Law. (St. Paul: West Publishing Co., 1967), p. 3.

greatly add to beneficial and concerted public policy in the area of water resource management. In like manner, the U.S. Water Resources Council has acknowledged that:

> The most significant deficiency in the past management of water resources was the failure to adequately consider water quality in many areas...(a)ggressive programs directed at water-quality management should have been initiated before major problems arose as a result of industrial and agricultural development and urbanization. Even now, as an all-out attempt to alleviate water pollution problems proceeds, the integration of water quality planning and management with other aspects of water resources development tends to be overlooked. Without integration, the water-quality goals will be more difficult and more costly to meet. 44

Legal scholars have warranted that an important area which should receive attention by the states involves the relationship of water right administration and water quality management.

> Water quality administration is usually vested somewhere within the state health department, while water right control rests with the water right administrator in another department. This may not, in and of itself, be a problem, but often there is no required correlation and coordination to be certain that the overall state water policy is being carried out. Sound water management requires such coordination. 45

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44 U.S. Water Resources Council, Vol. I, op.cit. p. 80

45 Jensen, Dallin W., "Some Legal Aspects of Water Resources Management", Public Administration Review, (Sept/Oct 1977), p. 461.

Public administrators will play a large role in the shaping of such water policy. Their day to day handling of permits; law review and implementation, and organizational theory and management expertise will substantially influence new laws and procedures that will, in turn, achieve better and more efficient water resources management.

This paper will not deal directly with topics that include: federal water allocation programs, the involvement of numerous other agencies with a peripheral interest in water management, interstate water agreements, land management considerations, and other water resource related issues deemed by the author to be largely irrelevant to the central "integration" issue. This is not to say that these issues are not important in their own right, but that they are simply beyond the scope of this paper.

CHAPTER II

LEGAL FRAMEWORKS

In this chapter, the principle laws that give rise to the stated policies within DNRC and DHES will be introduced. This is done so that the reader may appreciate how current programs and policies are set up in each agency. In Chapter Three, reference will occasionally be made to the laws introduced within this chapter.

LEGAL FRAMEWORK - DNRC

For this paper's purpose[1] the Water Resources Division of the DNRC works within the framework of six basic laws: the Federal Water Resources Planning Act, the Montana Water Resources Act, Federal Principles and Standards for Planning Water and Related Land Resources, the Montana Water Use Act, the Montana Environmental Policy Act, and Senate Bill No. 76 (the "Adjudication Act"). The following is a discussion of these laws.

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1 The number of laws under which the DNRC and DHES operate are by no means listed as inclusive in this paper. It is the author's intent to reference only laws germane to the "integration" issue.

The Federal Water Resources Planning Act

The Federal Water Resources Planning Act (FWRPA) was passed in 1965. One of its main purposes was to unify the planning efforts of various Federal, State, and local water resource projects. The statement of policy averred:

> ...it is hereby declared to be the policy of the Congress to encourage the conservation, development and utilization of water and related land resources of the United States on a comprehensive and coordinated basis by the Federal Government, States, localities, and private enterprise with the cooperation of all affected Federal agencies, States, local governments, individuals, corporations, business enterprises, and others concerned. 2

The legislation established a Water Resources Council (WRC) which was to:

> (1) maintain a continuing study of the adequacy of supplies of water necessary to meet the water requirements in each water resource region in the United States.
>
> (2) maintain a continuing study of the relation of regional or river basin plans and programs to the requirements of larger regions of the nation and of the adequacy of administrative and statutory means for the coordination of the water and related land resources policies and programs of the several Federal agencies.

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2 Federal Water Resources Planning Act, Public Law 89-80, 89th Congress, S. 21, July 22, 1965 (As Amended) 42 U.S.C. 1962 et. seq.

> (3) establish...principles, standards, and procedures for Federal participants in the preparation of comprehensive regional of river basin plans and for the formulation and evaluation of Federal water and related land resources projects. 3

Title II of this same act authorized the President to establish river basin commissions in response to a request by the WRC or a group of states within a basin. The principle duties of these commissions were to:

> (1) serve as the principle agency for the coordination of Federal, State, interstate, local and nongovernmental plans for the development of water and related land resources in its area, river basin, or group of river basins.
>
> (2) prepare and keep up to date, to the extent practicable, a comprehensive, coordinated, joint plan for Federal, State, interstate, local and nongovernmental development of water and related resources.
>
> (3) recommend long-range schedules of priorities for the collection and analysis of basic data and for investigation, planning and construction of projects.
>
> (4) foster and undertake such studies of water and related land resources problems in its area, river basin, or group of river basins. 4

Title III provided financial assistance to the states for state water planning activities meeting specified criteria. Funds are allocated among states

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3 Ibid., Sections 102, 103.

4 Ibid., Sections 201, 204.

on the basis of "(1) the population, (2) the land area, (3) the need for comprehensive water and related land resources planning programs, and (4) the financial need of the respective states."[5]

Under Title III, the states are to submit water planning programs to the WRC that provide for comprehensive and coordinated planning between all Federal, State, local agencies, and nongovernmental entities that have responsibilities in affected areas. Other statewide planning programs are also to be coordinated with the water planning programs of the particular state agency involved.

Montana Water Resources Act

The Montana Water Resources Act of 1967 (MWRA) was written to establish a water planning program which would qualify for Federal Title III funding under the FWRPA. The declaration of policy which introduced the act stated in part:

> The state, in the exercise of its sovereign power, acting through the Department of Natural Resources and Conservation shall coordinate the development and use of the water resources of the state so as to effect full utilization, conserva-

5 Ibid., Section 302.

> tion and protection of its water resources. The water resources of the state must be protected and conserved to assure adequate supplies for public recreational purposes and for the conservation of wildlife and aquatic life... (t)he greatest economic benefit to the people of Montana can be secured only by the sound coordination of development and utilization of water resources with the development and utilization of all other resources of the state... (t)o achieve these objectives, and to protect the waters of Montana from diversion to other areas of the nation, it is essential that a comprehensive, coordinated multiple-use water resource plan be progressively formulated, to be known as the 'state water plan.' 6

In order to fulfill the intent of the Act as quoted above, the Montana Legislature further spelled out the procedure for development and implementation of the State Water Plan. The Act directed the DNRC to:

> (1) gather from any source reliable information relating to Montana's water resources, and prepare therefrom a continuing comprehensive inventory of the water resources of the state.
>
> (2) formulate and with the approval of the Board of Natural Resources and Conservation (BNRC), adopt, and from time to time amend, extend or add to, the 'state water plan'.
>
> (3) submit to each general session of the legislature the state water plan or any...additions or revisions which the department has formulated and adopted.

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6 Montana Code Annotated, 85-1-203, 1979.

(4) prepare a continuing inventory of the ground water resources of the state. 7

In general, MWRA described a state water planning program that is similar to the one envisioned by the federal law, i.e., to publish a comprehensive, coordinated plan that considers all relevant federal, state and non-governmental agencies.

Early in 1968, the Montana Water Resources Board (the precursor of the BNRC) reviewed the legislative mandate and recommended that the State Water Plan be developed in four distinct phases.[8]

Federal Principles and Standards for Planning Water and Related Land Resources

In 1973 the Water Resources Council published in the Federal Register, Principles and Standards for Planning Water and Related Land Resources (P & S) as called for in Section 103 of the 1965 Water Resources Planning Act.[9] This is the blueprint that water resource planners use to guide the development of the State Water Plan. This document separately discusses the

7 Ibid., 85-1-203.

8 See Chapter Three under "State Water Plan".

9 Contained in Federal Register, Vol. 38, No. 174, Part III, 24778 et. seq., September 10, 1973.

principles, which provide a very general set of guidelines for project evaluation and plan formulation; and the Standards, which define in careful and specific terminology, the methods for these items.

> The Principles state that they are to "provide the basis for Federal participation with river basin commissions, States, and others in the preparation, formulation, evaluation, review, and transmittal to the Congress of plans for States, regions, and river basins; and for planning of Federal and federally assisted water and land resources programs and projects and Federal licensing activities as listed in the Standards. [10]

Objectives

The Principles establish two equal objectives for water resource planning. They are:

> A. To enhance national economic development by increasing the value of the Nation's output of goods and services and improving national economic efficiency.
>
> B. To enhance the quality of the environment by the management, conservation, preservation, creation, restoration, or improvement of the quality (emphasis added) of certain natural and cultural resources and ecological systems.

Planning Process

The planning process described in the Principles and discussed in detail in the Standards include the following steps.

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10 Ibid.

(1) Specify components of the objectives relevant to the planning setting;

(2) Evaluate resource capabilities and expected conditions without any plan;

(3) Formulate alternative plans to achieve varying levels of contributions to the specified components of the objective;

(4) Analyze the difference among alternative plans which reflect different emphasis among the specified components of the objectives;

(5) Review and reconsider, if necessary, the specified components; the planning setting and formulate additional alternative plans as appropriate; and

(6) Select a recommended plan from among the alternative plans based upon an evaluation of the trade-offs between the objectives of national economic development and environmental quality and considering, where appropriate, the effects of the plans on regional development and social well-being.

The Principles and Standards are to be used in project evaluation and plan formulation by all federal agencies constructing water resource projects or doing water-related planning. The sections dealing with

project evaluation describe specific applications of benefit-cost analysis and environmental evaluation techniques. The sections dealing with plan formulation define a process by which groups of projects are sorted into different plans and an optimal plan is selected from the alternative plans. The Standards dealing with plan formulation describe in considerable detail the accounting procedure used to present an array of plans and the trade-off procedure to be used in selecting an optimal plan.

The Standards

The introduction to the Standards state that:

> Although these standards are not binding upon State and local bodies participating in water and land resources planning, it is intended that the standards be broad and flexible enough to accommodate the goals and objectives of such entities. The standards apply to Federal participation in Federal-State cooperative planning and should also provide a useful guide to State and local planning. 11

The Standards specify three levels of water resource planning. Level A framework studies are designed to:

> (1) Determine the extent of water and land problems and needs;
>
> (2) Indicate the general approaches that appear appropriate for their solution; and

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11 Ibid.

(3) Identify specific geographic areas where regional river basin, or implementation planning studies are needed. 12

Level B regional or river basin plans are reconnaissance level evaluations of water and land resources for a selected area. They are prepared to resolve complex long-range problems identified by framework studies and assessments pursued by individual Federal, State and local entities.

Level C implementation studies "are program or project feasibility studies generally undertaken by a single Federal, State, or local entity for the purpose of authorization or initiation of plans."[13]

Level C studies are the final step in project design and evaluation before construction begins.

DNRC's Response

In response to the P & S, the DNRC set guidelines for the formulation of the State Water Plan which reflect the objectives and plan formulation steps described in the Principles and Standards.[14] The

12 Ibid.

13 Ibid.

14 Montana Department of Natural Resources and Conservation, Water Resources Division, The Framework Report, Vol. 1, (Bozeman, MT: Colorworld, Inc., Oct 1976) pp. 13-14.

guidelines state that:

1. The State Water Plan will serve the general welfare of the people by striving toward a balance of economic efficiency, resource development, and environmental quality.

2. The plan will describe alternatives formulated to meet the needs of the people for goods, services and benefits derived from water and related land resources and make recommendations for management of those resources.

3. The importance of public needs and desires and the pre-requisite of overall public involvement throughout the entire planning process will be fully recognized.

4. The plan will give priority to (a) in-basin use of water resources, and (b) Montanan's interests in water use.

5. The plan will consider the flexibility of state and federal laws, policies, and institutional relationships governing both short and long-range water planning and development.

6. The plan will be formulated utilizing only those water rights available for Montana's uses. Full consideration will be given tc all interstate agreements and existing water rights in Montana.

7. Other planning efforts will be evaluated to determine the full impact of other alternatives for uses of Montana's water and related land resources.

8. Due to anticipated rapid changes in social, economic, environmental, technological and physical factors, the basin planning efforts will be formulated so as to provide a flexible guide for water and related land resource planning in Montana, now and well into the future. 15

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15 Ibid., pg. 15. Emphasis supplied.

The overall objective of the State Water Plan is "to set out a progressive program for the conservation, development, and utilization of Montana's water resources for the maximum economic and social prosperity of the people."[16] Under this multiobjective planning theory, all programs will be evaluated from the standpoints of economic efficiency, environmental quality, and regional development.

Therefore, the use of multiobjective planning in the Montana water planning program provides not only a logical and objective method of developing a program for the maximum economic and social prosperity of her citizens, but it fits into and is required by the federal water planning principles and standards.

The Water Use Act of 1973

The Constitution of the State of Montana as adopted by the Constitutional Convention on March 22, 1972, and as ratified by the people of Montana on June 6, 1972, set the stage for the later passage of the 1973 Montana Water Use Act. Montana underwent a period of major new environmental legislation in 1973 and 1974

16 Idem.

and the Water Use Act for the first time in the history of Montana's statehood implemented the mandates that the 1972 Constitution required:

> ...that the legislature provide for the administration, control, and regulation of water rights and establish a system of centralized records of all water rights. The legislature declares that this system of centralized records recognizing and establishing all water rights is essential for the documentation, protection, preservation, and future beneficial use and development of Montana's water for the state and its citizens and for the continued development and completion of the comprehensive state water plan. 17

Likewise, the statement of policy affirmed that it was the intent of the state:

> ...to encourage the wide use of the state's water resources by making them available for appropriation...and to provide for the wise utilization, development, and conservation of the waters of the state for the maximum benefit of its people with the least possible degradation of the natural aquatic ecosystems. 18

The Montana Water Use Act of 1973 was the most comprehensive change of Montana's water laws in the state's history.

Most existing laws prior to July 1, 1973, concerning appropriation and adjudications were repealed. As a

17 Montana Code Annotated, 85-2-101, 1979.

18 Ibid., Emphasis supplied.

result, all waters of the state, whether surface, ground, diffused, or geothermal, are now included under one administrative system. DNRC duties under the act include, to:

> (a) enforce and administer rules adopted by the Board of Natural Resources and Conservation (the DNRC's advisory board) in relation to the governing of the issuance and terms of...permits.
>
> (b) require the owner or operator of appropriation facilities to install and maintain suitable constolling and measuring devices....
>
> (c) require the owner or operator of appropriation facilities to report to the DNRC the readings of measuring devices....
>
> (d) regulate the construction, use, and sealing of wells to prevent the waste, contamination, or pollution of ground water.
>
> (e) prescribe procedures, forms and requirements for applications, permits, certificates, declarations, and proceedings....
>
> (f) keep in its Helena office a centralized public record of...permits, certificates, declarations, applications, and other documents....
>
> (g) cooperate with, assist, advise, and coordinate plans and activities with federal, state, and local agencies in matters...(relating to surface and ground waters); and,
>
> (h) upon request by any person, cooperate with, assist, and advise that person in matters pertaining to measuring water or filing declarations with the DNRC.... 19

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19 Montana Code Annotated, 85-2-112 and 113, 1979.

What the Water Use Act in effect said to the farmer, rancher, or industrialist was that after July, 1973, they could no longer procure rights to a specific portion of water by the same methods that had been used up to 100 years previous. The Water Use Act was now telling the appropriator that a centralized record-keeping system was being put in effect and local county control over such water right records was to be given to the state to administer. Accordingly, the Water Use Act also dictated the terms to be followed before a permit to appropriate water could be approved:

> (1) The department may issue a permit for less than the amount of water requested, but in no case may it issue a permit for more water than is requested or than can be beneficially used without waste for the purpose stated in the application. The department may require modification of plans and specifications for the appropriation... and may issue a permit subject to terms, conditions, restrictions, and limitations it considers necessary to protect the rights of other appropriators, and it may issue temporary or seasonal permits.
>
> (2) The department may limit the time for commencement of the appropriation works, completion of construction, and actual application of the water to the proposed beneficial use. In fixing those time limits, the department shall consider the cost and magnitude of the project, the engineering and physical features to be encountered and, on projects designed for gradual development and gradually increased use of water, the time reasonably necessary for that...use. 20

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20 Montana Code Annotated, 85-2-312, 1979.

The Criteria for Issuance of a Permit by the DNRC to the applicant are that:

(1) There are unappropriated waters in the source of supply,

(a) at times when the water can be put to the use proposed by the applicant,

(b) in the amount the applicant seeks to appropriate, and

(c) throughout the period during which the applicant seeks to appropriate, the amount requested is available.

(2) The rights of prior appropriators will not be affected,

(3) The proposed means of diversion or construction are adequate,

(4) The proposed use of water is a beneficial use,[21]

(5) The proposed use will not interfere unreasonably with other planned uses or developments for which a permit has been issued or for which water has been reserved, and,

(6) An application for an appropriation of 10,000 acre-feet a year or more, or 15 cubic feet per second or more, proves by clear and convincing evidence that the rights of a prior appropriator will not be adversely affected. 22

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21 According to the Montana Water Use Act: "Beneficial use" means a use of water for the benefit of the appropriator, other persons, or the public, including, but not limited to, agricultural, domestic, fish and wildlife, industrial, irrigation, mining, municipal power, and recreational uses....

22 Montana Code Annotated, 85-2-311, 1979.

Water Reservations

The Water Use Act also allows for the granting of water "reservations", which are no more than quantities of water held in reserve for governmental agencies alone -- acting on behalf of the public will. Montana is somewhat of a pioneer in this practice. For example, the Montana Legislature felt that it was necessary to protect some minimum flows in designated streams of the state. Through the initiation of reservation requests, the DHES or (typically) the Department of Fish, Wildlife and Parks, can help assure aquatic fish and wildlife preservation by asking for and being granted a reservation of such waters for that particular purpose. Many other states have no provision for anything approaching this in their laws. Other examples include municipalities who wish to reserve water for expected future use, or federal agencies, who may wish to reserve water for a large dam or irrigation project.

Under the Montana Water Use Act, the BNRC, upon request, can approve the reservation of water for beneficial public use. Only governmental agencies, such as municipalities, counties, conservation districts, state departments, and federal agencies, may submit such

applications. The applications must document the future use of a given amount of water for specific purposes as provided by law, and the BNRC makes all final decisions on these water reservation requests, which if established, are subject to valid prior water rights.

According to law, an application for reservation of water shall contain information to show the following:

(1) The purpose of the reservation. The beneficial use or uses to which the reserved water will be applied shall be indicated.

(2) The need for the reservation. The applicant shall describe why a water right by permit will not meet the needs of the applicant.

(a) If the water involves consumptive uses, the applicant shall explain why it cannot construct the necessary facilities to divert, convey and use the water in the near future, and how that situation may change to allow that construction.

(b) If the application is for instream uses, such as fish, and wildlife, recreation, water quality, or protection of existing rights, the applicant shall document why the requested level or minimum flow of water should be protected from depletion. This documentation shall include the environmental benefits and detriments of maintaining the minimum flow, as well as the environmental affects of not maintaining a minimum flow, level or quality of water.

(3) The amount of water necessary for the purpose of the reservation.

(4) That the reservation is in the public interest. The applicant shall explain the public benefits

> which will occur from the reservation. These benefits shall be related to economic and environmental beneficial and adverse effects, and should refer to any state and federal legislation or policies that support the particular proposed beneficial use. 23

Although individual landowners or corporations cannot reserve water in the same manner as state agencies and municipalities, when the individual landowner applies for and receives a permit to appropriate water and states a given period of time for development or construction, that landowner has in effect reserved water for his use, subject to meeting the terms of the permit.

Preference

Noteably, the Water Use Act did not make any special provision for classifications of water use based upon preference, nor does one exist at present. "In 1973, Montana was unlike most other western states, which by then had enacted some provisions for preference or priority among different uses of water." 24

Montana Environmental Policy Act

Implications for Water Use

One of the most significant environmental measures

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23 Montana Code Annotated, 85-2-316, 1979.

24 Eagle, Robert E., "The Politics of Water Allocation in Montana", Montana Business Quarterly, Vol., Autumn 1978.

passed in the last decade is the Montana Environmental Policy Act (MEPA). Enacted in 1971, MEPA is based almost verbatim on the National Environmental Policy Act (NEPA) of 1969. MEPA recognizes that "each person shall be entitled to a healthful environment and that each person has the responsibility to contribute to the preservation and enhancement of the environment."[25] Under MEPA, any proposed water appropriation constituting a "major action significantly affecting the quality of the human environment" will require an Environmental Impact Statement (EIS).[26] The necessity for an EIS must be evaluated on a case by case basis for each reservation request, and is governed by MEPA, BNRC, and DNRC regulations and guidelines. If several applications for reservations of water are received, however, or are expected to be received within a short time period, a cumulative EIS will be prepared if the total size of the cumulative requests indicate an EIS is necessary. The EIS, if required, is prepared prior to BNRC action on the reservation application.

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25 Montana Code Annotated, 75-1-103, 1979.

26 Ibid., 75-2-201, 1979.

Senate Bill No. 76

Existing Rights

On April 18, 1979, Senate Bill No. 76 (SB 76) passed the 46th Legislature in Montana and became a law on May 11, 1979, when Governor Judge signed the Bill. The Act created a new statewide system to expedite and facilitate the adjudication of existing water rights (rights existing prior to the Water Use Act of 1973) it amended several sections of the Water Use Act of 1973 and specifically repeals the sections dealing with water rights adjudication.[27]

Under the old law, the DNRC was instructed to adjudicate existing water rights in another manner. According to the old law, adjudication of water rights in Montana was to be done on a geographical water basin to basin basis.

Water rights were to be collected, researched, and field investigated for each major drainage basin in Montana. Once gathered, the water rights were to be publically listed, and any objections were to be resolved before the courts finally issued certified water rights

27 Montana Code Annotated, 85-2-212, 1979.

to individuals within the basin.

In actual practice, however, this process proved to be very time consuming. After one river basin -- the Powder -- was adjudicated, conservative estimates placed the entire job to take well over one hundred years to complete![28]

SB 76 proposed to do better. Instead of having state officials dig through old records and filings, contact water users for information regarding existing rights, and compile the information, SB 76 advanced the idea that each individual water user should be accountable for his own individual water rights. Therefore, it was to be incumbent upon each water right holder to declare his claim to water before the courts. SB 76 set up four district court water divisions, each to be presided over by a "water judge", who in turn employs a "water master". The four divisions are:

(a) The Yellowstone River Basin

(b) The Lower Missouri River Basin

(c) The Upper Missouri River Basin

(d) The Clark Fork River Basin

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28 Recollection from the author.

SB 76 is now the law that must be followed for the statewide adjudication of existing water rights (those that existed before 1973 and the Water Use Act) through the filing of water right claims by individual water right users. Very briefly, SB 76 states that the Montana Supreme Court shall notify persons interested in claiming existing water rights by issuing an order declaring those persons to file with the DNRC no later than January 1, 1982, a statement of claim for each water right asserted, on a form provided by DNRC and as ordered by the Montana Supreme Court. The failure to file a claim of an existing right by the January 1, 1982, deadline will establish a "conclusive presumption of abandonment of that right."[29] The Act provides that the DNRC do the following:

> (1) Provide information and assistance as may be required by the water judge to adjudicate claims of existing rights.
>
> (2) Establish information and assistance programs to aid claimants in the filing of claims for existing rights.
>
> (3) Conduct field investigations of claims that the water judge in consultation with the DNRC determines warrant investigation, and
>
> (4) Provide the water judge with all information in its possession bearing upon existing rights... [30]

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29 Montana Code Annotated, 85-2-226, 1979.

30 Ibid., 85-2-243, 1979.

Decrees

SB 76 also mandates that within a reasonable time after the close of the filing period, the water judge shall issue a Preliminary Decree. The Preliminary Decree publically states that the water right claimant has a valid water right existing in the amount stated, and this determination shall be based on the statements of claim before the water judge, the data submitted by the DNRC, and any additional data obtained by the water judge. The water judge may, if satisfied, adopt the water master's report as the Preliminary Decree. If he is unsatisfied, he may recommit the report to the water master with instructions, or modify the report and issue the Preliminary Decree. Assuming no objections to the Preliminary Decree by the DNRC, a person named in the Preliminary Decree, or any other person with good cause shown, the water judge is then required to issue a Final Decree. The Final Decree will establish the existing rights and priorities within the water judge's jurisdiction of persons required by the law and order to file a claim for an existing right. The Final Decree will state the findings of fact, and any conclusions of law, upon which the existing rights and priorities of each person named

in the decree are based. Out of the Final Decree emerges a Certificate of Water Right issued by the DNRC to the holder of the water right.

LEGAL FRAMEWORK - DHES

The body of law that culminates in present Federal water quality statutes has a long and interesting history dating back to the U.S. Rivers and Harbors Act of 1899. By design, Montana's water quality law today mirrors the federal legislation. This has been done to allow the state to assume control of programs created by federal law. Virtually every program enacted for, and dealing with, Montana's water quality can be found in the Federal Water Pollution Control Act (FWPCA) and its amendments.

This section of the chapter will also include discussion of the "Clean Water Act", the Montana Water Quality Act and the Montana Water Quality Standards.

Federal Water Pollution Control Act

As amended, the objective of the FWPCA was to "restore and maintain the chemical, physical, and biological integrity of the nation's waters."[31] To

31 Federal Water Pollution Control Act, 92d Con., 2d Sess., P.L. 92-500/ 86, Stat. 816 (1972), 33 U.S.C., Sec. 1151, et. seq. (1972).

achieve this objective, a number of goals were declared. Among those goals existed those which declared:

> The discharge of pollutants into navigable waters be eliminated by 1985; that wherever attainable, an interim goal of water quality which provides for the protection of wildlife, aquatic life and recreation be achieved by July 1 1983; that it is the national policy that areawide waste treatment management processes be developed and implemented to assure adequate control of sources of pollutants in each state. 32

While the 1972 amendments to the FWPCA retained and strengthened the previous system of water quality standards, they more importantly changed the course of planning efforts to achieve clean water by requiring comprehensive river basin and regional water quality planning for both point sources and nonpoint sources of pollution. Pursuant to the FWPCA amendments, the states retained, under certain conditions, the primary responsibility of controlling water pollution.

The FWPCA mandated the form of Level B study plans under the Water Resources Planning Act, and declared that plans be completed by the WRC for all river basins in the United States by January 1, 1980.[33] The FWPCA

32 Ibid.

33 Federal Water Pollution Control Act, op.cit., Section 209.

amendments also required that a National Pollutant Discharge Elimination System (NPDES) permit for all point sources of pollution be established, providing the first major direct enforcement procedure ever against pollution.[34] Section 208 is the provision in FWPCA that requires states to formulate regulatory programs which control nonpoint sources of pollution.

The Clean Water Act

The 1977 Amendments to the FWPCA comprise what is collectively called the "Clean Water Act".[35] This act was a periodic improvement on the original FWPCA and was designed to extend financial authorizations and "fine-tune" the existing law. The 1977 amendments were shaped in part by what might be described as "institutional forces". For instance,

> Though recognizing a continuing and important state role in water quality planning and management, P.L. 92-500 (FEPCA) has defined the Federal interest to be both broad and, in some areas, pre-eminent. Implementation of the 1972 law thus led to some conflicting interpretations of the division of authorities and responsibilities between Federal and State agencies. The 1977 amendments respond to this problem

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34 Ibid.

35 Fed. Water Pollution Control Act Amendments (Clean Water Act) 95th Con., 1st Sess., P.L. 95-217; 91 Stat. 1566 (1977), 33 U.S.C. Sec. 1251 et. seq. (1977).

by more explicitly defining the roles of the different levels of government. 36

The Clean Water Act was designed to encourage Federal/State cooperation to achieve clean water. Even while outlining broad new Federal authority, the Act stated: "It is the policy of the Congress to recognize, preserve and protect the primary responsibilities and rights of states to prevent, reduce and eliminate pollution.[37] State, local and Federal governments each have water pollution control responsibilities, the nature of which varies from program to program. A major thrust of the 1977 amendments was to shift toward the exercise of more authority by the states, so Congress accordingly amended the Act to assure that it would not interfere with state water rights and water allocation systems.

In the early 1970's pollution problems were greatest in the cities and urban areas. In response to the 1972 law, state water quality programs focused almost solely on urban plights. Consequently, these took priority. Understandably, rural communities expressed

36 Environmental Protection Agency, A Guide to the Clean Water Act Amendments, (Washington OPA 129/8, November 1978)

37 Ibid.

frustration over the emphasis to consider urban water quality problems at the expense of rural ones. Furthermore, inherent difficulties in the law's language dealing with nonpoint source pollution were voiced by agricultural interests. As a result, several of the 1977 amendments deal directly with the needs and problems of small communities, rural areas, and agriculture. The Clean Water Act states that any state or areawide water quality management plan must identify, if appropriate, agricultural, silvicultural, mine, construction, residual waste and other related nonpoint sources of pollution (including irrigation return flows) and set forth procedures and methods (including land use requirements) to control to the extent feasible such sources.[38] To help ease the potential financial burden incurred by private landowners in complying with this section the law created a rural landowner financial assistance program.[39]

39 Ibid., at Section 35, The program involves long-term contracts for installation of Best Management Practices (BMP's) by landowners, under Federal cost-sharing of up to 50 percent.

The Montana Water Quality Act

Authority for the state's water pollution control program comes from the Montana Water Quality Act.[40] This program is administered by the Department of Health and Environmental Sciences (DHES) and is the responsibility of the Water Quality Bureau (WQB) within that department. The state's goals with regard to water pollution control are described in the public policy of the Act: It is the public policy of this state to:

> (1) conserve water by protecting, maintaining and improving the quality and potability of water for public water supplies, wildlife, fish and aquatic life, agriculture, industry, recreation, and other beneficial uses;
>
> (2) provide a comprehensive program for the prevention, abatement, and control of water pollution; [41]
>
> (3) provide that the DHES shall advise, consult, and cooperate with other State and Federal agencies, affected groups... in the formulation of a compre-

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40 Montana Code Annotated, 75-5-101 through 75-5-636, 1979.

41 Under M.C.A. 75-5-103(5), 1979, "pollution" was defined to mean "contamination, or other alteration of the physical, chemical, or biological properties of any state waters, which exceeds that permitted by Montana water quality standards, including...change in temperature, taste, color, turbidity, or odor; or the dischange, seepage...of any liquid, gaseous, solid, radioactive, or other substance into any state water which will or is likely to create a nuisance or render the waters harmful, detrimental, or injurious to public health, recreation, safety...birds, fish or wildlife."

hensive plan to prevent and control pollution. 42

(4) promulgate rules for the Water Pollution Control Advisory Council to follow. 43

Board Duties Under the Act

The Act directs the Board of Health (BHES) to:

(1) establish and modify the classification of all waters in accordance with their present and future most beneficial uses;

(2) formulate standards of water purity and classification of water according to its most beneficial uses, giving consideration to the economics of waste treatment and prevention;

(3) review, from time to time at intervals of not more than 3 years, established classifications of waters and standards of water purity and classification. 44

The Act stipulates that in revising classifications or standards, or in adopting new classifications or standards,

> The BHES may not so formulate standards of water purity or classify any state water as to lower any water quality standard applicable to any state water below the level applicable under the classifications and standards adopted except upon a finding that a particular state water has been classified under a standard or classification of water quality that is higher than the actual water quality that existed at the time of classification. 45

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42 Montana Code Annotated, 75-2-213, 1979 Em. Supp.

43 Ibid., 75-5-221, 1979.

44 Ibid., 75-5-301, 1979.

45 Ibid., 75-5-302, 1979, emphasis supplied.

Furthermore, the Act directly speaks to the issue of nondegradation of state waters by saying:

> (1) that any state waters whose existing quality is higher than the established water quality standards be maintained at that high quality unless it has been affirmatively demonstrated... that a change is justifiable as a result of necessary economic or social development and will not preclude present and anticipated use of these waters; and
>
> (2) any industrial, public, or private project or development which would constitute a new...or increased source of pollution to high-quality waters, provides the degree of waste treatment necessary to maintain that existing high water quality. 46

Montana is one of few states that recognizes that "pollution" as a water quality law concept does not include "naturally occurring conditions or material present from run-off or percolation over which man has no control or from developed land where all reasonable land, soil, and water conservation practices have been applied.[47]

Department Duties Under the Act

The Act also directs the BHES to adopt rules governing the permit process for point source pollution, and instructs the DHES to administer the permit process.[48] The Act

46 Ibid., 75-5-303, 1979.

47 Ibid., 75-5-306, 1979.

48 Ibid., 75-5-401, 1979.

provides authority for the DHES to:

(1) monitor state waters for wastes...;

(2) investigate conditions relating to pollution of state waters or violations of permit conditions;

(3) have access to and copy any records required;

(4) sample any effluents...49

In addition to stating that pollution (as defined in the Act) is unlawful, the Montana Water Quality Act notes that violations of any chapters within the Act will result in notice served to the alleged violator and may eventually call for a public hearing before the BHES.[50] Orders of compliance may also be invoked by the DHES and injunctions may be authorized against a violator of conditions, limitations, standards or other requirements.[51]

Water Quality Standards

The "roots" of the present day water quality standards were derived from the old state Board of Health (DHES's predecessor).

49 Ibid., 75-5-602 and 75-5-603, 1979.

50 Ibid., 75-5-605 and 603, 1979.

51 Ibid., 75-5-612 through 614, 1979

The State Board of Health was created in 1901 by the state legislature to deal with public health matters of the State of Montana. In 1907, the state legislature passed Montana's first stream pollution law prohibiting the discharge of raw sewage and other polluting matter to surface waters used for drinking water, ice supply, and other domestic purposes by cities, towns, and public institutions. Under the law, the State Board of Health ordered every city in the state to construct a sewage treatment works. In 1929, the Board began to recognize that a multitude of materials may occur in waters which could adversely affect public health, domestic water supplies and other beneficial uses such as fish propagation and water for livestock and irrigation. Water quality up to this time had been gauged by bacteriological examinations and reported fecal contamination. Thus began a series of stream pollution studies under limited funding and manpower to evaluate industrial, municipal and agricultural water pollution problems and water quality needs. The objective was to enact possible comprehensive legislation to control stream pollution and protect the beneficial uses of Montana's lakes and streams. In 1955, the state legislature passed a water

pollution control law to protect domestic water supplies, fish, wildlife, and other aquatic life and recreational, industrial, and agricultural uses. The law required that Montana streams be classified according to their present and future most beneficial uses and that water quality criteria and minimum waste treatment requirements be adopted to protect each classified use.[52] The classification of our streams and adoption of water quality criteria was accomplished in 1960. Except for some later revisions upgrading the Standards to reflect water quality improvements, the Standards are essentially the same.

Consequently, the Water Quality Standards were adopted to:

> Establish maximum allowable changes in water quality and establish limits for pollutants which affect prescribed beneficial uses of state waters. The DHES adopts as a rule the policy that best practicable treatment and control of waste, activity and flow is to be provided to maintain dissolved oxygen and overall water quality at the highest possible levels, and water temperatures, coliform bacteria concentrations, dissolved chemical substances, toxic materials, radioactivity, turbidities, color, odor, and other deleterious substances at the lowest possible levels... the water quality standards and composed of water-use classifications, water-use descriptions and specific water quality criteria, and general water

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52 See Revised Codes of Montana, 69-4808.2 (1947).

> quality criteria...(g)eneral water quality criteria apply to all state waters except where in this rule specific water quality criteria are more applicable to a specific water-use classification. 53

The law provides that before the BHES may classify streams or establish standards, adequate notice must be served to the public. Usually this takes the form of a public hearing, open to all interested persons and parties and especially those persons that the BHES believes may be affected by their proposed actions. These hearings provide the opportunity for all concerned to submit data, views and or arguments.[54]

SUMMARY

In this chapter, a synopsis of law related to the various programs of both the DNRC and DHES was given. An effort was made to outline the major operating laws for each department, but only those laws pertinent to the central theme that is discussed in this paper -- the integration of water quantity and quality functions within each department.

Chapter three will discuss the current management and planning programs of the DNRC and DHES.

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53 Administrative Rules of Montana, Vol. 6, Part 1: 16.20.101 et.seq. (1980). Emphasis supplied.

54 See Montana Code Annotated, 75-5-307, 1979.

CHAPTER III

CURRENT PROGRAMS AND POLICIES

The intent of this chapter will be to inform the reader of the mechanics of Montana's state water resources planning and management system, which is vested within the DNRC, and the state's water quality planning and management system, which is based within the DHES.

A discussion of DNRC's system is first.

DNRC's SYSTEM

DNRC Planning

State Water Plan

Currently the state water planning process is to do Level B studies and adopt them as the state water plan.

The process required to formulate a Level B study is much the same as the one envisioned for the original state water plan, and consequently the Level B study serves to satisfy both federal and state requirements for a planning process.

The following four phases of the State Water Plan and its accompanying planning steps are outlined below:

I. Phase One: Inventory

   a. Accumulates detailed knowledge of the water and land resources of the state and their present management and use.

b. Gathers all pertinent data relevant to the study area.

1. This includes compilation of data from all reliable sources, and, where informational gaps exist, appropriate methods and techniques are used for estimation. Once the information has been compiled, it is correlated with information gathered for other basins.

II. Phase Two: Requirements and Projections

a. Development of water requirements and projections for future water and related resource use.

b. Specification of components that are relevant to the planning area.

1. From the outset, the Water Resources Division (of the DNRC) consults federal, regional, state, and local groups to identify the particular needs and problems that are significantly related to the use and management of the resources in each planning area.

III. Phase Three: Plan Formulation

a. Development and publication of alternative plans, programs, and projects to be implemented in each of three time periods: between the present and 1980, between 1980 and 2000, and between 2000 and 2020.

b. Formulation of alternative plans to reach differing levels of development for both the study area and the entire state.

c. Review of objectives and analysis of differences between alternative plans.

d. Selection of plan based upon an evaluation of the tradeoffs among the various alternatives.

1. In accordance with the P&S (Principles and Standards), four accounts will be used for displaying beneficial and adverse effects and for showing and analyzing the tradeoffs among plans. The four accounts to be used are: National Economic Development (NED), Regional Development (RD), Environmental Quality (EQ) and Social Well Being (SWB). These accounts define the attributes and non-attributes of a

particular alternative.

e. Distribution of the plan for discussion.

1. Public participation efforts have accompanied each of the Level B studies. These generally include formation of citizen advisory groups which reflect a broad range of interests within the basin. The advisory groups are kept aware of study progress and are given opportunity to comment. In addition the management board holds public hearings to explain the planning process, to discuss controversial plan elements and to receive comments on the plans.

IV. Phase Four: Implementation

a. The implementation of recommended plans, programs, and projects. Some of this implementation takes place concurrently with present planning efforts; much is the result of future detailed surveys of problem areas, and could require enactment of additional legislation.

Although current Level B studies make up the State Water Plan, it is likely that frequent updating of

additional State Water Plan publications and publication of progress reports will be necessary to keep all involved in the decision-making process aware of changes in Montana's water resources situation.

Three Level B studies have subsequently been undertaken in Montana -- the Flathead, Yellowstone and Missouri. The Flathead Level B was adopted by the state legislature as the beginning of a state water plan.[1] The Yellowstone Level B was superceded by the Yellowstone Reservations[2], and the Missouri Level B is presently being completed.

Leadership for Level B studies is provided by Montana and coordinated by the appropriate river basin commission[3]. The Missouri River Basin Commission, for example, provides avenues by which, State, Federal, and

1 The Flathead Level B will be used as an example of a Level B product in this paper.

2 See U.S. Missouri River Basin Commission, Yellowstone River Basin and adjacent Coal Area Level B Study, (MRBC: Omaha, 1977-1978).

3 Montana is controlled by two river basin commissions. West of the Continental Divide is under the control of the Pacific Northwest River Basin Commission and the Missouri River Basin Commission's jurisdiction ie east of the Continental Divide.

local entities can join their expertise, manpower, and funding requirements when they would otherwise have been beyond any single agency's capability. A number of state and federal agencies participate in Level B studies. For example, multi-agency work groups are formed to review various aspects of water and related land resource issues such as irrigation, flood control, and water quality. In this way the needs of both the State Water Plan and the River Basin Commission's Comprehensive, Coordinated Joint Plan (CCJP) can be addressed.

Funding for Water Plan

Funding for the Level B studies is provided in large part by the federal government via the Water Resources Council and the appropriate river basin commission. This money is distributed among the federal agencies which participate in the study to compensate them for their time.

The strategy has been to utilize federal grant funds and federal technical expertise to cooperatively develop plans for each of Montana's major basins.

This approach was taken because of the grant funds available to participants and the similarity in goals of the Level B study as described in federal legislation and the state water plan as described in Montana's 1967

Water Resources Planning Act.

The state share of the cost of the study is provided through in kind services -- time spent by individuals working on the study, travel costs, and so on.

Other Planning Activities

In addition to Level B studies the water planning activities of the DNRC have included analysis of the applications to reserve waters of the Yellowstone River. The Planning Bureau was responsible not only for analysis of the applications but also for preparation of the Old West Regional Commission's Yellowstone Study and the Yellowstone Environmental Impact Statement. The Planning Bureau also takes part in special studies, such as the Pacific Northwest River Basin Commission's Water Assessment of Emerging Energy Technologies Study.[4]

There is no planning done in conjunction with the issuance of water rights. Issuing permits is an administrative process.

4 The author was directly involved with this special study.

DNRC Management

As noted in Chapter Two, the Montana Water Use Act provides for a centralized record system for water rights and also provides for a permit system for any new or additional water development. This requires that any new appropriations of water undertaken after July 1, 1973, must be accompanied by either a "Permit to Appropriate Water" or a "Certificate of Water Right", both granted by the department following certain procedures.

The following is a discussion of the process by which a person goes about obtaining a water right.

Permits to Appropriate Water[5]

For anyone contemplating construction of a new surface water diversion or impoundment, or a water well with an anticipated beneficial use of more than 100 gallons per minute, a "Permit to Appropriate Water" must be applied for and received before construction is begun or water is diverted.

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5 Taken largely from DNRC publication circular 1192 Water Development Projects and Wells - How to Apply for a Water Use Permit., Sept. 1978.

The "Permit to Appropriate Water" is a provisional document, and will subsequently be replaced by a "Certificate of Water Right" when the stream or area is adjudicated.

The DNRC administers their permit program through the Water Rights Bureau of its Water Resource Division. The Bureau issues permits for larger water appropriations, certificates for small groundwater developments, and collects data for adjudications.

Applications for permits to appropriate water are obtainable from either the clerk and recorder of each county in Montana or the DNRC, and must explain the intended use, location, amount of water, and purpose of the proposed project. An application fee, based on the amount of water requested, must accompany the formal application. From then on, DNRC makes a preliminary assessment of the application to determine whether its purpose is a beneficial use, whether the diversion works will be adequate, and if there could be any adverse effects on existing water rights in the area. If none are indicated, a formal public notification process may be waived, and the "Permit to Appropriate Water" is granted.

The DNRC is required to issue a permit, provided that the appropriate criteria[6] are met, and in all cases, the priority date is the date the department receives the original application. As noted in the discussion of "first in time, first in right",[7] this date can become quite important.

The Hearing Procedure. If it appears from information on the application that potential adverse effects to other water users may exist, the DNRC must publish formal notice of the application in the local newspapers. In addition, the DNRC examines its records and mails notification to any known individual water users in the area who might be affected. Local water users who may be affected then have an opportunity to file an objection to the application with the department within a specified time.

If the objections are determined to be valid, and an agreement cannot be reached among all parties, a hearing is then conducted. All evidence given at the hearing is carefully evaluated by the hearing examiner, who issues a "Proposal for Decision". It proposes to either approve

6 See Chapter Two.

7 See Chapter One.

modify, or deny the application. The proposal for decision goes to the Administrator of the DNRC's Water Resource Division, who is responsible for issuing a "Final Order" on the permit application. Persons disagreeing with the hearing examiner's proposed decision may, before the final order is issued, pursue the matter by filing an exception with the Administrator.

Briefs may be filed, as well as a request for an oral argument hearing before the Administrator.

After the "Final Order" is issued by the Administrator, those still in disagreement may appeal it to the Montana Board of Natural Resources and Conservation. (BNRC) Further appeals can be taken to the district court.

Final Procedures. The next step for the holder of a permit is to construct the project, divert the water, and put it to beneficial use. When the project is finished, a second form must be filed. Entitled "Completion Report of Water Development" it is for record purposes only, and no fee is attached. This form simply demonstrates to the department that the project has been completed substantially in compliance with conditions specified on the permit, and is a neces-

sary step before a "Certificate of Water Right" can be issued.

Large Appropriations. As stated in the criteria for issuance, in any water use application requesting fifteen cubic feet per second or more, a greater burden of proof falls on the applicant. The applicant must show by "clear and convincing evidence" that the rights of prior appropriators will not be adversely affected.

Also, as discussed in Chapter Two, under the Montana Environmental Policy Act, "any proposed water appropriation constituting a major action significantly affecting the quality of the human environment"[8] will require an Environmental Impact Statement (EIS). If such is the case, the department may impose an additional fee to fund the preparation of the EIS, which will inform the public and aid the department in its decision to grant a large appropriation of water.

Other Water Right Matters. In order to protect all water rights, prior approval is also required from the DNRC for any significant changes in water use, whether under a valid existing water right, a permit, or a

8 See Chapter Two.

certificate. Such changes would include alterations in the purpose for which the water is used or in the location of use, diversion, or storage, and an appropriator of more than fifteen cubic feet per second may not change the purpose of a water right from an agricultural use to an industrial one.

The DNRC keeps files of anyone who purchases land with an associated water right for record-keeping purposes and no prior approval or fees are required. The DNRC also requires recordation for wells or developed springs with a beneficial use of more than 100 gallons per minute.

The DNRC does not employ people to walk ditches and enforce the water rights on any stream. Instead, the enforcement task is left up to individual farmers and ranchers. Irrigation companies also typically employ "ditch riders" to monitor the allocation of water.

Management Implications of State Water Plan. The DNRC does not have a management program whose goal is implementation of the state water plan. Implementation of the state water plan, which currently consists of the Flathead Level B study, is dependent upon the initiative of individual agencies. For instance, the

Flathead Level B makes the following recommendations:[9]

1. Development of Buffalo Rapids 2 & 4 hydropower sites.

2. Stabilization of Whitefish Lake.

3. Zoning around several water quality sensitive lakes.

These recommendations would have to be implemented by the Corps of Engineers, an elected Board of Directors, and the Flathead County Commissioners, respectively.

As the above example demonstrates, there is no management program undertaken to promote the Level B recommendations, however, as mentioned earlier, the water planning bureau of the DNRC also played a significant role in the analysis of applications and development of the EIS recommendations to the Board of Natural Resources on applications to reserve waters of the Yellowstone River. The reservations granted by the Board effectively determined, to a large extent, water use in the Yellowstone for some time to come, and as such it will serve as an implemented state

9 Contained in Department of Natural Resources and Conservation, Water Resources Division, The Flathead River Basin Level B Study of Water and Related Lands (Pacific Northwest River Basins Commission: Portland, 1976) pp. 78, 74, 72, respectively).

water plan for the Yellowstone River. In this sense then, it can be said that some management functions will, from time to time, direct the course of a state water plan.

DHES'S SYSTEM

The following is a discussion of the mechanics of water quality planning and management as administered by DHES.

DHES Planning

The Federal Water Pollution Control Act and its amendments define two types of water pollution -- point source and nonpoint source, and describe the approaches to be taken in controlling both types of pollution.

Because this paper deals primarily with problems created by nonpoint source pollution, our emphasis must necessarily be on nonpoint source pollution control, planning, and management. However, for the reader's edification, a cursory review of point source planning and management is in order. Consequently, what follows is a short description of Montana's point source pollution control program. A discussion of nonpoint source pollution control measures follows.

Point Source Pollution Control Planning

The Montana Water Quality Act defines point source pollution as any discernible, confined or discrete conveyance from which pollutants are or may be discharged.[10] The strategy by which these sources are to be controlled includes a number of tools: The Montana Pollutant Discharge Elimination System Permit; Quantifiable Effluent Standards; Standards of Performance; and the Montana Water Quality Standards. The following represents a short discussion of each of these control measures.

Montana Pollutant Discharge Elimination System Permit (MPDES). The law requires that an owner or operator of any point source that is discharging pollutants into state waters must obtain a MPDES permit.[11] The Water Quality Bureau (WQB) issues a permit based upon whether the treatment proposed will meet certain effluent standards, standards of performance and water quality standards adopted by the Board of Health and Environmental Sciences.

10 Montana Code Annotated, Section 75-5-103 (15), 1979.

11 Ibid., Sections 75-5-304 and 75-5-401.

Effluent Standards. These consist of restrictions or prohibitions on quantities, rates and concentrations of chemical, physical, biological and other constituents which are discharged into state waters.

Standards of Performance. These are Board of Health adopted standards for the control of the discharge of effluents which reflects the greatest degree of effluent reduction achievable through application of best practicable demonstrated control technology processes, operating methods, or other alternatives.

Water Quality Standards. The Board of Health and Environmental Sciences has established classifications of all waters in accordance with their present and future most beneficial uses. Water Quality Standards are defined by measures of water purity based upon the most beneficial use of the stream, giving consideration to the economics of water treatment and prevention. The Water Quality Standards apply to both types of pollution, point source and nonpoint source, and are perhaps the most important determinant of violations in pollution levels. For this reason, it is important that the reader grasp the significance of the Standards classification system. For example, the preamble to the Montana Surface Water

Quality Standards asserts: "The Board adopts the policy that treatment and control of wastes, activities and flows must be provided to maintain and improve water quality to the highest practicable levels.[12] Accordingly, the WQB was charged with classifying each stream according to its present and future most beneficial uses. The basis of the classification was done according to the existing uses of the stream. A stream could be placed in any of a number of classifications depending upon the existing use. For instance, any water classified "A-closed" must be maintained suitable for drinking, culinary and food processing purposes after simple disinfection. Waters classified "C-3" must be maintained suitable for bathing, swimming and recreation; growth and propagation of non-salmonid fishes and associated aquatic life, water fowl and furbearers; and agricultural industrial water supply. Each classification is further defined by a number of specific standards related to such things as number of coliform bacteria, dissolved oxygen, temperature, pH, sediment and total dissolved solids (TDS). These standards may be ultimately used to condition, or deny applications for point source permits.

12 Administrative Rules of Montana, op.cit.

Since the water quality standards were adopted a few streams have been reclassified because of improved water quality, the prime example being the Clark Fork.[13] However, because the objective of the law is to improve or maintain the quality of the state's water, it is illegal to downgrade a stream's classification unless it was misclassified originally.[14]

Other Point Source Planning Measures. The WQB also plans for development of a priority listing of towns requiring new or upgraded sewage treatment facilities. When a community reaches the top of a priorities listing the WQB makes a grant to the community to retain a consultant to complete a facility plan. The water quality plan must identify the treatment works necessary to meet the anticipated municipal and industrial water treatment needs of the state over a 20-year period. The plan must also include a program to provide the necessary financial arrangements for such facilities, and identify those agencies necessary to construct, operate and maintain the facilities.

13 Interview with Chris Hunter, DNRC Water Planning Bureau, Aug. 16, 1980.

14 Montana Code Annotated, 75-5-302, 1979.

The Construction Grants Branch of the WQB provides for implementation of the priority listing for needed sewage treatment facilities.

Non-Point Source Pollution Control Planning

Nonpoint sources of pollution are generally more diffuse in origin than are point sources; examples include irrigation return flows, acid mine drainage and runoff from logged areas and construction sites.

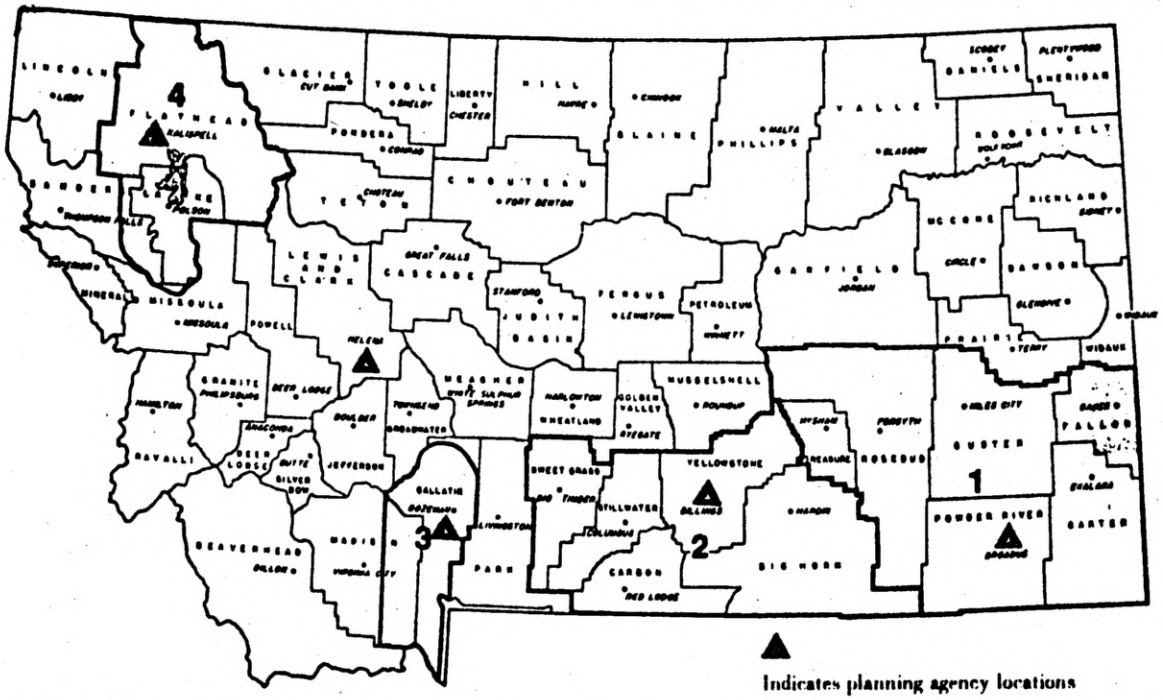
As shown in Chapter Two, the Federal Water Pollution Control Act Amendments of 1972 provide, in Section 208, for an areawide waste treatment management planning process whose purpose is to develop and implement adequate control measures for significant sources of water pollutants in each state. Under this law, the governors of each state were to identify areas having substantial water quality control problems and designate an "areawide" planning organization to conduct the planning process in the respective area. Four such areas were designated within Montana (identified in Figure 4).

For the remainder of the state, the governor designated the Water Quality Bureau of the Department of Health and Environmental Sciences as the responsible planning agency. The plans prepared by the local areawide

planning organizations are referred to as "areawide 208" water quality management plans. The plan prepared by the Water Quality Bureau is referred to as the "Statewide 208" Water Quality Management Plan. Collectively, the plans must make recommendations to the governor for the control of both point and nonpoint sources of pollution "which are both preventative and mitigatory in their approach."[15]

FIGURE 4

208 Statewide and Areawide Planning Organization Boundaries



SOURCE: Montana Water Quality Board, 1979

15 DHES, 208 Plan...p. 1.

The nonpoint source control program in Montana is voluntary in nature. As such, it depends to a large degree on the cooperation between landowners and state officials for its success.

The planning process typically begins with an identification of existing nonpoint source water pollution problems in a localized area. Normally, in nonpoint pollution cases more than one single person or entity is directly involved with all water pollution problems in a specific area. There may be various interest groups or numbers of people with the same water problems -- most of them stemming from similar land and water management practices. Given the voluntary nature of the program it is felt that it is important to involve all affected groups in the planning process.

The WQB attempts to have inventories conducted for affected groups and tries to involve the groups in the process in some way, e.g., the WQB contracts with the Montana Association of Conservation Districts to identify agriculturally related nonpoint problems and with the U.S. and State Forest Services for silviculturally related studies.

When the problems are identified -- erosion, irrigation return flows, logging roads, etc. -- alternative solutions can be discussed. The alternatives are generally management practices which will result in minimizing the problems. Examples might be: changing from flood to sprinkler irrigation and utilizing sedimentation ponds to control erosion, or cable logging on steep slopes to keep heavy runoff from occurring, etc. Management practices are the focus because treatment of nonpoint source pollution is considered impractical, given its diffuse nature. The goal is to utilize management that will not cause the problem and to find management practices which do the job without causing the farmer, logger, or miner undue hardship. These management practices are termed Best Management Practices (BMP's). They are usually developed through a long process of give and take between the water quality agency and the affected groups.

Water quality issues are considered only in relationship to the BMP thought to alleviate or eliminate a certain problem, e.g., changing a diversion point on a stream, etc.

The final part of the planning process is identifying the entity best able and suited to carry out a continuous planning process of prioritizing water quality problems, refining BMP's and working with individuals to make them aware of the problems, of the solutions available and of the financial and technical assistance available to them. In Montana the conservation districts are best able to fill this bill on private agricultural and forested lands and the U.S. Forest Service is recognized as the most likely agency on national forest lands.

As far as enforcement is concerned, the DHES is authorized to take appropriate enforcement action on its own initiative to prevent, abate and control virtually any pollution of state waters.[16] This authorization could be used to enforce BMP's that are imposed upon a landowner by the agency in charge. Whether or not they actually are used for this purpose is a subject for discussion later on in this paper.

Other Related Nonpoint Source Planning Activities. The Water Quality Bureau of the DHES also participates in the Level B process, although the role they play is not an effective one. The majority of their involvement

16 Montana Code Annotated, 75-5-612, 1979.

is limited to basic review and advisory of plans, assumptions and recommendations, mostly because of a lack of funds for the WQB to operate with. They do not receive any express monies from the Federal government to take part in Level B planning.

DES Management

Point Source Pollution Control Management

The primary tool in the management of point source pollution is the MPDES permit program. Enforcement of permit conditions and water quality standards is an important aspect of water quality management and the MPDES program. The WQB has taken enforcement action in the past against communities and industries where discharges violated conditions of their permits and also for discharges made without a permit that resulted in violations of the water quality standards.

Routine chemical analyses are taken at point source discharge areas and documentation of water quality violations are relatively well established, so that the management of point source pollution control is not altogether a frustrating task. Suffice it to say that the law does provide a fairly adequate mechanism by which point source pollution control programs can be

managed fairly effectively.

Non-Point Source Pollution Control Management

The management of nonpoint source pollution differs greatly from point source considerations. Much of the difference is due to the fact that nonpoint sources of pollution are diffuse in nature and difficult to collect, analyze, and treat. Consequently, the management program to control nonpoint sources of pollution focuses on the development of management agreements as a method to implement the water quality management plans. Successful implementation of a nonpoint source water pollution control program (especially on private agricultural lands -- which is our focus) mandates a high level of cooperation and involvement among local, state, and federal management agencies with land and water quality management responsibilities and private citizens, without whom implementation would be non-existent.

The Process. The WQB typically enters into negotiations with that entity identified in the water quality plan as the best suited to implement that portion of the plan. The product of the negotiations is typically a management agreement which gives much of the responsibility for implementing the plan to the management agency

and outlines what support and tasks the WQB will provide.

As an example, the Montana Association of Conservation Districts (MACD) conducts inventories and assesses agriculturally related water quality problems in the statewide area and makes recommendations for a nonpoint source pollution control program that typically encourages the use of BMP's to mitigate pollution problems. The Conservation District Law[17] gives the districts broad authority to study and regulate the use of lands for the purposes of providing for the conservation of soil, to control and prevent soil erosion, and for the prevention of flood water and sediment damages, among other things. Thus, by statute and more importantly through experience the Local Conservation Districts (CD's) are designated as the lead management agency for administering a non-regulatory program to manage nonpoint source pollution.

Cooperative interagency agreements between DNRC, the individual conservation districts, and the WQB, provide the basic legal framework for the non-regulatory program.[18] Within these agreements, the conservation districts have arranged to: (1) develop a water quality

17 Montana Code Annotated, 76-15-10 & 76-15-102(1979)

18 Agreements taken from Statewide Water Quality Management Plan, previously cited: DHES, 208 Plan...,pp.15-17.

management plan that will identify and prioritize existing and potential nonpoint source problems; (2) select and adopt the BMP's that can be applied to correct the problems; (3) establish realistic schedules for abatement of the identified problems; (4) work cooperatively with individual landowners in solving problems identified by their plans; and (5) assist landowners in obtaining financial and technical assistance.

For example, assume from an inventory it was determined that a rancher's creek is severely eroded due to return flows from his flood irrigated land. Sedimentation in the creek is impairing water quality and the rancher's land is being lost to bank erosion. The erosion problem is also aggravated by poor grazing practices that have removed riparian vegetation and damaged the stream banks.

Supervisors would begin to solve the problem by using the stream reach inventory to show the rancher the problems found on the creek and their apparent causes. The supervisors would solicit the ranchers' cooperation in solving the problem and make recommendations for improving the irrigation system, stabilizing the stream banks and improving stocking rates. The supervisors

might inform the rancher of the availability and source of woody vegetation to stabilize the stream bank; make available to him the technical assistance of the Soil Conservation Service in solving his problems; and help arrange for cost-share funding through the Agricultural Stabilization and Conservation Committee to defray the cost of improvements. Where problems that continue to cause water quality degradation cannot be solved on a cooperative basis, i.e., should the rancher not be willing to cooperate with these recommendations and assistance, the Supervisor would then refer the problem to the WQB for further investigation. The WQB would determine, at this point -- through its laboratory division -- any water quality standards violation and would take the appropriate enforcement action allowed under the Montana Water Quality Act.

The Department of Health and Environmental Sciences' Legal Division, acting as an agent of the Attorney General, represents the DHES in all water pollution enforcement matters and provides the necessary guidance and assistance for statutory development.

In addition to these responsibilities, the CD's are also obligated to prepare, with the assistance of the

DNRC and DHES, a master water quality management plan within the CD's boundaries, and cooperate with the DHES in documenting nonpoint source pollution problems.

SUMMARY

This chapter capsulates the main functions of the planning and management programs of DNRC's Water Resource Division and DHES's Water Quality Bureau as they relate to the integration issue.

Chapter Four will discuss these planning and management programs from an analytical standpoint.

CHAPTER IV

ANALYSIS OF PLANNING AND MANAGEMENT PROGRAMS

To this point the paper has reviewed the major laws which established the water quality and quantity planning and management programs in the state. It has also reviewed how these laws and resultant programs are being implemented by DNRC and DHES respectively.

In this chapter the reader will not be introduced to any new laws or programs. What will take place instead is an analysis of the effectiveness of the previously mentioned laws and programs with regard to water resources administration in Montana. How well does it work? Are the programs that have been currently set up to protect and insure the availability of good clean water in Montana accomplishing their purpose? Are there problems inherent in our programs that deal with water resource issues? What recourse does our state have?

Questions such as these are posed in this chapter. This chapter precedes the final chapter which contains some of the author's answers to questions similar to those above.

First of all, the author presents a comparison of planning and management programs within each affected agency. This comparison attempts to establish to what

degree, if any, the programs are related within the agency. Once this "in-house" analysis is completed, the author will juxtapose each agency's planning and management programs with the other agency's planning and management programs.

This chapter concludes with a brief analysis of two other similar states' programs and some of the problems associated with their respective systems. This chapter starts, first of all, with an evaluation of DNRC's planning and management.

DNRC PLANNING AND MANAGEMENT

The planning and management programs of the DNRC are largely unrelated. The reasons for this stem from the fact that the recommendations contained in the Level B studies are: (1) very general, (2) are not accompanied by implementation schemes, (3) do not provide guidance on the issuance of water rights, and (4) do not adequately measure and take into account public needs and desires.

For example, the most important irrigation problems in the Flathead Basin are listed in the Level B study as late-season water shortages and a lack of nearby water development of irrigable lands.[1] Although possible

1 Flathead Level B Study, op.cit. pp. 54-57

alternative actions for improvement of these problems are listed, development of haphazard private irrigation is expected to continue regardless of any plans that might be recommended. Reasons for this include the uncertainty of water rights in the particular area (a large part of the area includes the Flathead Indian Reservation and deals with federal reserved rights to water), certain economic limitations, and environmental concerns that hamper early solutions to many of the problems.

For many years in the Flathead Basin, as is typical of many areas of the state, problems of irrigation water supplies have been handled and resolved by individual landowner action. "Because only the best land has been developed, and the least expensive method utilized, little concern has been given either to lands not improved or to instream water requirements."[2] The fact that the Level B study is purely an advisory tool coupled with this individual piecemeal addition of wells and river diversions may preclude complete and ordered utilization of the water and land available for irrigation in certain areas of the Flathead.

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2 Ibid., p. 54

To date, although the state water plan has in principle committed the DNRC to consider the "importance of public needs and desires" thoughout the planning process[3], future public interests and desires in the Flathead with regard to private water rights and appropriations are not given a great deal of consideration.

The above example serves to typify the types of Level B considerations that are largely ignored by the area populace. The reasons for the dismissals of Level B judgments may lie in the public's perception of big government. There appears to be a large degree of suspicion and hostility harbored by citizens against governmental agencies that deal with water resources matters in Montana.[4] Much of the acrimony citizens and public officials express against one another seems to be due in large part to the public's perception (right or wrong) of who actually makes the big resource decisions of today. The public seems to view these decisions as being made almost exclusively by what appears to be state and federal agencies of government.

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3 See Chapter Three.

4 From author's personal experience.

> These organizations are widely viewed as unresponsive to public opinion generally and indifferent to the needs or values of individuals. Their influence extends beyond their formal organizational structures and pursuades or coerces individual citizens and local holders of public office to accede to their policies. 5

As a result, controversies accrue where moral indignation is felt between the public and state government over who has the right to say how the environment, and especially water, may be used in any locality in the future.

Caldwell notes that the "divergencies of attitudes, interests, and values make it impossible for any group or individual to represent the popular will in more than a symbolic or abstract sense;[6] and in this world increased complexity, change, and personal mobility make it difficult for many citizens to retain a sense of participation in public affairs. The public official, nevertheless, "under the theory of government prevailing in the United States is assumed to be guided by the public will, except where that will is subordinate to fundamental (i.e., constitutional) law."[7]

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5 Caldwell, Hayes and MacWhirter, Citizens and the Environment: Case Studies in Popular Action, (Bloomington: Indiana University Press, 1976), p. xi

6 Ibid. p. xiv.

7 Idem.

Therefore, it is important that the parameter of significant public input be effectuated so that Level B policies that are unwanted or unneeded in the public's eye are not pursued. On this point it has been argued that Montana could garner consideration of public interests in water right matters through inclusion of a public interest criterion in the criteria for issuance of water appropriation permits that are administered by the DNRC.[8]

The administration of water rights displays the opposite characteristics; it deals with very specific applications for water, and the basis for evaluating those applications is clearly delineated (the criteria for issuance). State water plans currently have little bearing on the issuance of permits, and as such are relatively ineffective as guiding agents to better water resource management.

This lack of coordination is primarily due to the fact that the two programs were established by separate pieces of legislation; each with different objectives.

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8 See Chapter Five, Recommendation No. One.

The water right program seeks to encourage the use of the state's water through a system that consists of handing out permits for water appropriations in a "willy-nilly" fashion. On the other hand, the Level B studies typically make broad, generalized recommendations that may advocate grandiose water resource projects without considering adequate public input and private water rights. Level B's also tend to treat problems like dewatering or stream assimilative capacity issues without considering the concomitant problems caused by the water right programs.

In summary, the author must come to the conclusion that DNRC planning and management programs are not realistically related.

DHES PLANNING AND MANAGEMENT

In contrast to DNRC programs, the water quality planning and management activities of the DHES were established by the same essential legislation. The goal of the legislation is quite specific -- to maintain and improve water quality, and therefore, planning and management programs <u>are</u> directly related. The line between planning and management for our purposes -- nonpoint source pollution control -- tends to be somewhat

negligible but nevertheless, distinctions do surface; especially in regard to legislative approved policy directives and actual departmental handling of poor management practices and resultant water quality problems. An example of a distinction between policy and management that serves to underscore a problem area lies in the fact that while the MWPCA contains a nondegradation policy,[9] the Board of Health and Environmental Sciences (BHES) has not yet adopted rules to implement the policy.

The nondegradation policy requires that existing high water quality within a particular reach of stress be maintained at that high level, and as water quality standards define the minimum level of water quality to be maintained or achieved, the degradation of state waters to the minimum water quality standards is not justified except where it is determined that a "change is justifiable as a result of necessary economic or social development..."[10]

As yet, the BHES has been slow to act in implementing rules to govern the consideration of these "economic and social" issues that must be considered in lowering

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9 M.C.A. 75-5-303, See Chapter Two.

10 Ibid.

existing water quality in a reach of stream.[11] Up to now the major obstacle to water quality improvement in Montana has been the degradation question: Does the state continue to wait until degradation occurs and has been documented instream before corrective action is pursued? Or, in the absence of specific rules governing degradation does the state prevent degradation from occurring in the first place by encouraging if not insisting on the use of Best Management Practices (BMP's)?[12]

The WQB has had a difficult time trying to get BMP's implemented on private irrigator's farms and ranches. "It is really hard to document a nonpoint water quality violation..."

> You've got to be right there when it happens, you have to have your monitoring lab right there and you have to prove that what farmer Brown did caused the standards to be violated. So, consequently, he's not going to spend his money and time using BMP's if he can't see what good they do him, and besides, for BMP's to work, water quality has to be on a part [as an important issue to the farmer] with irrigation. Right now it doesn't stand a chance. 13

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11 See discussion of associated problems dealing with monitoring and enforcement of water and water laws later in chapter.

12 Question posed by Steve Pilcher, Loren Bahls, and Abe Harpestad during WQB interview, September 10, 1980, Helena, Montana.

13 Statement by Abe Harpestad of Water Quality Bureau, personal interview, April 21, 1980.

The reasons for this are basically political and economic. The general feeling from many state bureaucrats is that agricultural, silvicultural and mining interests simply would not accept a regulatory program at this time. Moreover, farmers feel that the costs of complying with regulations that deal with BMP type treatments cannot be passed along to consumers of farm goods as easily as costs passed along the customers by industry and municipalities.[14]

Montana is a state that has relatively few water quality problems in comparison to other areas of the United States, and considering the perplexing problems associated with detection and enforcement of nonpoint source pollution, maintenance and prevention of degradation has become the emphasis of Montana's water pollution control efforts.

DNRC AND DHES PLANNING PROGRAMS - ARE THEY RELATED?

In general, the DNRC and the DHES formulate plans separately, planning objectives are different and plans may be mutually exclusive. For example, the 208 Water Quality Plan is formulated solely by the DHES and is given only a cursory review by the DNRC before its adoption phase.

14 Ibid.

Its objectives are to protect the water quality standards, which means that the DHES considers depletions, as a whole, to be detrimental to their planning objectives. To the extent that the 208 plan does not consider water quantity allocation issues, such as the potential expansion of irrigation through newly appropriated water, it is exclusive of DNRC's planning and management programs.

The Level B plan, on the other hand, is formulated almost solely by the DNRC statewide; it is given to very little input and a summary review by the DHES. Its objectives have obviously emphasized water development projects, and it has been accused by the DHES of being "no more than a water development document that gives only token assessment to water quality."[15] The DHES maintains that the Level B studies "contain no 'hard and fast' studies of water quality impacts in any regions...they deal in such generalities that you can say damn near anything about the water quality of a certain area."[16] As mentioned before,[17] the Level B studies have also been criticized for lack of

15 Statement by Steve Pilcher, WQB Chief, Interview April 9, 1981.

16 Ibid.

17 See Chapter Three.

implementation. The implementation that is present depends, to a great degree, on the individual initiative and zeal of the participants (typically "Feds") to construct their projects. For example, tradeoff analysis is to be used in arriving at a plan to fit the Level B scenario, but it has been argued that because of the larger amounts of money funded to federal participants, more facts, figures, and studies come to play in the federal government's pursuit of championed goals. In this manner state issues are said to be slighted in favor of federal interests in future water resource development projects.[18]

Other criticisms of Level B studies surround the issue of data use. The Level B's are limited to existing data only and oftentimes state officials have criticized the lack of willingness on the behalf of other participants to wait for enough evidence to surface that might suggest possible solutions to any number of problems.[19] This takes on a special meaning when a water quality concern is thought to assume an immoderate nature but through a lack

18 Opinion expressed by Arnold Vinnard, Water Planning Bureau, Interview April 9, 1981.

19 Ibid.

of clearcut evidence it is nullified from any special consideration it might receive from the Level B studies.

The Level B studies have also been criticized for not being coordinated to a great degree with water reservation activities in the state. Questions in this area may include federal-state "wrangling" over reserved water rights issues.

In summary, history teaches us that planning activities for water quality and for water resources development have been conducted separately. This is due in part to fundamental differences in the objectives and methods of these programs. Water quality management planning is designed to reduce pollution to protect both instream and offstream uses, while water resource plans have traditionally been oriented towards the economic benefits of water development; (particularly) irrigated agriculture, energy, navigation, flood control, and recreation. Water quality management planning has been on an areawide or basin-wide basis, while water resource plans are generally prepared on a project-specific basis.

Some Level B studies under the Water Resources Planning act are exceptions to these generalizations, as they may be conducted on a basin-wide basis, with

varying degrees of state and local involvement.

Water quality management planning for waste treatment projects is conducted to determine the most cost-effective method of attaining water quality or technology-based standards. Under the Water Resources Council's Principles and Standards, Federal water resource development projects must likewise be justified on the basis of cost-benefit analysis. With respect to this consideration, the two plans may be likened to each other. However, water quality management planning is primarily conducted by states, subject to EPA review and approval, while planning for water resource projects is conducted primarily by Federal agencies.

Another concern that the Level B studies are not addressing at present, and one that holds great portent for conflicting uses of water (e.g. instream vs. agricultural vs. industry vs. municipal uses) is the question of water use preference legislation. Although efforts have been made to establish bills proposing that the state adopt a formal system of preferential uses of water, nothing to date has been done, and it would seem that guidance, in the form of a Level B impact study, would be welcomed in the water use preference area.

DNRC AND DHES MANAGEMENT PROGRAMS - ARE THEY RELATED?

DNRC management programs do not consider water quality issues in any real sense. Water quantity permits are not evaluated to see if depletions will violate water quality standards. This, in itself, is a serious problem because the element of water quality is only implicit in Montana water appropriation laws.

> As a consequence, water users must normally rely upon common law doctrines and private litigation to protect their water right where the quality has been degraded to levels that hinder usage. Because the quality element is not explicit, as are the other elements of a water right -- quantity, source, point of diversion, type of use, and place of use -- the state agency charged with administration of the water laws and rights is not in a favorable position to initiated action to prevent harm from water quality deterioration, and thus, the management capability extends only to quantity control. 20

Consequently, once the DNRC receives an application to appropriate water from a potential user it routes the application internally through its water right certification process; this includes sending a copy of

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20 Radosevich, George E., and Gaylord V. Skogerboe, Achieving Irrigation Return Quality Control Through Improved Legal Systems (Washington: EPA, Dec., 1978), p. 134.

the application to the Department of Fish, Wildlife, and Parks (D,FW&P).[21]

The DHES does not receive the document, however, and consequently cannot be in a position to input any considerations or qualifications it might have with respect to water quality impacts on the proposed appropriation. On this point, it is clear that the state's interest for protecting its water supply is not being currently served by the inadvertent or deliberate negation of water quality considerations on permits to appropriate water.

The Water Quality Standards also pose a problem for the DNRC. The Water Quality Standards were established without regard to the impact they have on allowable depletions -- they are designed only to protect categories of uses.[22] The DNRC feels that the DHES was being over

21 This paper will not include an indepth analysis of the DFWP and their relation to the integration problem, although, the fact that it is not dealt with should not prevent others from doing so, for the DFWP's role in maintaining water quality and wildlife habitat is substantial and not meant to be a slighted one. Suffice it to say that the DFWP routinely challenges all diversions of water for non-wildlife concerned projects and frequently raises the argument that instream flow requirements for fish and wildlife may be violated before water quality standards are infracted. As one might guess, the DFWP valiantly tries to protect the status quo.

22 See Chapter Two.

zealous in their efforts to maintain water quality and consequently misclassified some drainages; such that the standards prescribed are not met in a naturally occurring situation.[23] This in itself is not a constraint because as long as irrigators utilize best management practices their discharges are not considered polluting.[24] Still the fact remains that a large majority of farmers and ranchers do not voluntarily or consciously use BMP's with regard to water use and are, in effect, contributing to a water quality infraction or an infraction based upon a person's implicit right to receive water of a certain quality. Therefore, the act of diverting could reduce the assimilative capacity of the stream, thereby raising TDS levels and could result in Water Quality Standards violations from previously existing discharges. To this extent then, the management functions of both departments are not highly related.

Traditionally DNRC has supported the growth of irrigated agriculture and feels that the water quality standards, if enforced strictly, would seriously constrain irrigated agriculture in some drainages. Con-

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23 Interview with Chris Hunter, DNRC Water Planning Bureau, August 16, 1980.

24 Ibid. See also Chpt.2 for understanding of what actually is considered polluting under Montana law.

sequently, DNRC has viewed the standards with skepticism. On the other hand, at least, both agencies realize that DNRC's issuance of permits without regard for the Water Quality Standards or BMP's can result in violations of the Standards. As the Water Quality Standards are a keystone in water quality planning and management, DNRC's actions are a threat to DHES's mandate to maintain and improve the quality of the state's waters.

The DNRC generally has had very little to do with the creation of the Water Quality Standards although they are certainly in the position to do so if they wish. The WQB laments the fact that the DNRC does not take a more active part in the formulation of the Standards and would welcome a stronger role (both functionally and enthusiastically) by the DNRC in this area.[25] The DNRC can express its views on the Standards in two ways, either through the Water Pollution Control Advisory Council, which has review authority over proposed standards, or at public hearings that precede all Water Quality Standards adoptions. The DNRC could obtain a clearer understanding of how the Standards are developed

[25] Interview with WQB personnel by author, April 2, 1981.

if a more active role were pursued by that agency in Standards formulation procedures. However, even if integration of ideas and policies did develop between the two agencies (such that the DNRC took a more operative role in this process), it should be remembered that the DHES must assume final responsibility for the Standards; owing to the fact that they possess the water quality expertise needed for ultimate recommendation approval before the Board of Health and Environmental Sciences (who approves the Standards).

To sum up in general phrases, it is not altogether unappropriate to view the DNRC as being in a position to pass out water until it's so bad no one can use it for anything. The DHES, on the other hand could appear to adopt the position from which they maintain water quality for the people of the state by simply not letting the farmers use it.

Economic Considerations Associated with the Management Problem

A comprehensive evaluation of water quantity and quality interconnections is a complex task requiring consideration of the economic incentives for water use and consideration of how these incentives alter streamflows and water quality parameters.

What follows is a discussion of some economic considerations that are closely linked with water quantity and quality management in the West. The author attempts to "make a case" for several recommendations in Chapter Five by introducing the reader to these economic considerations in this chapter, as the concepts are closely allied to water management functions and considerations.[26]

Consumptive users have economic incentives to increase diversions as long as the additional revenues produced by the diversions are greater than the associated costs of diverting and using the water. Available water is generally free for the taking, when it is naturally available. Water right applicants pay only a nominal fee when an application is submitted and the right they receive entitles them to exercise the specified right forever at no additional cost. The charges assessed by water users associations in some areas are for storage costs, maintenance of diversion structures, canals, and water rights enforcement, but these costs tend to be generally nominal, and the water right is effectively free.

26 Taken in large part from DNRC economist Arnold Vinnard's views expressed to the author when he worked for the same agency.

The quantities diverted clearly depend on comparisons between the cost of diverting and using the water and the increased productivity or value due to the water use. The economic productivity of water depends upon the value of the products for which it is an input (crop prices) the costs of other necessary inputs, e.g., irrigation equipment, and the increase in output due to the use of water. The productivity of water is generally higher with better quality water.

The allocation of water in Montana, however, can necessarily produce some market failures. For example, consumptive users impose costs on other users by degrading water quality. Since they are not charged for these costs there are economic incentives to divert and deplete too much. Market incentives to invest in activities aimed at maintaining or improving water quality are inadequate or nonexistent because investors are unable to charge beneficiaries for the value created. Improved water quality provides benefits available to all consumptive and nonconsumptive users yet no one can profitably go into the business of improving water quality because it is impossible, for practical reasons, to charge for the services rendered. Another type of market failure occurs

when certain types of water-dependent activities such as fishing, sightseeing and other recreational pursuits cannot be charged for the value they produce. This means that private incentives to spend money allocating water for these users are not adequate. Market failure in the allocation of water results in excessive depletions at the expense of the environmental amenities not adequately provided for by private markets.

These market failures have provided the traditional economic justification for governmental regulation and public investment in water resources. Effluent standards, water quality discharge permits, water quality management plans and public investment in recreational access sites and the preservation of recreational opportunities are economically justified as being needed to offset the tendency of competitive markets to produce marketable products at the expense of non-consumptive purposes whose value is not readily marketable. An interesting question is whether these governmental programs are <u>effective</u> in off-setting the private incentives to overdeplete.

Analyses of the quantity-quality relation is further complicated by the fact that water quality changes affect

the quantities diverted and the quantities remaining instream just as the quantities affect the quality. Irrigation with high quality water will generally produce greater yields than irrigation with low quality water, all else being equal. Higher yields make irrigation more profitable and provide economic incentive to expand irrigated acreage and irrigation depletions.

Conversely, irrigation with low quality water can damage crops and reduce productivity and profits. Thus a program which changes water quality levels may alter the economic incentives for depletions and the volume of diversions.

Irrigation is heavily subsidized in Montana. Numerous federal and state programs provide grants, technical assistance, low interest loans and crop price supports to farmers and ranchers. Irrigation is also the major source of water quality problems in most areas of the state. As discussed, two principle reasons for this are that any depletion tends to concentrate the remaining impurities left instream and that irrigation return flows often leach salts from the soil and carry them back in return flows to the nearest streams.

Irrigation subsidies are generally recognized to be economically inefficient and are usually justified on grounds of equity rather than efficiency. They are considered inefficient because they are not designed to compensate for those types of market failure that would result in underinvestment. Instead, their principle objective is to increase and stabilize incomes for a politically powerful and popular sector -- the farmer and rancher. An evaluation of inefficient subsidies must consider whether the gains in equity outweigh dead-weight loss created by the inefficiency and boils down to a value judgment on whether the social and ethical merits of irrigation subsidies outweigh the narrowly-defined economic losses. The central issue for this paper is that these subsidies reduce irrigation costs to farmers, increase the quantity of diversions and depletion, and thus contribute to water quality degradation.

Another concern, central to the economic issue of water allocation, regards conservation of water. The conservation of water, where excess amounts of water are not needed to irrigate a portion of land, would greatly benefit those uses to which water could be put

if the supply was present.

As strange as it seems, however, the doctrine that was devised in western water law to serve as the basis and measure of the right to use water -- the beneficial use concept -- actually militates against the implementation of efficient water management practices. That the doctrine works to limit the efficient use of water resources is clear; if the water is not beneficially used, the claimant does not have a water right in the unused portion. This has the dual bad effect of (1) penalizing a water conserver by depriving him of the benefits of his conservation investment or (2) stimulating excessive use and/or (in the case of municipalities in particular), construction of excess capacity, all to protect expanded future needs.

"There seems to be an inherent fear of loss (by irrigators) through abandonment or forfeiture of the right through the failure to exercise it."[27] As a result, appropriators divert as much of their total alotment as possible to protect their right, resulting in over

27 Radosevich, G.E., "Water Right Changes to Implement Water Management Technology," contained in U.S. Environmental Protection Agency's, Managing Irrigated Agriculture to Improve Water Quality, (Washington: EPA, 1972), p. 269.

application of water and subsequent diminution in remaining quantity flows.

To summarize, current uses tend to be bound by human nature to past practices, which work to encourage a lackadaisical attitude by many water users towards good, sound management practices.

Comparison of Management Programs for Enforcement Methods

With this section, the author attempts to group comparisons of program enforcement methods for each agency so that any problems inherent in the management of these programs may be clarified. The analysis starts with the DNRC.

Enforcement in Management Programs - DNRC

The objectives of the DNRC's enforcement program is to insure that water is properly allocated to rightful appropriators and that the laws of the state are upheld with respect to the "wise utilization, development and conservation of its waters."[28] In contrast to the enforcement program of the DHES, the DNRC's enforcement program for water rights administration is structured and fairly effective. Administrative procedures dictate

28 Montana Codes Annotated, 85-2-101, 1979.

the course that is to be followed when questions or altercations arise between two or more parties involving the amount or use of the state's water. Generally, for example, enforcement questions arise after the issuance of a permit to appropriate water on a stream; usually at the insistence of one of the users of that stream's waters. From that point in time, records to water are checked by the appropriate water right office in the area to determine what rights, if any, govern use to water on the stream in question. Further proceedings attempt to clarify existing rights and a hearing examiner will typically issue findings of fact and conclusions of law pertaining to the controversy in question.

The DNRC may also invoke the "prevention of waste" clause to order a person that is considered to be "wasting water, using water unlawfully, or preventing water from moving to another person having a prior right to use the same"[29] to cease and desist such action and if necessary to remedy the waste that was incurred. It is interesting to note, however, that the DNRC has never used this law to control of limit the wasting of water.

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29 Montana Codes Annotated, 85-2-114, 1979.

The water rights bureau of the DNRC does a fair job of enforcement, mostly because records of water right filings are available for most stretches of stream in Montana, and by virtue of the affidavit process whereby "use" rights to water can usually be determined from people that have lived or presently live in the area of the stream in question.

As mentioned, none of the acts under the jurisdiction of the DNRC, or any of the rules adopted by the BNRC, address regulation or control of water quality rights.[30]

Enforcement in Management Programs - DHES

Point source pollution is still a significant source of water quality degradation in Montana, but intensive management in the recent past has nearly alleviated the problem. Municipalities are the major source of point source pollution and the state's waste water discharge permit program and construction grant program should virtually eliminate the municipal inadequacies in the near future.

As pointed out before, Montana's most significant water quality problems are sediment and salts from non-

30 See Chapter Five, Recommendation No. 1 for a discussion of arguable rights of prior appropriators.

point sources and reduced stream flows. Yet, control and management of nonpoint sources of pollution is grossly unstructured and ineffective in Montana. Even though the WQB has adopted a nonpoint source pollution control program (by virtue of the Montana Water Quality Act and Water Quality Standards), it does not have the enforcement authority nor manpower capabilities to implement one.

> Furthermore, because the legal-management considerations regarding nonpoint source pollution control are dispersed throughout the state and federal codes and are hampered by poor management coordination between agencies of government, comprehensive control and management of nonpoint sources of pollution has been without direction or purpose. 31

This is an ironic situation considering that nonpoint sources of pollution are the major cause of water quality degradation in Montana.

The problems being addressed by the WQB in reference to the statewide 208 nonpoint source pollution control program are long-term, largely because water quality information needed for correcting these types of problems is not yet state-of-the-art. Several studies have

31 Water Quality Bureau, Statewide Water Quality Management Plan, op.cit. p. 6.

pointed to the fact that the "technical capability to identify the cause and effect relationship among non-point source problems and the expected water quality effects of various control techniques does not [yet] exist."[32]

Officials at the WQB often express their vexations and frustrations at documenting nonpoint water quality violations (e.g., dewatering, excessive sediment due to runoff, erosion, etc). It is agreed that it is awfully hard to actually cite a person or group of people for violations of the Water Quality Standards based upon actual studies of water quality data. There are substantial determents that prevent the WQB from indicting people for these types of violations. For example, making a case against a farmer or rancher for a standards violation often necessitates the gathering of evidence at a point in time when the evidence is readily available....namely at the height of a storm (when runoff occurs) or when de-watering becomes a critical issue.

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32 General Accounting Office, Water Quality Management Planning is Not Comprehensive and May Not be Effective for Many Years., report by the Comptroller General of the U.s., No. CED-78-167, December 11, 1978.

Violations of this sort tend to be highly variable, accrue over long stretches of stream, and typically over long periods of time. Consensus indicates that such a monitoring program of all nonpoint sources in each examined river basin (that is potentially contributing to pollution) runs the risk of being both cost prohibitive and logistically impossible.[33]

From the previous legal discussion, it was found that the DHES has authority to "prevent, abate, and control the pollution of state waters."[34] However, the scope of the DHES's authority in pollution control and enforcement is limited to discharges of pollutants into state waters and alterations of conditions in state waters which exceed those permitted by the water quality standards. The authority of the DHES under the MWPCA does not extend to the actual withdrawal of water from state waters.

Although dewatering, for example, may violate water quality standards, the DHES has no control over the amount of water withdrawn for beneficial uses. In

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33 Ibid.

34 See Chapter Two.

addition, none of the acts under the jurisdiction of the DHES, or any of the rules adopted by the BHES, address regulation or control of water use rights.[35] Considerations such as these make it obvious that enforcement of the Standards are frustrating at best when allowing for nonpoint source pollution.

A LOOK AT TWO OTHER STATES

Inasmuch as this paper deals with the advocacy of the integration between two functions of the state this author conducted a survey among other western states in order to determine if they experienced the same sort of problems that currently besets Montana water resource administration, and also, to determine if any states had actually integrated their water quality and quantity functions.

Of the ten western states surveyed, Washington, Oregon, California, Nevada, Idaho, Utah, Arizona, New Mexico, Colorado, and Wyoming, only California and Washington (both of which have riparian and appropriative

35 Jamison, Mona, Yellowstone Impact Study, Technical Report No. 4, (2nd) The Adequacy of Montana's Regulatory Framework for Water Quality Control, DNRC publication, July 1977, p. 15.

rights) had actually integrated the two resource functions in question.[36] What follows is the author's attempt to succinctly present the fashion in which germane water resource matters are handled in these two states along with different views that authorities in those states presented to the author about their own programs.

California's Program

> The water quality policy of California states: "The Legislature finds and declares that the people of the state have a primary interest in the conservation, control and utilization of the water resources of the state, and that the quality of all the waters of all the state shall be protected for use and enjoyment of the people of the state...activities and factors which may affect the quality of the waters of the state shall be regulated to attain the highest water quality which is reasonable considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible." 37
>
> The policy concludes by saying that:
>
> "statewide programs for water quality control can be most effectively administered regionally, within a framework of statewide coordination and policy." 38

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36 The survey was conducted by reviewing each state's water-related laws through access to available literature. Much of the author's text is condensed from Radosevich, Achieving Irrigation, supra, pp. 155-166, and California Governor's Commission, Final Report: Review of California Water Rights Law, 1978, pp. 99-112.

37 California, Water Quality Code, Sec. 13000 (1967)

38 Ibid.

In 1967, the California legislature formally recognized that the quality of water is directly related to its quantity. As a result, the State Water Rights Board was combined with the State Water Quality Control Board to form the State Water Resources Control Board.

The California State Water Resources Control Board is responsible for formulating California's policy for water quality control which must be periodically reviewed. To insure compliance with state policy, all regional water quality control plans must be approved by the State Board.

The Porter-Cologne Water Quality Control Act was enacted in 1960. This law was the first complete revision of the state's water quality control laws in two decades and had been labeled as the "toughest water quality act in the nation." It provided new procedures to enable the State Water Resources Control Board to carry out water quality objectives more effectively through its water rights function. This Act made important changes in the statewide policy for water quality control and armed the regional water quality boards and the State Water Resources Control Board with a new arsenal of administrative powers. It made important changes in the definitions of pollution, nuisance, contamination, and beneficial

uses to be protected from quality degradation. As such, water quality control in California is largely the responsibility of the State Water Resources Control Board, nine Regional Water Quality Control Board, and the State Department of Public Health.

The Porter-Cologne Act directs the nine Regional Boards to formulate and adopt water quality control plans for all areas within its region. A water quality plan does not become effective unless it is approved by the State Board.

The State Board is responsible for the allocation of funds to the Regional Boards, and is also designated as the state water pollution control agency for all purposes stated in the Federal Water Pollution Control Act.

The State Water Resources Control Board has two statutory divisions: The Water Rights Division and the Water Quality Division, each with its own division chief.

Each of the regional boards can also engage in planning and coordinating other state and local agencies to control water quality. Specifically, each regional board is commanded to obtain coordinated action in water quality control, encourage and assist in self-policing

waste disposal programs, require investigations and reports from other state agencies, request enforcement of water quality control laws, recommend to the State Board projects for financial assistance, encourage regional planning in which the Boards can consider almost any public interest criteria, and report cases of contamination.

Water quality and pollution is taken into account along with the availability of unappropriated water whenever applications for appropriation of water are considered.

The new water quality control act has made additional changes relative to the appropriation of water. These changes clarify actions which the State Board must take to implement water quality objectives through its water rights function. The act authorizes the Board to do the following:

1. In determining the amount of water available for appropriation, to take into account, whenever in the public interest, the amounts of water needed to remain in the source for protection in a relevant water quality control plan.

2. In action upon applications to appropriate water, to consider the relative benefits to be derived from uses specified to be protected in any relevant water quality control plan.

3. Whenever it is in the public interest, to approve appropriation by storage of water to be released for the purpose of protection or enhancing

the quality of other waters which are put to beneficial uses.

In addition to the Act, the Board has continuing authority in every water permit it issues to add to any permit as a condition for granting an extension the stipulation that specific requirements to minimize waste of water, unreasonable use, unreasonable method of use and unreasonable diversion be imposed. The Board can require among other things, restrictions on diversions to eliminate tailwater runoff or reduce return flow from irrigated agriculture.

One member of the State Water Resources Control Board stated that although California has formally recognized that the quality of water is directly related to its quantity, the state has no official policy that says it shall consider water quality in the application process to appropriate water.[39] Instead, the nine different basin plans spell out what water quality considerations should be considered and the different basin plans are used primarily as a guiding document. The State Board typically does not adhere strictly to the different

39 Telephone conversation with Ralph Johnson, Division Administrator, California State Water Resources Control Board, April 30, 1981.

basin plans because they are amended frequently as time passes and public interests change.

Some problem areas were discussed with the author; for example, while instream uses are considered to be beneficial uses of water, their enjoyment cannot, as a rule, be secured by a water right. In principle, a well-conceived system for allocating water among instream and offstream beneficial uses would weigh the relative value of competing uses, however, it does not appear that various instream uses participate equally with offstream uses in the present system for allocating water supplies.

This problem exists despite state policy that provides that fish, wildlife, and recreation uses are beneficial uses of water which must be considered in administrative determinations of the public interest.

Minimum flow criteria are being developed in California for all streams and waterways but one of the most fundamental problems is that data are often inadequate to wisely allocate the water of a stream. Better data was seen to be needed for purposes of identification of conflicts and tradeoffs among alternative uses, as a measure for quantifying instream values, and to document the need for their protection. At present,

information is collected by the water developer and the Department of Fish and Game during the application and protest procedure. The Department faces financial and time constraints with every application. As a result, there has been no concentrated effort to determine water availability. Lack of a definitive base of information necessitates case-by-case determinations, a "hit-or-miss proposition" that many feel gives only haphazard protection to instream uses.

Another important problem is the ad hoc nature of the application and protest procedure. Many believe that the process actually discriminates against instream uses. Project designs are often completed before instream protection is considered, making the inclusion of instream protection in project design more difficult to implement. Furthermore, nothing compels the Board to apply instream flow requirements consistently. The "protection of instream values depends on the cumulative effects of Board action over time. One set of Board members may be staunch in their defense of instream values, but if their successors in office hand out permits freely...the damage is done. And the damage is cumulative over time."[40]

40 Ibid.

Public interest is highly valued as a guide to resource policy in California. Implications from the author's research point to the fact that water resource decisions receive a high level of public scrutiny. As the members of both the State and regional Boards are appointed directly by the Governor, political ramifications loom ever present for each and every decision of state policy affecting water and its use.

In general, although California is beset with its particular problems (not unlike every other state) the integration of its water quality and quantity functions is looked upon as highly desirable. California officials much prefer their integrated system to the ones common to most states in the West.

Washington's Program

> It is the declared policy of Washington to: "...maintain the highest possible standards to insure the purity of all waters of the State consistent with public health and public enjoyment thereof, and propagation and protection of wildlife, birds, game fish and other aquatic life, and the industrial development of the state, and to that end require the use of all known available and reasonable methods by industries and others to prevent and control the pollution of the waters of the State of Washington. Consistent with this policy the State of Washington will exercise its powers, as fully and as effectively as possible, to retain and secure high quality for all the waters of the state...while at the same time preserving and vigorously exercising state powers to insure

> that present and future standards of water quality within the state shall be determined by the citizenry, through and by the efforts of state government, of the State of Washington." 41

The Washington Legislature has also declared:

> ...that it is a fundamental and inalienable right of the people of the State of Washington to live in a healthful and pleasant environment and to benefit from the proper development and use of its natural resources. The Legislature further recognizes that as the population of the state grows, the need to provide for our increasing industrial, agricultural, residential, social, recreation, economic and other needs will place an increasing responsibility on all segments of the society to plan, coordinate, restore and regulate the utilization of our natural resources in a manner that will protect and conserve clean air, pure and abundant waters, and the natural beauty of the state. 42

Water pollution control in Washington is the responsibility of the Department of Ecology and the Ecological Commission. The Department of Ecology was created in 1970 and was given all the powers, duties and functions of the previous Water Pollution Control Commission. Furthermore, the Department of Ecology was also given all the powers, duties, and functions of the Department of Water Resources, the State Air Pollution Control Board and the Department of Health with respect to its duties regarding air pollution and the control of pollution

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41 Washington, Revised Codes, Section 90.48.010, 1975.

42 Washington, Revised Codes, Sec. 43.21A.010, 1975.

problems created by the disposal of solid waste.

The Department has the power to promulgate, amend, or rescind rules and regulations which are necessary to carry out water pollution statutes. This power extends to the promulgating of water quality standards in order to maintain the highest possible standards for the waters of the state. The Department has the authority to bring legal action to enforce Washington's Water Pollution statutes and has jurisdiction to control and prevent the pollution of streams, lakes, rivers, ponds, inland waters, salt waters, water courses, and other surface and underground waters of the State of Washington.

The Ecological Commission, also created in 1970, consists of seven members who are appointed by the Governor from the electors of the state who possess a general knowledge of, and an interest in, environmental matters.

The Commission must provide advice and guidance to the director on each of the following:

> Any positions proposed to be taken by the Department on behalf of the state before interstate and federal agencies or federal agencies or federal legislative bodies on matters relating to or affecting the quality of the environment of the state.
>
> Any comprehensive environmental quality plan, program

> or policy proposed for adoption by the Department as a state plan or policy pertaining to an environmental management activity.
>
> Any procedures for the financial assistance grants proposed to be given to municipal, regional, county or state organizations for environmental quality purposes.
>
> Any procedures for considering applications for and granting variances.
>
> Any proposal developed for submission to the legislature as a department request bill.
>
> Any other matter pertaining to the activities of the department submitted by the director for which advice and guidance is requested.

In addition to its water quality control functions, the Department of Ecology is responsible for the general administrative supervision of Washington's water resources. In other words, both water quality and water quantity functions rest in the department.

Both the divisions of Water Quality Management and Water Resource Management fall under the Office of Water Programs within the Department of Ecology. While talking with Washington water resource officials it was learned that a good, harmonious, working relationship exists between the states' water "quality and quantity" divisions.[43]

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43 Telephone conversation with Joan Thomas, Division Head of Water Quality Management, April 30, 1981.

Washington does recognize instream uses as beneficial uses and water rights for these types of uses can be generally secured.

Public involvement with water resource policies and the general public interest are highly regarded in Washington. Part of the reason this is true stems from the fact that people "really do believe in water quality in Washington and make an effort to find out what we're (the state) doing to protect our resources.[44]

Indeed, Washington has always had a public interest criterion in its criteria for permits to appropriate waters of the state. In the fall of 1976, the State of Washington began a two-year planning process to seek solutions for agricultural point and nonpoint source pollution abatement. "The underlying concept behind all planning efforts was a firm commitment to public participation. Local farmers from water quality committees, conservation districts, and agricultural organizations were consulted throughout the planning process."[45]

Although some administration officials may paint a

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44 Ibid.

45 Water Quality Planning Division, Office of Water Programs, Department of Ecology, 208 Work Plan: Irrigated Agriculture, March 1979, p. 1.

rosy picture of water resource management Washington is also not without its problems in this area.

As an example, minimum flows are not entirely established for every principal river or water course in the state although magnanimous efforts are underway to achieve these ends. Surprisingly, some major rivers and tributaries such as the Yakima have not yet received minimum flow protection. Currently, public interests are considered in an area where minimum streamflows are lacking; information on public interests and desires are formulated through public hearings conducted throughout the affected area and the entire state.

Political problems have surfaced in this regard, as might well be expected, since minimum flows are considered to be a very "hot" item with irrigation and industrial interests opposing them on one end, and environmentalists advocating their adoption on the other. The irrigation interests are currently pushing for separation of quality and quantity allocation functions, but the political framework is not presently geared to making a switch and state administration officials feel that the separation will never happen.

In summary, Washington state officials felt that

although quality and quantity functions differ with regard to some aspects and implementations, "the two are so interrelated that it makes sense."[46]

CONCLUSIONS

In summary, it appears that management rules for both the DNRC and the DHES are well defined by law while the planning legislation defines only general objectives and allows considerable flexibility in defining the process and final product. This is especially true in the planning and management of programs of the DNRC where vague, amorphous and generalized pronouncements have little, if any, direct bearing on rules promulgated for management of water quantity functions.

The planning and management legislation of the DHES, while a good deal more related than that of the DNRC, does not offer a consistent relationship between planning and management. For example, as has already been indicated, the major problem with water quality management in Montana lies in the difficulty in enforcing existing laws...Although the MWPCA and the 208 water quality management laws specify that pollution shall not

46 Joan Thomas telephone conversation, op.cit.

occur in state waters, pollution does occur. The problem lies in the ability to enforce these laws. Management roles could be changed by new legislation or court decisions; legislative changes could be recommended by the planning process.

It is also worth noting that each of the states that have their quantity and quality functions vested under one department in the West appear to prefer the situation far more than before the reorganization.

This concludes Chapter Four and leads into the final chapter where the author devotes his writing to several recommendations that surround and plead the integration issue.

CHAPTER V

RECOMMENDATIONS

CHANGING THE STATUS QUO

Should we change the Present System? To reiterate, water quality and water quantity problems once seemed mutually exclusive in Montana, and this author feels that they must now be viewed as inseparable. The state, in order to maintain water quality standards and prevent degradation, cannot continue indefinitely to allow dewatering and reduced stream assimilation; some minimum flows must be maintained in the state's rivers and streams. Indeed, it was strongly felt by members of both departments over three years ago, that consolidation of the two agency's programs was needed. Common among those recommendations posed by special staffs from both the DNRC and DHES was that "it is incongruous that two different state agencies preside over water quality and water appropriations"[1], and it was felt that "this situation [status quo] can only lead to unnecessary problems for water users, DHES, and DNRC... [accordingly] present responsibilities and mechanisms of DNRC, DHES,

1 Jamison, op.cit., p. 20.

and their boards should be re-examined to improve the state's ability to manage water quality."[2]

What Choices Exist? If we accept the fact that the status quo must be changed, an immediate question becomes how; are there suspicious alternatives to the present system of water resource management, and if this is the case, to what degree need the changing be done?

As part of the answer, this author recommends the development of five basic ideas that he feels are needed for the furtherance of effective management of water resource matters in Montana.

1. The inclusion of water quality considerations in the permit to appropriate water.

2. The inclusion of a public interest criterion in the permit to appropriate water.

3. The legislature should seriously look at the present water allocation system use in Montana, especially with respect to water conservation incentives.

4. The BHES should adopt specific rules implementing the non-degradation policy.

5. The WQB should be incorporated into the Water Resource Division of the DNRC.

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2 In-house memorandum from Special Staff to Chief Legal Counsel, DNRC, February 16, 1978.

Recommendation #1:

Inclusion of water quality considerations in the permit to appropriate water. Central to the coordination and cooperation between the DNRC and the DHES is the inclusion of a water quality element in water quantity allocation law.

In addressing the problem of water quality at the state level it is found that quality has never been an element of a water right under the appropriation system. Water quality is belatedly becoming recognized as an integral function of water quantity considerations. The viewing of water quality as a function of water rights enables a person to understand that every time a quantity right is exercised there will be some effect on water quality. As specifically concerns irrigation (or other water withdrawals),

> lower flows usually result in lower quality because the assimilative capacity of a stream is reduced through loss of aeration due to lower stream velocity; lower flows also result in larger evaporation losses due to increased temperatures and this affects quality by increasing the concentration of minerals; lower flows increase stratifications and provide more time for production of undesirable water quality changes such as algae growths which

> can cause nuisance conditions, including taste and odor problems. 3

This degradation of the water, as noted in Chapter One, will eventually contribute to the demise of various ecological regimes associated with the holocoenotic environment.

One might ask why the rights of a prior appropriator do not reasonably include water quality. The answer is they do, but the duty to grant permits by the DNRC may be nondiscretionary if the criteria to appropriate water are successfully met.

> The rights of a prior appropriator...reasonably include water quality. Therefore, if a prior appropriator's water quality will be degraded by the granting of a permit to an applicant, it could be argued that the DNRC is authorized to deny his permit... [however] since the DNRC has not denied permits on the basis of water quality degradation occurring at the expense of existing appropriators, the DNRC's actions indicate it has adopted the position that the word "rights" includes only water quantity. 4

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3 Robie, "Relationships Between Water Quality and Water Rights", contained in Johnson and Lewis, Ed., Contemporary Developments in Water Law (University of Texas, Center for Research in Water Resources, 1970), p. 77

4 Jamison, Mona, "Can Dewatering be Effectively Controlled under MWPCA?" contained in DNRC, Yellowstone Impact Study...op.cit., p. 17.

The DNRC responds to this by noting that in "some cases water quality can be an attribute or element of a water right, and in such cases it may deny a permit if the water quality element of an existing water right would be adversely affected. (However)...it has not done so to date."[5] MEPA also provides a mechanism whereby a permit may be denied by the DNRC if an adverse environmental impact will occur should a permit be granted,[6] however, not one permit has ever been denied on the basis of resulting adverse environmental impacts.

Consequently, it is only through the "reservation of waters" provision of the Montana Water Use Act[7] that the DHES can hope to become instrumental in controlling pollution and determining water quality effects in advance of appropriative permits on a particular stream.

The DHES nonetheless argues that the flow reservation process provides the DHES with an indirect method of controlling water quality degradation caused by dewatering, and since the BNRC grants or denies applications for reservations of waters, the DHES's control over water

5 Ibid., emphasis supplied.

6 See Chapter Two.

7 Montana Code Annotated, 85-2-316, 1979.

quality degradation caused by dewatering is inadequate, since the reservation process does not guarantee that the flow reservations applied for will be granted.

Recommendations have included those that suggest...

> the water quality element should be a general provision added to all new water rights and requests for extensions, changes in use and transfers, in order to provide the necessary authority to state water agencies for later setting and enforcing of numerical standards (either with respect to water application or return flows, or both). Where water quality standards on streams for beneficial use have been realistically set, such standards can be incorporated by reference to water rights from that source of supply. 8

Indeed, there is precedent for this type of action.

> In California, there is a special provision that the water will be used in such a manner as not to degrade unreasonably the usage of water for downstream users. In some instances, the State Water Resources Control Board has also applied numerical water quality standards to particular water rights. 9

In a like manner as noted above, a water right holder

> would have the same assurance and likewise liability in the use of diverted water within the priority system for quality purposes as he now has for quantity flows. This change would be instrumental in encouraging practices to treat or dispose of

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8 Radosevich, George E. and Skogerboe, Gaylord V., op.cit., p. 134.

9 Ibid.

> highly saline waste waters and encourage the proper application of water on the farm. 10

In point of fact, one of the Federal government's alternatives presented for irrigated agriculture is an action that would have appropriated additional sources of funds for states to develop "a system to integrate water quality and water quantity decision-making at the state level."[11]

Once the criteria for issuance of a water right permit contains the water quality consideration, answers to technical questions may be arrived at more easily. For example, central to the determination of water quality is the flow of information regarding the acre-feet capacity of streams in certain drainages and the number of appropriations existing on the streams at any point in time. This information would enable the WQB to determine, for example, proper BMP's that might have to be employed in order to protect riparian habitat along the stream and safeguard applicable water quality standards.

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10 Radosevich, G.E., "Water Right Changes to Implement Water Management Technology," contained in Managing Irrigated Agriculture, op.cit, p. 274.

11 Environmental Protection Agency, Water Quality/Water Allocation Coordination Study: Draft Study (Washington: EPA, Aug. 1979), p. IX-17.

Determinations might also be brought about to require water to be released from holding reservoirs or state and federal dam projects to augment stream flows and increase the assimilative capacities of streams to handle pollution.

Recommendation #2:

Inclusion of Public Interest Criterion in the Permit to Appropriate Water. A literal reading of the democratic Constitution of Montana makes evident the fact that the waters of the state are to be held in public trust. In addition, laws such as NEPA, the FWPCA Amendments of 1972, and the FWRA of 1965 include requirements for "public involvement".

> Public involvement program purposes include: establishing trust and legitimacy in the community; relaying information about programs so that opinions can be formed; delineating ways to facilitate resolution of conflicts; and assuring that citizen-generated options are considered. 12

The emphasis on public involvement presumes the use of public opinion as a measurement device to be used as a gauge on policy. From a historical viewpoint, a general consensus is that "public opinion is the complex of beliefs (formulated points of view that cluster around

12 Kauffman, Kris G., and Alice Shorett, "A Perspective on Public Involvement in Water Management Decision-Making," Public Administration Review, Sept/Oct 1977, p. 467.

an issue) expressed by a significant number of persons on an issue of general importance."[13]

The use of public opinion as an aid to policy and decision-making in government naturally assumes that democratic measures, i.e., justice by majority rule, are being taken to insure that accountability resides in the public at large for the government's actions.

> We know that the level of democratic attainment depends upon public opinion, and that opinion, like democratic government itself, is a social variable of ever shifting scope, direction, and intensity of expression. When opinion sustains the ends and means of democratic government, public opinion is in the public interest. [14]

The Survey. With these innate principles in mind, the water laws of 11 other Western states were examined to determine how many had a public interest criterion and what form it took.[15] Of the 11 states surveyed -- Arizona, Idaho, California, Colorado, Washington, Oregon, North Dakota, South Dakota, Wyoming, Utah and Nevada -- only Colorado does not have a public interest criterion.

13 Hennessy, Bernard C., Public Opinion, 2nd Edition (California: Wadsworth Co., 1970), p. 30.

14 Lasswell, Harold D., Democracy Through Public Opinion (New York: Banta Publishing Co., 1941), p. 19.

15 This study was undertaken at the time the author was employed by the DNRC and credit is given to the Water Planning Bureau for its development.

The form of the public interest criterion is generally of two types, one being very general, the other quite specific. Two examples of a general criterion are:

1. The appropriation must not impair existing rights or be detrimental to the public welfare; and

2. Based upon the public interest and the economic welfare, the state engineer may, in his discretion, approve or disapprove any application.

The statutes of the states of North Dakota, Oregon, Idaho and California are much more specific about what constitutes the public interest. For example, in North Dakota "In determining the public interest, the state shall consider all of the following:

(a) The benefit to the applicant resulting from the proposed appropriation.

(b) The effect of the economic activity resulting from the proposed appropriation.

(c) The effect on fish and game resources and public recreational opportunities.

(d) The effect of loss of alternate uses of water that might be made within a reasonable time if not precluded or hindered by the proposed appropriation.

(e) Harm to other persons resulting from the

proposed appropriation.

It was difficult to draw any conclusions from this survey however, but it seemed that those states which had defined the public interest used the criterion more often than the other states. This might be because agency personnel typically have a better idea of the legislature's intent when the public interest is defined.

Although a public interest criterion is included in Montana water law in the application for reservation, there is no such criterion in the application for permit.[16]

Three important questions were posed to the study team considering the public interest criterion:

1. Are there important considerations in the issuance of water rights that are not now addressed?

2. Should these issues be addressed in the issuance of permits?

3. Would the public interest criterion provide the necessary mechanism to consider these issues?

In answer to the first question, it is clear that there are considerations in the issuance of water rights that are not now addressed. Presently, nothing in Montana

16 See Chapter Two.

Water Law would allow the DNRC to evaluate economic questions prior to issuing a water right. Although the DNRC can return an application when it finds that the application is not in good faith or does not show a bona fide intent to appropriate water for a beneficial use,[17] it by itself does not really address the economic issues. The type of issue that is ignored could be, for example, a situation where the department has knowledge that indicates the applicant may not be able to afford the diversion or where the benefits of the appropriation would not cover the costs.

The other aspect of these three economic items is that they would allow an evaluation of the effects of economic activity resulting from the proposed use. An application for irrigation water may benefit the applicant, but it arguably should include benefiting the general economic activity of an area as well. The same may be said of an appropriation of water for industrial purposes. These types of questions are an important aspect of an appropriation which cannot now be evaluated.

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17 Montana Codes Annotated, 85-2-310, 1979.

The effect of the proposed use on fish and game or public recreation values cannot be evaluated in the issuance of water rights under existing statutes. These values can, of course, be protected through the establishment of reservations for that purpose, but it will be some time before reservations are established on all streams in the state that have widely recognized fish, wildlife and recreational values, and some may never have reservations. This aspect of the public interest criterion would provide for the consideration of those values.

Another example of protection in the public interest could be a small tributary creek which provides spawning habitat essential to the fish population of a stream noted, and heavily used, for fishing. This portion of the public interest criterion would cause these instream values to be considered in the issuance of water rights.

The effect of the proposed use on public health and safety is another issue which the current statutes do not allow the DNRC to evaluate in the issuance of water rights permits. An example of how an appropriation could threaten the public health and safety would be a use that resulted in contamination of drinking water wells.

Saline seep, which can be aggravated by irrigation, can and has resulted in the contamination of shallow aquifers used for drinking water purposes.

The effect of the possible losses of alternative uses of water is also not presently evaluated under existing statutes. This is especially important in requests for large appropriations because a public interest survey could negate the use of moratoriums on any subsequent applications where the moratoriums have originally been placed on water use to study the original appropriation's effects on other parameters. Replacing moratorium use with a public interest criterion would save money and time, since a moratorium on water use must be voted in by legislative action. The preceding effects that stem from an appropriative use of water are not currently being evaluated, along with other effects that stem from highly appropriated basins, water quality considerations and dam operations. These could conceivably be subjected to public scrutiny and opinion through the inclusion of an adequate public interest criterion in the state water plan.[18]

18 See discussion, Chapter Four.

The author, in response to questions two and three, feels that the public interest criterion should be developed, partly because of the fact that democratic principles are more apt to be considered in this manner, and because of studies that have indicated that "generalized public opinion (in the manner of Gallup's national polls) is not a matter of the highest priority in legislative decision-making."[19] Whether administrators make more use than legislators of this kind of public opinion is still open to questions; but the "indications are that administrators, too, are more heavily influenced by specialized clientele, other officials, and pressure groups."[20]

The author feels that only through dynamic, specific, and localized public opinion polling measures, can the public interest in an area with regards to water development be ascertained and acted upon. Public interest considerations should be included in effective Level B planning programs throughout the state. Both the DNRC and the DHES admit wanting to work with the public to a

19 Hennessy, op.cit., pg. 46.

20 Ibid.

greater extent but currently lack mandated policy and funding with which to do so.[21]

Many authors agree that the survival of our water resources in this part of the country "...will depend on a proper mix of technological feasibility and social considerations [like the public interest] which increasingly will become the major elements for future water use development and for solutions to increasing problems of water degradation."[22]

Recommendation #3:

The Legislature Should Seriously Review the Present Water Allocation System in Montana, Especially in Regard to Water Conservation. It has been known for quite some time that "the western states' water supplies can indeed be increased substantially through simple conservation and reduction of current waste -- particularly in

21 See Lamson, Laurie L., Montana Water Quality and Public Participation: A Resource Guide to Montana's Water Quality Bureau (Helena: Northern Rockies Action Group, Inc., April, 1975), pgs. 22, 29.

22 Vlachos, Evan, "Sociological Considerations in Irrigation Water Management: Facing Problems of Water Quality Control," contained in U.S. Environmental Protection Agency's, Managing Irrigated Agriculture...op.cit., p. 287.

agriculture."[23] A savings of a small percentage of water from agricultural uses could support numerous other enterprises depending on water, just because of the sheer volume of water that is used in agricultural pursuits. It is also no secret that conservation opportunities are present due to the "enormous inefficiencies in present irrigation practices. The magnitude may well be in the millions of acre feet/year potentially salvageable."[24]

As was made apparent in Chapter Four, a crucial problem in any water management system is the type of incentives and the structure of the legal-organizational arrangement that enables irrigators to waste water.

> The rapid growth in use of water for crop irrigation over the last several decades can largely be explained in terms of public policies at the national, state and local level which have encouraged an excess use of irrigation water. These factors include farm price and income support programs which encourage the expansion of output per acre, and generally making water available to users below cost or

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23 Pring, George W., and Karen A. Tomb, "License to Waste: Legal Barriers to Conservation and Efficient Use of Water in the West contained in Rocky Mountain Mineral Law Institute, Proceedings: 25th Annual Institute (Albany: Matthew Bender Publisher, 1979), p. 25-3.

24 Ibid., p. 25-5.

scarcity value. 25

Howe makes it clear that the actual quantity of water consumed in the agricultural sector is much more sensitive to water pricing and agricultural support policy than to near term technological opportunities, and suggests that if commodity and water prices were kept more in line with actual scarcity values, much less water would be used than at present. The rate of new irrigation development would be markedly slowed.[26]

Such is the flavor of many a treatise on the subject of water conservation.

> Federal, state and local government subsidies, grants, loans, loan guarantees and cost sharing programs could play a major role in stimulating water conservation, and although pricing mechanisms would not apply to the great number of private irrigators who draw their own supplies directly under their own water rights...authorities have proposed that water user fees or "withdrawal charges", equivalent to an excise or use tax,

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25 Howe, Charles W., et. al., "Future Water Demands -- The impacts of Technological Change, Public Policies, and Changing Market Conditions on the Water Use Patterns of Selected Sectors of the United States Economy: 1970-1990." Contained in Resources for the Future, Incorporated, (Washington: Government Printing Office, March, 1971), p. 101.

26 Ibid.

be imposed on self-suppliers, scaled to provide efficiency incentives. 27

Other recommendations for change include strict enforcement of existing state appropriation laws, compliance with existing state and federal water quality laws, adoption of specific efficiency criteria, and major surgery (structural changes) on the appropriation system of water allocation itself.

In the literature surrounding change of legal and institutional barriers to conservation, two recurring major approaches are sounded. (1) Recommendations designed to "free-up" water by encouraging or mandating conservation practices, and (2) those clarifying rights to the freed water, so that the benefits of conservation do not simply pass to the next junior appropriator.

It is generally concluded that without significant change in both categories, water conservation efforts will fail to materialize.[28]

Pring and Tomb cite the study undertaken by the National Water Commission entitled Water Policies for the Future and declare that the "most heavily favored and

27 Pring and Tomb, op.cit., pg. 25-26.

28 Ibid., see pp. 25-43.

promising reform area is for states strictly and imaginatively to enforce the waste control mechanisms already available in their appropriation laws."[29]

If this is the case, and avenues do indeed exist for enforcement of basic requirements such as the limiting concepts of "beneficial use," "reasonable use," "waste," and "public interest/welfare," then Montana should consider itself extremely lucky and make haste to realize what a fortuitous set of circumstances it confronts. Although reformists gleefully view applications for new rights as the easiest to address in nipping wasteful diversions "in the bud" (i.e., previous to an approval of an application), they dolefully look at existing rights and wish that there were opportunities under existing law that could achieve the same results. But happily so, in Montana, there is a mechanism for resurrecting existing rights and requiring contemporary conditions on the permits. The mechanism is none other than Senate Bill 76, which requires that all existing water rights prior to 1973 be "re-claimed" and adjudicated.[30] Fate has dealt an

29 Ibid.

30 See Chapter One.

irony to Montana for the state was for years considered mired in archaic water law concepts, without even a state agency to administer and record permits to appropriate water. Senate Bill 76 now makes it possible for water courts to impose new conditions upon old permits to further water conservation if the legislature realizes what it is holding in its hands and takes the initiative to benefit the environment and its trustees -- the public.

What is meant by the "adoption of specific efficiency criteria" in relation to regulating water waste is the notion of a rejection of "customs"; applying "X" amount of water to any area regardless of soil type, climate, crops or other related factors. What is envisioned instead is to devise a system "not of inflexible statutory or judicial limits, but of quantity-setting discretion in the state agency flexibly geared to the individual conditions of a given region. Ideally, the standards would be set, not on a case-by-case basis, but through more generic proceedings."[31]

It is also argued that conceptual and structural changes or modifications in the law ought to be pursued

31 Pring and Tomb, op.cit., p. 25-51.

to better effect and encourage a social consciousness regarding water use among agricultural and other water users. "The concept that is at the heart of the appropriation doctrine and which could make the most substantial impact in solving the legal and institutional constraints [to water conservation] is the concept of beneficial use."[32]

The term "beneficial use" is generally not defined, it is normally nebulous, but does in general meet the needs for both allocating and distributing water within the state. However, from Chapter Four it is clear that the doctrine works to limit the efficient use of water resources; if the water is not beneficially used, the claimant does not have a water right in remaining unused portion. The general consensus is that the "concept must be conceived and directed not only to types of uses but to the nature of the use on the farm with respect to the users' needs. More importantly, this concept must be viewed with respect to the users' responsibility to other downstream users and the public interest."[33]

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32 Radosevich, G.E., "Water Right Changes...", op.cit., p. 273.

33 Pring and Tomb, op.cit., p. 25-52.

Also stated for reformist change are the concepts of appurtenancy, which ties water to land and which consequently breeds inefficiency by promoting irrigation of certain lands that are not as productive as other available lands belonging to the water right holder, and transferability of rights -- whether water rights in general or saved water rights in particular. Consensus has also called for a change in state law that clearly recognizes "all saved or conserved water as becoming the property of the conserver."[34] However, sharp criticism has been leveled at this idea as being generally too simplistic.[35]

Other highly popular recommendations include radical departures from the status quo in institutional settings. The proponents of these recommendations find reform within present institutions to be inadequate -- "either for reasons of political intransigence or inadequate jurisdiction."[36] What is contemplated here runs the gamut

34 Ibid.

35 See generally Radosevich, Western Water Laws, op.cit., at Section 5; and Pring and Tomb, Rocky Mountain Mineral, op.cit., at 25-52 to 25-54.

36 Pring and Tomb, op.cit., p. 25-62.

from a centralized state brokerage system to "operate as a market center for the exchange and sale of water rights or renting of water available under the rights held",[37] to studies calling for development of a single authority to plan for water resources development and water quality control on a basinwide basis[38] to finally, proposals based on strict economic benefits like the establishment of "water banks". These "water banks" closely resemble the "centralized state brokerage systems" mentioned earlier with the added factor of being flexible enough to improve water quality as well.[39]

All the above recommendations call for a "pervasive spirit of social consciousness and a new world outlook of individuals and collectivities away from their small closed system of their particular community, to the larger and much more complex regional scene."[40]

37 Radosevich, Managing Irrigated Agriculture, op.cit. at 275.

38 See generally Radosevich, Western Water Laws, op.cit., at Sec. 3; and Pring and Tomb, Rocky Mountain Mineral, op.cit., at 25-62 to 25-66.

39 See Pring and Tomb, op.cit., pp. 25-60 to 25-66.

40 Vlachos, op.cit., p. 301.

Formidable as resistance is to change (especially in areas affecting property rights), change is occurring and will undoubtedly increase as water availability declines. And the change must of necessity focus, not on developing new sources of water as in the past, but on more efficient use of existing supplies.

Montana will have to come to grips with the problems surrounding water availability sooner or later as growing demands for water from industry, municipalitites, recreationists and agriculture compete with each other.

"The general public's perception of water resources as unlimited, discretly divisible, and outside the reach of market forces may be susceptible to change as the finite nature of these resources becomes more visible."[41]

Consequently, the legislature should authorize interim studies of these sensitive and important water issues and seriously consider the two scenarios that are available -- the first approaching 21st century with the status quo in water management; or 21st century water management that is progressive, dynamic, and at the very least anticipated with regard to future use.

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41 Berry, Marvin P., "Water Management in Crisis", Public Administration Review, September/October 1977, p. 476.

Recommendation #4:

BHES Should Adopt Specific Rules to Implement the Non-degradation Policy. It is inconceivable that the State of Montana should have a law on its books that is as encompassing as the non-degradation clause and at the same time as ineffective. As mentioned previously[42], there has not been a single instance where the non-degradation clause of the MWPCA has been brought to bear in furtherance of its legislative intent -- namely the protection and preservation of Montana's number one resource -- its water.

Rules have yet to be adopted to implement the non-degradation section of the act, and primarily for that reason, neither the WQB nor the DFWP have made use of the clause. While skeptics of the clause may assert that up to this point in time the state hasn't felt the need to use the clause because of the lack of any "clear and present" danger to the state's waters, it goes without saying that if the need to use the clause had arisen, or, more likely, if in the future, when pollution results from competing demands for water from industrial, power,

42 See Chapter Four.

agricultural and domestic uses, the state may be forced to no other recourse but to use the non-degradation clause. Even so, if rules are not developed, it will be as though one were waving a gun without bullets in front of a charging elephant -- the inevitable will become reality.

At present the biggest problems to surmount in adopting rules for the clause are (1) the technical problems that are common to all professions -- problems of information transfer and the limitations of current technology, and (2) problems associated with defining the legislative and public interest with regard to allowable economic and social actions that would condone degradation of the water resource.

> Technical problems fall into categories of measurement, data analysis, interpretation, and dissemination...(and) two rather obvious limitations which exist in regard to the solution of multi-disciplinary technical problems are those of: (1) nomenclature, and (2) compatible units of measure. 43

As mentioned in Chapter Four, the problems of pollution documentation vis-a-vis the parameters of streamflow and time become exceeding prodigious and complex when subjugated

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43 See Orsborn, John R., "Water Management and Technology: Technical Aspects of Streamflow Allocation," Public Administration Review, September/October, 1977, p. 463.

to legal and administrative criterias of legality and illegality.[44] Also, difficult and politically sensitive questions have to be answered in order to propose avenues by which degradation may be legally allowed.

Nevertheless, pressure must be applied to keep the cause moving in spite of the discontinuity present in public objectives, disenchanted public servants and the change from one administration to the next. In order for anyprinciple or regulation to govern a conduct or procedure (as defines a rule), definable limits must be standardized to proscribe disallowable (i.e., unwanted "economic and social") actions. As is the case with any finite resource[45] time is of the essence and the BHES must see to it that these rules are formulated.

Recommendation #5:

Incorporation of the WQB into the DNRC. From the presentation of problems that has been made in Chapter Four and the author's understanding of public administration principles, the author strongly advises the integration

44 Ibid.

45 Water could be classed as a "finite resource", if for no other reason than that by its use and subsequent guaranties through law it may be taken out of circulation for other uses.

of the water quantity and quality functions of the state under one department, the DNRC, and ultimately under one division in the department -- the Water Resources Division.

The reasons proffered for the incorporation of these functions include several considerations. These are: (1) Administrative responsibility; (2) the Locus of power; (3) the Use of the Hierarchial Principle; (4) Coordination; (5) Cooperation; and (6) Planning.

Administrative Responsibility. Article IX of the Montana Constitution generally provides that the legislature sound the note for the "protection of the environmental life support system from degradation and provide adequate remedies to prevent unreasonable depletion and degradation of natural resources."[46] More on point, the Constitution also declares that the use of water..."shall be held to be a public use[47]... and (a)ll surface, underground, flood, and atmospheric waters within the boundaries of the state

46 Constitution of the State of Montana, adopted March 22, 1972. Ratified June 6, 1972 -- Article IX, Section 1, Chapter 3. Emphasis supplied.

47 Ibid., Sec. 3, Chapter 2. Emphasis supplied.

are property of the state for the use of its people..."[48]

A scrupulous reading of the Constitution -- the avowed will of the people -- and a comparison of that document with the resultant end product of its will -- the programs set up expressly for the fruition of its intent and resolve -- leave this author no other conclusion than to say that the mandates of the Constitution are not being met in the area of water quality and quantity management.

As a requisite to democracy, administrative responsibility to the imperatives of the Constitution are keynote.

> Administrative responsibility is not less important to democratic government than administrative efficiency; it is even a contributor to efficiency in the long run...this kind of responsibility (i.e., accountability for constitutional mandates to the people) is what democracy means... 49

The author's indictment of irresponsibility stems from the omission and/or inadvertency of cooperation, coordination, and planning between the DNRC and the DHES concerning appropriate water management functions.

48 Ibid., Sec. 3, Chapter 3. Emphasis supplied.

49 Finer, Herman, "Administrative Responsibility in Democratic Government," Bureaucratic Power in National Politics, 2nd Edition, ed. Francis E. Rourke (Boston: Little, Brown and Co., 1972), pp. 326-328.

When addressing water quality and quantity issues we speak in terms of environmental management and planning and indeed:

> The objective of environmental planning is to obtain a more adequate consideration of alternatives in the protection, modification, and improvement of the total environment than could be obtained through the independent and uncoordinated efforts of separate environmental shaping agencies. 50

What the integration of DNRC and DHES water management functions attempts to achieve is better administrative responsibility in natural resource development areas than is present now; responsibility measured in terms of better coordination between programs that affect each other or have similar general policies, cooperation between employees whose attitudes previously conflicted thus hampering progress in related areas of environmental management, and better resource planning efforts in the future -- planning efforts that are structured to anticipate the tasks to be performed and not just adopted ad hoc to meet issues as they arise.

Locus of Power. If we accept that:

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50 Caldwell, Lynton K., Environment: A Challenge for Modern Society, (New York: Natural History Press, 1970), p. 192.

> ...members of bureaucracies can give shape to stated policies through the exercise of choice and judgment in administering them (and) secondly, in attempting to effect the objectives and working conditions which society will authorize for their organizations, members of bureaucracies necessarily engage in pressure politics, 51

(to advance their shared professional interests), we must also accept the fact that "whether a governmental function will be emphasized or de-emphasized will depend, to a large extent, upon its organizational location."[52]

Indeed, the sweep of most literature indicates that "the centralization or integration of related functions is an essential element of achieving public responsibility and moreover, "[t]he continuation of separate, single purpose... agencies increases bureaucratic communications problems and hampers execute problem solving."[53]

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51 Sheridan, Richard G., Water, Water Everywhere - But?: A Study of the Politico-Administrative Aspects of Water Development in Montana, (Bozeman: Montana State University Joint Water Resources Research Center - Report No. 9, 1968) p. 135.

52 Weber, Max, "Essay on Bureacracy," contained in Bureaucratic Power, op.cit., at p. 54.

53 Ibid. See also Kramer, Fred A., Dynamics of Public Bureaucracy, (Cambridge: Winthrop Publishers, Inc., 1977) pp. 89-122 and pp. 243-263 and Gortner, Harold F., Administration in the Public Sector, (New York: John Wiley and Sons, 1977) pp. 179-190 and pp. 209-217.

Governmental economics of centralized services, possibilities of performing informational and educational functions vital to democratic responsibility and other advantages peculiar to centralization are possible if integration is developed in such a way that it combines separate agencies (with separate but similar functions) and leaves the organization politically stronger and able to speak with one voice.

In this way, agencies that are strengthened by centralization have the potential to represent the public's interest, and its own, in a stronger, more unified manner to the other political bodies in government.

Hierarchy. Hierarchy has been called "a significant method of achieving the coordination of related functions (and as such) supplements the centralization principle."[54] Indeed "the principles of office hierarchy and of levels of graded authority mean a firmly ordered system of super -- and subordination in which there is a supervision of the lower offices by the higher ones."[55] While Weber professes that "such a system offers the governed the possibility of appealing the decision of a lower office

54 Sheridan, op.cit., p. 135.

55 Weber, Max, Bureaucratic Power, p. 54.

to its higher authority, in a definitely regulated manner"[56] he also states that "(b) ureaucratization [which stems from hierarchy, among other principles] offers above all the optimum possibility for carrying through the principal of specializing administrative functions according to purely objective considerations."[57]

Hierarchical or scalar organizations seem to require as an essential element a single executive or a popular responsible executive approach, which places the direction of related functions under the supervisory authority of one man who may be held accountable to the Governor, the legislature and the public for the activities of his agency. The hierarchical principle is said to mitigate against "duplication of work, lack of clear cut responsibility, lack of cooperation, loose supervision, ineffective delegation of authority...confusion of purpose, wasted effort, conflict of wills and lack of concrete achievement."[58]

56 Ibid.

57 Ibid., pg. 57.

58 Sheridan, op.cit., p. 137.

However, Sheridan points out, and rightly so, that one of the major problems with the application of the hierarchical principle is its assumption of what Weber terms the "monocratically organized" or superior-inferior relationship.

This type of relationship tends to ascribe these same assumptions of inequality of status in personal relationships to concerns over suborganizational objectives and their inferiority. For example, let's assume that the WQB is transferred to the Water Resources Division of the DNRC. Where are the programs to be located hierarchically? On a level equal with that of the Water Planning Bureau (WPB) of the DNRC? Or below that somewhere? If the WQB's programs are placed in a position inferior to the programs of the WPB the person-directed feelings of inferiority might be translated into organization-directed feelings of inferiority.

This author believes that the programs and policies of the WQB must assume equal status with those of any developmental or planning entity within the DNRC. The author also deems it imperative that the legislature adopt the water quality and public interest criterions to insure the involvement of water quality programs with

those of water development programs.[59]

There may also be a tendency for the WQB to be treated like the "new kid on the block" for a period of time after its assimilation with the DNRC. The author was, at one point, particularly concerned that public knowledge of -- or proximity to -- sensitive environmental issues would be lessened to some degree under the proposed centralization of water resource functions.[60] However, there is a reaction against executive discretion and bureaucratic secrecy that lies within the phenomenon of what Alvin Gouldner calls "domain assumptions".[61] In contrast to managerial theory, domain assumptions

59 The author is hesitant to call for integration between the two water management functions if these conditions are not met.

60 The author's fears were allayed until it was satisfactorily demonstrated that there are indeed strategies for bureaucratic opposition that provide a means of counterbalancing executive discretion.

61 Weinstein, Deena, Bureaucratic Opposition, (New York: Pergamon Press, 1979), p. 5.

> ...interpret human beings as purposive actors who have the potential to act on motives that are not rooted in fear, resentment, or selfish enjoyment, and who are sometimes able to question the prevailing 'definition of the situation' and to act on their critical insight. The dominant value of this perspective is neither control nor instrumental rationality, but the freedom of the person as a moral actor, which is not factual but must be achieved through struggle.
>
> The basic contention is that administrative action is not capable of encompassing all of the activities within an organization because (1) all goals and sub-goals are not shared (that is, there is disagreement about whether certain goals should be pursued) and (2) administrators do not always act "rationally" (that is, those in managerial roles do not always conduct themselves in accordance with universal criteria)...
>
> ... Policies may be judged to be objectionable because they contradict general bureaucratic norms or because they are inconsistent with the particular goals that differentiate the organization from others. In such cases the standards for criticism are embedded within the organization's self-definition. However, policies may also be opposed because they are held to violate general moral standards, such as those of a religious tradition, the general culture, or some transcendent position...policies may be disputed because they harm subordinate employees in some way or because they harm the organization's relevent public. 62

As pointed out by Weinstein, oppositions mounted by only one person are mose easily discredited...so a popular approach or strategy to oppose bureaucratic policy is the

62 Ibid., pgs. 5, 26.

"informing strategy", which is the attempt to exercise power indirectly by pursuading someone else, usually someone with administrative or legal authority, to rectify the perceives abuse.[63]

An employee who is dissatisfied with the bureaucratic routine or some other perceived threat to policy management has, in Montana, a number of interest groups at his call to take up his -- and ultimately their -- cause in fighting the bureaucracy.

Many interest groups in Montana express objectives, (often conflicting) which are directly related to water conservation and development. Some are more influential and wield greater power than others.

Table 3 lists those organizations in Montana which periodically express water views and indicates their primary interest in water.

In summation, the clear identification of organizational objectives, (achieved by the legislature's adoption of the water quality and public interest criterions) and the equality in organizational position of the WQB with that of the planning and development functions of the DNRC, is paramount to achieving public responsibility in water

63 Ibid., pgs. 61, 65.

resource areas.

TABLE 2

WATER-ORIENTED INTEREST GROUPS IN MONTANA[64]

Organization	Water Interest
Upper Columbia Development Council	Private Power
Western Montana Fish & Game Ass'n.	Regional Recreation, Pollution control
Montana Farm Bureau Federation	Irrigation
Montana Farmers Union	Irrigation & Public power
Montana Ass'n of County Commissioners	General Development
Montana Cattlemen's Ass'n	Irrig. & stock watering
Montana Conservation Council	General Development
Montana Land Improvement Contractors	Small water project development (irr)
Montana Outfitters & Guides Ass'n	Recreation, Pollution control
Montana Wilderness Guides Ass'n	Recreation, Pollution control
Montana Associated Utilities	Public Power
Montana Railroad Ass'n	Irrigation & gen. dvlpmt. water rights
Timber Products Manufacturers Ass'n	Watershed Management
Montana Municipal League	Municipal supply & pollution control
The Dude Ranchers Ass'n	Recreation
Montana Power Company	Private Power
Montana Recreation Ass'n	Recreation and Pollution Control
Montana Bankers Ass'n	General Development
Montana Cattle Feeders Ass'n	Irrigation (ag use)
American Dairy Ass'n of Montana	Ag use
Montana Dairy Industries Ass'n	Ag use
Montana Hotel-Motel Ass'n	Recreation and Municipal water

64 Source: Sheridan, op.cit. pp. 222-223.

TABLE 2, CONTINUED

Organization	Water Interest
Montana Livestock Markets Ass'n	Stock-watering, ag use
Montana Manufacturers Ass'n	Industrial
Montana Reclamation Ass'n	Irrigation
Montana Ass'n of Soil and Water Conservation Districts	Irrigation, stock-watering (ag use)
Montana Wildlife Federation	Recreation, Pollution control
Montana Stockgrower's Ass'n	Ag use, irrigation
Montana Woolgrowers Ass'n	Ag use, irrigation
Montana Chamber of Commerce	General Development
Montana State Grange	Ag use
Montana Water Users Ass'n	Ag use
Montana-Dakota Utilities Company	Private Power
Pacific Power and Light Company	Private Power
Montana Taxpayers Ass'n	General Development (opposition to)
Rocky Mountain Oil and Gas Ass'n	Industrial, groundwater
Montana Petroleum Ass'n	Industrial, groundwater
Western Montana Mine Owners & Operators Ass'n	Industrial use, disposal
Mining Ass'n of Montana	Industrial use, disposal
Montana Wilderness Ass'n	Recr., Preservationist
Trout Unlimited	Recr., Pollution control
Montana Grain Growers, Ass'n	Irrigation, (ag use)
Anaconda Company	Industrial, water rts.
Mountain States Tel. & Tel. Co.	General Development
Association of Montana Planning Brds.	General Development
Montana Hereford Ass'n	Ag use
Montana State League of Women Voters	General Development
Upper Missouri Generation & Trans.	Private Power
Upper Mississippi Dev. Committee	General Development
Central Montana Electric G & T	Private Power

Coordination. Coordination has been defined by classical organizational theorists as "the binding together of individual efforts to accomplish a common objective"[65], and "the orderly arrangement of group effect, to provide unity of action in the pursuit of a common purpose...it is the first principle of management in that it expresses the principles of organization in toto: nothing less".[66]

Some authors have used the terms coordination and integration synonymously, and have defined it as the "process of achieving unity of effort among the various subsystems in accomplishing the organization's tasks".[67]

If it is assumed that the foregoing is true, it must also be assumed that an "organization has as its primary function the efficient coordination of diverse activities"[68]

65 Dessler, Gary, Organization Theory: Integrating Structure and Behavior (New Jersey: Prentice-Hall, Inc. 1980), p. 124.

66 Ibid.

67 Lawrence, Paul R. and Jay W. Lorsch, "Differentiation and Integration in Complex Organizations", Administrative Science Quarterly, Vol. 12, No. 1 (June 1967), p. 4.

68 Kast, Fremont E., and James E. Rosenzweig, Organization and Management: A Systems Approach, (New York: McGraw-Hill, 1970), p. 513.

and logic would compel us to also believe that the efficient management of diverse water resource issues would be better achieved through the integration of water quantity and quality functions in Montana.

It has been suggested that there are three primary means whereby organizations achieve coordination: through the hierarchy, the administrative system, and voluntary activities.[69] In hierarchical coordination, various activities are linked together by placing them under a central authority...and in time coordination through the hierarchical structure must be supplemented by the administrative system or voluntary means. Administrative systems are formal procedures designed to carry out the coordinative effort concerned with a horizontal flow of work of a routine nature. Voluntary means of coordination "may depend upon the willingness and ability of individuals or groups to voluntarily find means to integrate their activities with other organizational participants... and achieving [this] coordination is one of the most important yet difficult problems of the manager".[70]

69 Ibid., p. 187.

70 Ibid., p. 188.

Effective coordination of quality and quantity functions also means coordination with the goals and programs of other organizations that directly or indirectly affect regional water basin development. This includes entities such as federal, other state, and local resource agencies along with river basin commissions, executive resource councils and public interest groups.

> The coordination required by a group of specialized individuals is no more than the orderly regulation of inter-dependence...and it seems to be true that only one official position can be tolerated; otherwise the organization would pull apart. In this sense, all organizations are monistic. The term "an organiation" or "the organization" implies this minimal or basic monism. 71

In this light, the WQB must be recognized by the DNRC not as a separate competing and conflicting entity, but as a partner in the interrelationship of "water use". To this end, formal organization can assist in achieving coordination, by at least providing the authority mechanism for coordination.

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71 Sheridan, op.cit., pp. 145, 146.

Cooperation.

> Organizational conflict includes conflict between individuals, between individuals and groups, and between groups. Intergroup conflict...often involves two or more organizational units that while interdependent, find themselves with conflicting goals. 72

Such is the problem that many skeptics of integration might point to in order to discount the viability of combining the WQB with the DNRC.

Notwithstanding the fact that there are fundamental differences in the way each agency views water resource management, this author believes that, like others, "intergroup conflict (is) a very real and often useful aspect of organizations...and this generally positive picture of conflict appears to be supported by surveys of current management practice".[73] "Constructive conflict is both valuable and necessary. Without conflict there would be few new challenges; there would be no stimulation to think through ideas; organizations would be only apathetic and stagnant".[74]

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72 Dessler, op.cit., p. 314

73 Ibid., p. 314.

74 Robbins, Stephen P., "Managing Organizational Conflict", in Schnee, J., Warren, K.E., and Lazarus, Harold, The Progress of Management (Englewood Cliffs, N.J.: Prentice-Hall, 1977), pp. 163-76.

Several authors advocate conflict resolution to be virtually impossible without monistic command and that under this type of system decision-making -- in an integrative relationship (with respect to functions) -- problem solving, and free exchange of ideas and information are emphasized; interactions are flexible and open and attitudes towards the other unit, and when and integrative relationship previals, they are positive and friendly.[75]

This type of integrative decision-making could serve to help foster voluntary coordination between the two agencies by acquainting each agency with the other's mandates, goals and programs.

The two agencies should better understand each other's legal mandates and programs. Some of the institutional barriers to integrating water quality and quantity functions result from conclusions based upon an incomplete or inaccurate understanding of each other's programs. At the very least, the agencies should understand the role that each plays.

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75 On point see Sheridan, op.cit., p. 146 and Dessler, op.cit., p. 323.

Although the absence of conflict between the two agencies may never be fully realized or even desired, it can be managed so that only (1) constructive inter-organizational conflict occurs and (2) highly desirable voluntary coordination is developed between agencies.

Assael's study[76] indicates how management can promote conditions necessary for constructive interorganizational conflict. For example, management must provide:

(1) a critical inquiry into past organizational policies. This can lead to a review of policies that are in dispute and may lead to a general review of related areas, forcing recognition of the interdependence of the parties in conflict.

(2) a system of communication and an outlet for grievances, because agencies are often ignorant of each other's attitudes and economic policies.

(3) a mechanism for possible re-allocation of resource and system powers (i.e., especially, with respect to responsibilities and latitudes).

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76 Contained in Jackson, John H., and Cyril P. Morgan, Organization Theory: A Macro Perspective for Management (Englewood Cliffs, N.J.: Prentice-Hall, 1978), pp. 249-251.

(4) a standardization of procedures for resolving conflict, because such routine interaction will facilitate resolution of future conflict. Applicability here looms large for some measure of public interest and public interaction of water resource issues when the conflict is too large and too politically "hot" for normal administrative channels of resolution.

(5) a means to distinguish and direct possible countervailing power that may result from constructive conflict.

What is ultimately envisioned by the author is the final ability -- through integration, of the DNRC to consider options available to address water quality problems relating to reduced streamflows. These might include:

(1) increased "treatment" levels or BMP's,

(2) limiting diversions and consumptive uses,

(3) augmenting streamflows to increase assimilative capacities, and/or,

(4) relaxing water quality standards.

These goals could be addressed through coordination and integration of the WQB and the DNRC.

It must be remembered that "cooperation is an end to be sought for its own sake and both coordination and cooperation may be facilitated through the application of satisfactory organizational arrangements."[77]

Planning. A crown jewel amidst the methods for achieving democratic decision-making in the public interest is through planning. "Planning also permits centralized data gathering and assemblage and serves as a device for cooperation and coordination. Finally, planning is useful in assisting public responsibility."[78] Several essays have pointed to the fact that without planning very little else could or would get done.

"Planning is preparation for action...it is a means to an end. It is the process of formulating the objectives to be realized by administrative enterprise... There can be no efficient management of work performance without planning."[79]

77 Sheridan, op.cit., p. 144.

78 Ibid., p. 149.

79 Fritz, Morstein M., Elements of Public Administration (Englewood Cliffos, N.J.: Prentice-Hall, 1963), p. 113.

It has been suggested that the initial task of environmental planning "is the marshalling and interpretation of facts. In addition, the task entails the development of alternative proposals for maintaining and improving the productive and self-renewing capabilities of the environment."[80]

With an expanding variety and intensity of water use, with increasing public demand for conservation of resources and environmental protection, and with the demands for conservation of resources and environmental protection, and with the demands of dynamic agriculture and industry for more good quality water, comprehensive water resource planning and management programs are essential. But they will not be possible under a fragmented single purpose approach to the problem or one that is based on outdated theories.

Through the integration of the WQB with the DNRC, comprehensive planning can be effected to a greater degree in water resource use.

The day has passed when Montana can afford to sit back and measure out fifty cubic feet per second here and fifty feet per second there without considering either

80 Caldwell, op.cit., p. 230.

the quality of the water appropriated or the effect of the appropriation on water quality.

One author maintains that

> ...the various approaches to the structuring of government for environmental management proceed from either of two assumptions: first, that the existing structure should be adapted ad hoc to meet issues as they arise; and, second, that the structure should anticipate the task to be performed. The first position is the more conventional and conservative when the implications of the second position are harder to define, because the conclusions are dependent upon the perceptions of the task... but regardless of how the organizational task is approached, certain factors inherent in environmental problems remain to be reckoned with regardless of the structural solutions that may be preferred. 81

These "environmental problems" tend to be

> uncertainties created by highly diverse political and legal systems for managing water resources and which defy comprehensive management. Moreover, managers themselves bring to the decision-making arena preconceived notions of public interest based on professional training, agency traditions, and ideological value framework. All these factors work against attempts at meaningful coordination and cooperative decision-making. 82

Water resource management cannot simply be viewed as the management of people within an organization to achieve a common objective, because this is just a small part

81 Ibid., pg. 214.

82 Doerksen, Harvey, "Water, Politics, and Ideology: An Overview of Water Resources Management", Public Administration Review, September/October 1977, p. 447.

of the total water management process. Water resource managers typically have only partial control over the object of their concern -- the water which they manage.

> [W]ater management is inherently to an unusual degree multi-disciplinary. Just as no one agency manages the nation's water, no one discipline is broad enough in its range of knowledge and attention to provide the necessary skills. Hydrologists, geologists, biologists, hydrologic and civil engineers, economists, political scientists, and professional managers are all involved. Awareness that these disciplines see the problems in different ways is one of the keys to understanding the realities of water policy decision-making and implementation. 83

That there is often social disagreement over basic values; information is often limited and costly to acquire; and people differ in the way they conceptualize policy problems makes it easy to see why there are limits to the achievement of full comprehensiveness and rationality in policy analysis and decision-making by governmental bodies.[84]

Accordingly, the organizational problems of environmental management are systems problems, requiring for their solution coordinative policies affecting a variety

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83 Beckett, Paul L. and Lamb, Berton L., "Water Resources Management: Introductory Comment" Public Administration Review, September/October 1977, p. 444.

84 See Eagle, op.cit., p. 11 & Braybrooke, David and Charles Lindblom, A Strategy for Decision: Policy Evaluation as a Social Process (N.Y.: The Free Press of Glencoe, 1963), pp. 33-36, 50-57.

of interactions. Characteristically, these problems cut across functional and jurisdictional boundaries established for other purposes. They are problems for all levels of government.

In the author's opinion, coordinated policies can only be coordinated if integration takes place between the WQB and the DNRC.

In order to insure that statewide plans are effectuated and are not merely unachieved ambitions, planning must be a continuous process wherein new data, revisions of goals, unexpected occurrences, and so on, may be "plugged" into the plan.

> Mass opinions, aspirations and expectations change as the political system moves through time. It is in this moving situation that the power of mass opinion makes itself manifest in its interactions with democratic leadership -- chiefly in its rejection of leadership factions whose outlook lags notably behind.... 85

For this reason, some have envisioned environmental planning as: "(1) involving the public in the decision-making process; (2) meshing the public's perception of its water resource management needs with the program direction; or (3) involving the public in all stages of

85 Key, V.O., Jr., Public Opinion and American Democracy (New York: Alfred A. Knopf, 1961), p. 554.

program formulation and decision-making".[86]

Others have sought to establish a new direction for water planning institutions so that this new direction would recognize and incorporate the close link between land and water use planning.[87] The message which seems to be coming from a number of states is that there is a serious effort being made to achieve a more coordinated water resource program and to correlate to a greater extent than before the water resource program with other state programs and policies.

In the West, for example,

> almost every state has some form of water planning program designed to better coordinate the allocation and utilization of its water resources. In many of these states, the authority to prepare a water plan specifies that all potential and alternative uses of unallocated water are to be evaluated in the preparation of the plan...
>
> ...the pertinent observation here is that in many states the water plan -- once it is completed -- has the realistic possibility of achieving a regulatory status, and thus playing an important role in the management of the state's water resources...
>
> ...in these states it can be assumed that planning will assert a substantial influence on water use decisions. 88

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86 Kauffman and Shorett, op.cit., p. 468.

87 See Berry, Marvin P., op.cit., p. 473.

88 Jensen, Dallin W., "Some Legal Aspects of Water Resources Management," Public Administration Review, September/October 1977, pp. 459, 460.

CONCLUSION

The author makes the contention that an integration between the water quality and quantity functions of the state is not only highly desirable, but a necessity if Montanans value good clean water in the future.

Integration will help assure that decisions about future water allocations will be more carefully arrived at where water quality aspects are concerned. If brought about properly, integration will also help assure that the voice of the public is given an adequate measure in water resource matters.

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