THE ENVIRONMENTAL QUALITY COUNCIL

P R O C E E D I N G S

ENVIRONMENTAL REGULATIONS AND MONTANA'S ECONOMY:

A PUBLIC FORUM

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ENVIRONMENTAL REGULATIONS AND THE ECONOMY

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Deborah B. Schmidt, Executive Director

TO: Members of the 48th Legislature

FROM: Senator Gary Lee, Chairman of the EQC Subcommittee on Environmental Regulations and the Economy

A charge of the Environmental Quality Council in the interim of the 47th and 48th legislative sessions was that a subcommittee be formed to address the issue of environmental regulations and their effect on Montana's economy.

As Chairman of that subcommittee, I would begin by recommending that the Legislature accept the majority of environmental laws currently existing as being advantageous and essential to implementation of the Montana Constitution's guarantee of a clean and healthful environment to citizens of this state.

To measure the extent to which environmental laws hinder economic development is extremely difficult. It seems clear that uncertainty over delegation of authority to boards, commissions, and state agencies causes more malaise among business interests than do the laws themselves. As was brought forward by many of those testifying before the Select Committee on Economic Problems and at the Forum, a specific regulation has little actual impact on business decisions. However, implementation of the regulation and uncertainty over the vicissitudes of the regulatory process and the "fairness" of agency personnel apparently causes hesitation on the part of business to commit capital to development in Montana.

While the overall view held by some Montanans and businesses may be that our environmental laws are exorbitantly strict, the subcommittee has found that this view is largely unsubstantiated. But is this perception to be totally ignored? I would venture to say that we as legislators have acted and will act on many occasions on the basis of perception only. For us to expect that business executives are immune to these perceptions of undue restriction would be quite naive.

A word of caution: we must not change Montana's environmental laws to suit perception by some elements of the business community and the public. I merely offer this perception of unnecessary restriction as an important component of the obvious misunderstanding among legislators, business, the public, and state agencies.

Another observation is that both sides of the issue (those wanting stronger environmental laws versus those that want weaker ones) have been quite unyielding in their respective positions. This attitude in itself does not create or contribute to a climate of compromise or acceptance of common goals. The unwillingness to compromise has increased costs for everyone and has been counter productive to a healthy economy as well as to a healthy environment. As long as these attitudes and perceptions persist, this stalemate will endure.

The recommendations on the following page are a small step toward resolving this situation. Providing stability and maintaining quality in agency personnel who administer and enforce Montana's environmental laws will help diminish one element of uncertainty plaguing business. Developing conflict management and environmental mediation skills within state government and the universities will help all sides discover common goals and arrive at less costly resolution of conflicting desires or programs. The Environmental Quality Council will pursue these ideas in greater depth, as well as follow up on specific issues raised in the case studies included in the Forum.

I hope the Legislature will support these recommendations as well.

SUBCOMMITTEE RECOMMENDATIONS

The Subcommittee recommends that the Legislature:

1) Review level of compensation, training, and classification of regulations to ensure maintenance of quality personnel and minimize turnover in technical personnel.

2) Support development of a conflict management, environmental mediation capability within the university system and state government.

And that the EQC:

3) Hold a meeting to examine each of the case studies -- lessons learned and changes that can be made to improve the regulatory process.

4) Develop a proceedings document and follow up on legislation that relates to or results from the Forum as well as to give committees and sponsors information from the Forum.

INTRODUCTION

In recent years many Montanans have shifted their focus from seeking to protect their natural resources from unplanned and unwise development to creating new jobs and promoting economic development. While according to most statewide polls, environmental protection is still an important concern, in recent years environmental regulations have been viewed by some as stifling economic development. Others believe that now that a body of environmental protection law is in place, Montana must proceed with enhancing economic development that is in harmony with these laws. Governmental regulation in general and environmental regulation in particular are currently popular candidates for scrutiny as a major cause for Montana's and the nation's economic difficulties. If environmental regulations are contributing to Montana's economic ills, it may be because the costs of those regulations were ignored or underestimated when the legislation was enacted. Yet even if environmental regulations are not a cause of our economic difficulties, the public may perceive them to be so. Indeed, recent attention has focused increasingly on Montana's environmental regulations as being a major cause for lack of new economic opportunities in the state. This perception that there is too much regulation, along with the belt-tightening that can be expected as a result of slow growth, inflation, and tight money, is causing many to question the need for some kinds of environmental regulation.

While the costs of environmental regulation are now being closely analyzed, there is very little analysis of the benefits of those regulations. Environmental benefits may not show up in national or state income accounts, and thus are not likely to influence significantly the rates of inflation, unemployment, and other economic indicators that are used to judge the health of the economy.

The Legislature has periodically considered these issues, sometimes peripherally, in recent years. During the 1979-80 interim, the Environmental Quality Council was charged with conducting a study proposed in HJR 21 to determine how Montana could promote new industrial development that would be compatible with Montana's high quality environment. As part of that study, the EQC contracted with Professor Maxine Johnson of the University of Montana and secured the services of an intern. The result of this study included two reports entitled "Promoting Industrial Growth and Diversification" and "A Study of Industry Experiences and Attitudes in Montana".

During the last legislative session and after the closure of the Anaconda Company operations in Anaconda and Great Falls, the Legislature established a Select Committee on Economic Problems. The Legislature directed the committee to study, among other things, the extent to which newly adopted air quality standards and other environmental regulations contributed to the closure of a major industry in Montana. The committee was also directed to look at factors contributing to the decline of traditional industries in Montana. The committee produced a report and conducted various hearings but came to no significant conclusions.

Following the 1981 legislative session, the Legislature directed, through HJR 48, that an interim committee examine various economic development concerns such as tax incentives, investment opportunities, the availability of capital, and other factors that contribute to economic development. Because the Environmental Quality Council had been interested in the past in determining how environmental regulations affected the total environment, which includes the economic and social as well as the physical environment, the subcommittee formed to carry out HJR 48 asked EQC to continue the work that it had begun during the previous interim. The Environmental Quality Council agreed to concentrate on the aspect of the HJR 48 study that dealt with the effects of regulation, specifically environmental regulation, on the economy. EQC then formed a Subcommittee chaired by Senator Gary Lee and composed of Representative Gay Holliday, Senator Dorothy Eck, and Frank Stock to attempt to build on work that the Legislature had done in these areas in the past. The EQC directed the subcommittee not to duplicate previous work but to develop new ideas as to how Montana's environmental regulations can work in tandem to protect both the physical and economic environment. EQC's responsibilities in these areas stem from the Montana Environmental Policy Act, which directs the Council to evaluate the effect of Montana's programs and policies on the environment, including the physical, social, and economic environment.

The EQC Subcommittee on Environmental Regulation and the Economy therefore decided to adopt a study plan, the core of which would be a public forum that would look at the various environmental regulations in the state and the costs and benefits to the total environment. To assure that the forum represented as many aspects of Montana's economy and environment as possible, the Council and Subcommittee established a steering committee with participation from many sectors including industry, government, and conservation interests.

The purpose of the steering committee was to assist the EQC in structuring the forum, determining the issues to be considered, selecting participants, and helping to obtain the participation of the members of the organizations which the steering committee members represented.

The decision was made at one of the early steering committee meetings to request information from the various sectors represented on the environmental regulations that were considered most burdensome and/or ineffective. However, with a few exceptions, the steering committee members were unable to obtain the data. The various organizations were unwilling to release the information because of the fear that their opponents would then know what issues would be focused on during the upcoming legislative session. At this point, the Subcommittee decided to proceed with the Forum although the specific issues could not be effectively targeted. Throughout the planning process the steering committee was contacted and given the opportunity to make suggestions which were often implemented. Although the final forum became more theoretical and generalized than originally intended, specific areas were examined during the case study section.

The EQC intended that the Forum should provide a basis for developing communication and cooperation between all interests concerned about the economic and environmental well being of the state.

The Council feels that this goal was largely accomplished, and that the Forum established a firm foundation on which to build future cooperative efforts to achieve economic development conforming to reasonable environmental standards.

The Forum proceedings include a summary of many of the main points brought out during the Forum. The individual and panel presentations have been somewhat condensed. Discussions between the participants and the audience have been incorporated into the text. The Forum was recorded and many speakers submitted written copies of their presentations. The tapes and full text of those speakers' remarks are available in the EQC office for review.

SUGGESTED READING

BOOKS

President's Commission for a National Agenda for the Eighties. Report of the Panel on the American Economy, Energy, and Environment. "The American Economy, Energy, and Environment in the Eighties". Englewood Cliffs, New Jersey: Prentice Hall. 1981

U. S. Council on Environmental Quality. "Environmental Quality - 1980". Washington, D. C. U. S. Government Printing Office. 1980 Pages 387-399

U. S. Council on Environmental Quality. "Environmental Quality - 1979". Washington, D. C. U. S. Government Printing Office. 1979 Pages 639-680

Crocker, Thomas D., Rogers, A. J. III. "Environmental Economics". Hinsdale, Illinois: Dryden Press, Inc. 1971

Resources for the Future. "Annual Report 1981". Washington, D. C. 1981

U. S. General Accounting Office Report. "A Market Approach to Air Pollution Control Could Reduce Compliance Costs Without Jeopardizing Clean Air Goals". Washington, D. C. March, 1982

Swartzman, Liroff, and Croke, Eds. "Cost-Benefit Analysis and Environmental Regulations". Washington, D. C. The Conservation Foundation. 1982

Peskin, Portney, and Kneese, Eds. "Environmental Regulation and the U. S. Economy". Baltimore, Maryland. Johns Hopkins University Press for Resources for the Future. 1981

The Council of State Governments. "The Environment Comes of Age: State Environmental Issues". Lexington, Kentucky. 1977 Pages 9-20

Baram, Michael S. "Alternatives to Regulation, Managing Risks to Health, Safety, and the Environment". Lexington, Massachusetts. 1982

Hamrin, Robert. "Environmental Quality and Economic Growth, Studies in Renewable Resource Policy". Council of State Planning Agencies, Washington, D. C. 1981

Baden, John and Stroup, Richard L., Eds. "Bureaucracy vs. Environment, the Environmental Costs of Bureaucratic Governance". University of Michigan Press, Ann Arbor. 1981

PAPERS

Williams, Stephen F. "Pollution Control: Taxes Versus Regulation". Los Angeles, California. International Institute for Economic Research. 1979

Kieschnick, Michael. Council of State Planning Agencies Working Paper. "Environmental Protection and Economic Development". October 1978.

ENVIRONMENTAL REGULATIONS AND MONTANA'S ECONOMY: A PUBLIC FORUM

A G E N D A

MONDAY, OCTOBER 4, 1982

9:00 a.m. Opening Remarks

Environmental Quality Council - REP. DENNIS IVERSON and SENATOR GARY LEE
Joint Subcommittee on Business - REP. LES KITSELMAN

Introduction of Moderator
DR. RICHARD MC CONNEN, Montana State University

9:15 a.m.

"Basic Economic Theories of Environmental Regulation"
DR. THOMAS CROCKER, University of Wyoming

"Montana's Current Environmental Policy From Legal and Economic Viewpoints"
FRANK CROWLEY, Attorney, Department of Health
DR. LARRY NORDELL, Economist, Department of Natural Resources

"Economics of Alternative Forms of Environmental Regulation"
DR. TERRY ANDERSON, Montana State University
DR. TOM POWER, University of Montana

12:30 p.m. LUNCH - Luncheon Speaker

DR. RICHARD STROUP, U. S. Department of Interior, Director of Policy Analysis

2:00 p.m.

"The Use of Cost Benefit Analysis - Libby Reregulation Dam"
DR. JOHN DUFFIELD, University of Montana
GEORGE MARSHALL, Army Corps of Engineers

"The Role of Environmental Regulation in Economic Decision Making"
(Panel of Industry and State Officials)

MIKE FITZGERALD, President, Montana International Trade Commission
GARY BUCHANAN, Director, Montana Department of Commerce
LEO BERRY, Director, Department of Natural Resources
STEVE KEIL, Chairman, National Association of Wheat Growers' Farm Chemicals Committee
ROBERT T. CONNERY, Attorney, Holland and Hart

TUESDAY, OCTOBER 5, 1982

9:00 a.m.

"Conflict Management/Environmental Mediation"
CHRISTOPHER W. MOORE, ROMCOE, Center for Environmental Problem Solving
RICHARD D. MULLINEAUX, General Manager, Health, Safety, and Environmental Support, Shell Oil Company
ROBERT TURNER, Regional Vice-President, National Audubon Society

CASE STUDIES - Examples of How the Regulatory Process Works - Lessons To Be Learned
(Participants will choose one case study group to attend.)

1. Billings Major Subdivision
2. Anaconda Aluminum
3. Troy Mine - ASARCO
4. Tongue River Railroad
5. Local Issue - Choteau County Dump

12:30 p.m. LUNCH - Luncheon Speaker

DR. HENRY PESKIN, Senior Fellow, Resources for the Future

2:00 p.m.

"The Future Course of Environmental Management"
(Representatives of Government, Conservation, and Industry)

PANEL MEMBERS:

MIKE GUSTAFSON, WESCO Resources, Inc.
DR. JOHN BADEN, Center for Political Economy and Natural Resources
ANDY PATTEN, Attorney for Conservation Groups
DR. RON ERICKSON, Director, Environmental Studies Program, University of Montana

RESPONDENTS:

JOHN NORTH, Representative of Governor Ted Schwinden
REP. ROBERT MARKS, Speaker of the House, 47th Legislature
ED ZAIDLICZ, Board of Health and Environmental Sciences

Summation - Closing Remarks

DR. RICHARD MC CONNEN, Montana State University
REP. DENNIS IVERSON

BASIC ECONOMIC THEORIES OF ENVIRONMENTAL REGULATION

Dr. Thomas Crocker
University of Wyoming

Before discussing the theories of environmental economics, one must understand two themes. First, many non economic decisions must be made before one can apply economic analysis. Second, good science does not necessarily make good policy.

There are two conflicting views of man. The first is that man is a hedonistic pleasure machine with no free will. The second, which is the economic viewpoint, is that man is purposive and has free will. His behavior reveals his preferences.

Economics is not just concerned with money. Money is only a measuring rod. Economics is concerned with overcoming scarcity. The individual cannot have all desired things when and as desired. Therefore, competition is unavoidable. Economic decisions must be made to assign goods and services to those who value them most highly. Some goods and services are renewable, some are limited and as in the case of natural resources, declining. We tend to overlook the value of the ecosystem as a resource. We treat the carbon contained in the fossil fuel as a resource yet we have treated the oxygen needed for combustion as somewhat less of a resource. The ecosystem is a capital good that produces among other things, water and clean air.

As resources become more scarce, more intensive extractive processes are used, thus generating more pollution.

There are a number of ways of ameliorating scarcity including:

Changing wants through religion or moral suasion;
Increasing technology - produce more from less; or
Exchanging - gaining from trade.

Given sets of preferences, individuals exchange goods to maximize their satisfaction. For exchange to function, there must be prior agreement on the principles by which claims on goods will be used as an intermediary to define the reciprocal obligations individuals have to each other.

Exchange furthers economic efficiency. When economists speak of economic efficiency they are referring to maximizing goods and services and distributing them so that all gains from trade have been exhausted. Although economic efficiency is important, equity questions also must be considered.

If markets increase efficiency, should not we have all markets? Markets don't always work. Environmental goods often don't satisfy market conditions. There is constant conflict over whether collective choice or individual choice should be followed.

Many environmental goods are common property where individuals cannot be excluded from using them. Property rights to common property are hard to trace or do not exist.

Other environmental goods are public goods. Consumption by one does not decrease the amount available to others. It is difficult to determine or force an individual to pay his share of the cost of public goods.

Finally, there are monopolistic advantages that result in a depletion rate greater than in perfect competition.

The ultimate problem is to find an incentive scheme and information structure that brings about efficient outcomes. This can be done by either stimulating markets or by simulating them.

Stimulating markets is accomplished by reducing costs from adopting more efficient allocation devices (establishing property rights). Simulating is usually considered to be benefit cost analysis; however, benefit cost analysis does not involve compensation.

MONTANA'S CURRENT ENVIRONMENTAL POLICY

FROM LEGAL AND ECONOMIC VIEWPOINTS

Frank Crowley, Attorney
Department of Health and Environmental Sciences

The topic of environmental regulation and economic development is often oversimplified. It can, however, involve a complex set of interactions and often turns on site specific considerations.

Both environmental regulation and economic development extend beyond major industrial facilities. Just as a significant portion of the state's economic growth is unrelated to major industrial projects, many of the state's pollution problems are unrelated to industry but are in fact related to urban growth or small scale business operations.

The statutory network of Montana's environmental regulations is a clear expression by the people that the exceptional environment be maintained and the state's natural resources not be depleted. However, these statutes also take the economic considerations into account.

The administration of these laws is difficult because of the dual goals of protecting the public health and maintaining economic development. Many of the environmental issues are not precise.

Administrative agencies implementing environmental laws must resolve conflicts between different interests and values. Participation of all parties potentially affected is encouraged. Economic considerations are extensively addressed in the decision process. There is a high level of participation in environmental decision making.

There is no factual basis for asserting that agencies have failed to strike a proper balance as required by statute or have developed an anti-development posture. Agencies are as often criticized for being too lenient on pollution.

Federal environmental laws implementing uniform national policies have played an enormous role in environmental protection at the state level. Today, major new industrial sources face virtually identical pollution control requirements in every state. Where Montana has varied from minimum federal requirements, care has been taken to address economic needs of specific Montana industries.

Frequent comparisons have clearly demonstrated that Montana's laws and standards are quite similar to those of other states in the region. Therefore, Montana's environmental protection requirements in no way place the state at an economic disadvantage in favor of neighboring states.

Montana has been largely successful in avoiding the "moving target" in its environmental regulation. Where a requirement may change, existing sources are either able to comply, are grandfathered, or are allowed to achieve compliance over a period of sufficient time. Several recent requirements have been relaxed or made more flexible.

While no dramatic overhauling of the permitting process has been undertaken, progress has been made within the agencies to streamline and simplify the permitting process.

If there is a perception of anti-development sentiment in the state, it is not derived from the state's laws and standards. Perhaps what makes the environment/development interface so conspicuous in Montana is the intense level of citizen participation in environmental decision making which is communicated to persons outside of the state.

MONTANA'S CURRENT ENVIRONMENTAL POLICY

FROM LEGAL AND ECONOMIC VIEWPOINTS

Dr. Larry Nordell, Economist
Department of Natural Resources and Conservation

Just as producing electricity requires resources such as steel and coal, it also requires environmental resources such as air and water. The difference between the steel and coal and the environment is that the latter is unpriced. No one individual owns the environment; therefore no one charges to use it. Its use must be considered a cost although it is not accounted for in production decisions, or therefore the price of the goods produced with it.

Economists thus view environmental regulation as an attempt to adjust for this market failure, to insure that production decisions act as though the full resource costs of production had been considered. In effect every regulatory decision should contain implicitly or explicitly a social cost-benefit analysis.

I would like to talk about two major pieces of legislation that make up the framework for Montana's environmental policy from an economics perspective.

The Montana Environmental Policy Act (MEPA) and the Major Facility Siting Act (MFSA) differ in how they are triggered, what issues they consider, and how they are used.

MEPA requires that an EIS be prepared for any "major state action" which significantly affects the environment. The MFSA on the other hand is specifically aimed at major energy facilities.

MEPA requires that impacts be evaluated in comparison with alternatives, including the no action alternative. MEPA is silent about need, benefits, or demand for the project or permit in question.

MFSA distinguishes between utility and non-utility applicants. Need must be considered for utility facilities but non-utility facilities are explicitly exempted from this consideration.

The position of the state has been that MEPA is procedural. Judge Bennett ruled last week that it is substantive and must be used in agency decision making.

However, from an economist's point of view, MEPA analyses, as currently written and applied, do not yield information useful in decision making.

The way in which MEPA analyses could yield useful economic data would be to consider the no-action alternative in the terms. Analysis of the

cost of depriving consumers of the output of the process could provide a means of comparing the benefits and costs.

The MFSA requires in all cases the choice of the project with a minimum impact among the alternatives. This choice cannot be made without a comparison of all costs and benefits, including what economists call external costs -- the environmental impacts.

The final point I want to make concerns the Certificate of Need in the MFSA. Economists do not believe in the word "need". There is no such thing as need, only wants and demands. Need implies an absolute. Demand implies a desire that depends on cost and income and is tied to tradeoffs.

What does this imply? There is no such thing as need for an electric generating facility. There is a best way of balancing supply and demand. The Northwest Power Planning Council is charged with drawing up a plan along these lines for the Pacific Northwest region. It would be worthwhile to create a similar decision process for Montana.

ECONOMICS OF ALTERNATIVE FORMS

OF ENVIRONMENTAL REGULATION

Dr. Terry Anderson
Montana State University

In an economic system it is important to develop incentives and information which bring about coordination and cooperation. It is important that these systems of incentives and information place the responsibility of their actions on those with the ability to take action.

Can we make polluters responsible for their actions? The difficulty arises when trying to link action and responsibility in certain environmental cases such as air pollution. Since no one owns the air, who will protect it? In the case of the air polluter, there has been no mechanism by which to levy responsibility.

Current regulations have not done much to link action with responsibility. Furthermore, they have not generated useful information and have not changed incentives. Certainly current regulations have not generated cooperation and coordination. Instead, conflict has been the main result.

A number of alternatives have been devised.

Taxes on pollution or effluent charges are one alternative to set standards. You may pollute; however, a charge must be paid for every unit of pollution. These charges have not been politically popular.

Another approach is the bubble offset and banking approach. A bubble is a defined area within which only a certain level of pollution will be allowed. Individuals would be allowed to pollute but only to a certain amount. If a new company wished to begin polluting and the pollution level had already been reached, they would be able to buy pollution rights from an existing company. This would be the offset. Pollution rights could be bought, sold, and banked. The advantage to this approach is that those with lower costs of controlling pollution would do so to a greater extent than those with higher costs of controlling pollution. The industry with the lower pollution control costs would sell their pollution rights to he company with the higher pollution control costs. In this way, a certain level of pollution control has been achieved at a lower cost to society.

In these approaches we are not talking about achieving an efficient level of pollution control. Rather, we are trying to minimize the cost of getting to a given level of pollution. These approaches do not come any closer to telling us what the efficient level of pollution is.

Is there any hope for reaching an efficient solution? I would suggest that in a number of cases there is. By improving the action

responsibility connection, the incentives and the information, we can come closer.

Consider laws that exist all over the West prohibiting any organization from owning instream water rights. I cannot own water and just leave it there for fish, or just because I like it. If we were to reconsider our ownership patterns and allow instream ownership, and the water was being polluted and I owned it, I could sue for damages.

Who cares about efficiency? Certainly industry, environmentalists and government officials charged with environmental rule making do not. At every decision making stage discretion has been placed with officials. We have developed a system that involves intensive lobbying at these stages. The process which accompanies these decisions is part of what Tom Crocker called the articulation game. I would suggest that until we change this articulation game into a process that is more akin to a market, we will not get very far in controlling pollution.

ECONOMICS OF ALTERNATIVE FORMS

OF ENVIRONMENTAL REGULATION

Dr. Tom Power
University of Montana

Economists have been very much united in their approach to environmental problems. They are nearly unanimous in opposition to standards and in support of the use of market mimicking incentive schemes to control pollution. However, they have not succeeded in convincing industry, environmentalists or politicians of their merits. Only bureaucrats have shown a hesitant interest in them.

In their enthusiasm for market mimicking solutions, economists have often overstated the case for pollution charges in a way that may not make more critical observers very comfortable with economists' contact with reality.

Economists assert that pollution charges will perform better than standard because:

... they are automatic and self-enforcing;
... they are more flexible and can be source and site specific;
... they require less information to set accurately;
... they will involve less controversy and debate;
... they, unlike standards, provide incentives for polluters to continuously reduce pollution rather than stopping at a bureaucratically set target.

However, there are a number of practical problems with the implementation and use of effluent charges. Pollution charges, if not set at a high enough level, may not provide incentive. The levels charged will be the key issue of the debate. The actual impact of charges on the amount of pollution will remain uncertain. A vast amount of information and technical knowledge will be needed to set charges. If market values for a clean environment are over or underestimated, we may be no better off than with set standards. Charges will have to be adjusted constantly for inflation as well as changes in society's values. These adjustments would be accompanied by constant debate.

There are two types of objections to the market mimicking approaches. The first objections are based upon whether or not the approach will work. The second objection is that the market mimicking approach places the particular values of economists upon society.

Let me outline some of the ideological values imbedded in the economists' vision. Economists, despite assertions that they accept and respect people preferences, are in fact seeking to change and influence people's preferences in the following ways:

... by convincing people not to care about the preferences of others;
... by suggesting that equity issues are not as central, vital, or important as efficiency issues;
... encouraging self interest as a reliable and acceptable motivation in human behavior;
... by forcing market exchanges over other types of human interactions and supporting the values and attitudes this encourages to develop.

Economists assume that we should be indifferent to the motives of polluters. If we use economic incentives, we are making a social statement of indifference towards the motives of polluters.

But motives do matter to people. We care why a person did what they did. Humans care about motives because motives affect the character of our society and the quality of our lives.

To extend market type financial incentives to public policy problems like pollution control may be seen as undermining one key motivation in any good and decent society.

DR. RICHARD STROUP
U. S. Department of Interior
Director of Policy Analysis

I'm sure you know the reputation of economics as the 'dismal science'. But some of us here today are enthusiastic about what we call the 'political economy of hope'. We'd suggest that our market economy, based as it is on a private ownership of natural resources, can make some strong and -- much more importantly -- some imaginative adjustments to the growing demand for conservation and preservation of natural resources.

You might be interested in our looks back in history to see why we're optimistic. History has demonstrated for us the connection between the ownership of resources and the stewardship of those resources. For example, beaver populations in one area several centuries ago were threatened by Native American trappers. Those Indians responded to that problem by essentially establishing private ownership of each beaver colony. This action prevented what Garrett Hardin called "The Tragedy of the Commons". Once each colony was owned by a particular family, that family had every incentive to conserve the beaver resource instead of trapping out the colony before someone else did.

Contrast that example with the buffalo on the Great Plains. For a while, just prior to the time the while man came in any great numbers, the buffalo were actually threatened in some locations by the various nomadic Indian tribes that suddenly had access to horses and guns.

Ownership of the buffalo could not be established. The buffalo did not sit still, and neither did the tribe. Even though the Indians had a tradition of conserving the buffalo, the lack of ownership was very nearly fatal to the buffalo.

We can make the system of ownership work for resource conservation. A good modern example is Big Sky of Montana. Chrysler Realty and Chet Huntley recognized the rapid rise in the demand for Montana's scenic wonders. They set up a system to protect an entire mountain valley. Once they had established ownership to the valley they subdivided the land and sold small parcels, but only after they established strong protective covenants on each parcel. Each buyer had to promise not to do a whole long list of environmentally damaging things in that valley. But each buyer was perfectly willing to make those promises, because the value of the property rose. That development increased the value of the entire mountain valley.

Western ranchers are another group that is finding that catering to the increased demand for outdoor recreation has quite a high payoff. Ranchers in many cases can make quite small changes in the way they manage their land -- primarily in the fence rows and the edges of the fields and pastures -- which strongly increase the value of hunting on

that land. When daily hunting fees or seasonal leases are involved, the revenue can be a big help to the rancher. There are even parts of Texas where ranchers earn more money from fee hunting than they do from all their traditional agricultural activities.

Even when profit is not involved, it is important to note that the market still works for environmentally concerned citizens. Even a single individual, or a small group of publicly spirited citizens, often can take advantage of an environmental opportunity just by purchasing the land or development rights to it. The National Audubon Society and its local chapters have done a lot of this. They own about a quarter million acres in their various private refuges. Ducks Unlimited and the Nature Conservancy play the same game, and so do several other organizations. The market mechanism here allows individuals who aren't silver-tongued orators even if they can't persuade a majority of the legislature or Congress, to exercise their vision anyway in their favorite local environments.

But just a minute, now. Can the environmentally concerned citizens actually outbid giant, multi-national corporations? Well, it turns out that these greedy corporations don't want to pay any more than they have to for the resources they want. And so, typically, all an environmental organization has to do is raise the ante just a little bit about what the corporation has to pay for a similar resource somewhere else, in a less environmentally sensitive area. And then the resource belongs to the environmentalist.

It's not that the environmentalists have more money -- it's that they have different goals. So typically, there's not that much conflict between them, any more than there is between them in the market for pickup trucks.

Does this mean there's no role for government in environmentalism? Of course not. Some resources are not owned: air and water, for example. And thus they are typically abused, like any other unowned resource. In situations like that, you've got to have government protection. The market is indeed imperfect, although government is too, I hasten to add. However, it is a comfort that private property rights and the market system are so frequently a powerful ally of those who are most concerned with environmentalism.

I think we have a tremendous amount of evidence that we can be optimistic about the ways in which the private sector is responding and will respond to our increasing sensitivity to the value of the natural environment. Let us not assume that market decisions are bad and that public decisions are good. Market values typically represent true social needs, including, I believe, environmental needs.

THE USE OF COST BENEFIT ANALYSIS

LIBBY REREGULATION DAM

Dr. John Duffield
University of Montana

There are a number of problems with the use of benefit-cost analysis. The results of benefit-cost analysis will always be incomplete. Benefit-cost analysis relies on many assumptions. Therefore, the setting in which the analysis is done is very critical to the outcome. Many times the institutional setting in which the analysis is done is inappropriate for the problem and determines the outcome. The analysis is done by the agency with jurisdiction, which may not be the agency with the proper expertise in the area.

There are many assumptions which influence the benefit-cost analysis and the results are especially sensitive to the interest rates assumed.

Another problem with benefit-cost analysis is that it requires estimates of social benefits. It is extremely difficult to estimate social benefits.

Benefit-cost analysis is used to simulate markets; however, it ignores distribution or equity issues which are important. The analysis is limited to efficiency criteria.

One of the methods that is commonly used for benefit-cost analysis is the alternative cost method. Basically the way this works is by first establishing the need, then identifying appropriate alternatives, and finally evaluating the costs of the alternatives.

The problem with this methodology is that it begins with establishing the need. There is no such thing as absolute need. The study is supposed to determine the benefits and costs of the proposal but immediately assumes the need without looking at various prices.

The estimates of the cost of environmental action can vary greatly. The old method of determining cost looks at how much the public would be willing to pay to prevent the action. The new method looks at how much the public would have to be compensated for the loss. The compensation approach tends to be 5 to 20 times higher than the willingness to pay approach. In this latter approach we have changed the definition of property rights.

How do you redesign the whole context in which benefit-cost analysis are done? The Facility Siting Act and MEPA go a long way toward accomplishing this goal.

THE USE OF COST BENEFIT ANALYSIS

LIBBY REREGULATION DAM

George Marshall
Army Corps of Engineers

The Libby Dam project involves three elements - the Libby Dam, Additional Units and Reregulating Dam (LAURD), and Libby Reregulating Dam Power Units. The project is located on the Kootenai River in Northwestern Montana.

The Libby Dam is a 420 foot high concrete gravity dam that is 98 percent complete. It functions to control floods, generate hydropower, and increase downstream generation through storage releases.

The Libby Additional Units originally scheduled to go on line in May, 1984 are 15 percent complete in installation. The Rereg Dam (LAURD) site is 10 miles downstream and was intended to serve peak loan requirements in the mid-1980's and beyond and to minimize river fluctuations from operations at the main Libby Dam. The LAURD construction was enjoined on September 8, 1979 by the U. S. District Court of Montana and upheld by the Ninth Circuit Court of Appeals in March, 1979.

Currently all work on the rereg dam is stopped. Construction will require congressional authorization and resolution of NEPA issues. Congress has funded installation of the first additional power unit on the main dam.

The project was intended to meet projected demands with an efficient and reliable mix of resources. There are two aspects of power demand -- magnitude and timing. Magnitude and timing are portrayed in the daily load shape which provides a picture of aggregate living habits.

Different types of generating plants are used to supply different portions of the load. There are three types of generating plants in the resource mix: base load, intermediate load, and peak load.

Base load plants are large, efficient units suited for continuous, steady operation. They have low operating costs but they are high investment units. They are either hydro, nuclear, coal, or oil-fired units with 8-16 hour start up times (except hydro).

Intermediate load plants are less efficient than base load plants suited for meeting daily variations. With the exception of hydro, they have a 3-6 hour start up time.

Peak load plants are low investment plants with high operating costs suitable for short duration peaks because of their several minute start up time.

The hydropower evaluation procedures used to conduct the economic analysis for the Libby Dam project were established by the U. S. Water Resources Council under the Water Resources Planning Act of 1965.

The first step involved was identifying the system for analysis. In this case it was the Pacific Northwest Region.

The second step was to determine the need for power. This was done by estimating future demand, determining existing and proposed generating supplies and comparing the two forecasts to determine the magnitude and time of deficits. The portion of the deficit met by the proposed project is then determined.

The next step involves determining the most likely non-federal alternative by considering alternatives, screening them for environmental and economic impact as well as engineering soundness and national policy viability. The benefits of the new resource are then computed for both deficit and surplus periods.

During the deficit period benefits are based on the cost of the most likely alternative:

... capacity benefits -- capital cost of construction and financing of the least cost alternative;
... energy benefits -- cost of operation and maintenance of least cost alternative.

During the surplus period benefits are based on any of the following sources:

... value of power exported to Pacific Southwest;
... value of displacing existing higher cost generation;
... value of short-term purchases;
... value of displacing high cost short-term purchases.

There are two methods of benefit evaluation. The conventional method selects the single most likely thermal alternative. The system method selects the most likely combination of alternatives.

In addition to this economic analysis, there were four areas of environmental analysis. An EIS costing approximately $400,000 was conducted between 1972 and 1980. Environmental studies funded by the Corps of Engineers included studies of the fisheries, wildlife, water quality, and archeological resources at a cost of over $4 million. Additionally, fisheries and wildlife mitigation was conducted. Finally, recreation facilities were constructed.

THE ROLE OF ENVIRONMENTAL REGULATION

IN ECONOMIC DECISION MAKING

Mike Fitzgerald, President
Montana International Trade Commission

The past decade has made Montanans seasoned veterans of the "Great Economic Development Debate". Few states have had a more controversial decade of internal change, litigation, confrontation, and public debate. This has heightened the interest of many Montanans with diverse backgrounds and increased their political participation.

Today nearly every organization regardless of primary concerns is also concerned about and participating in discussions about economic development.

The majority of conflicts are related to basic resources including coal, oil, natural gas, minerals, timber, water, and agriculture as well as the related infrastructure including transportation, utilities, and manufacturing.

A report of the University of Montana's Bureau of Business and Economic Research has concluded that although timber and agriculture will continue to be important - "If Montana is to reverse recent losses and maintain or improve the economic welfare of its citizens, then we must rely on natural resource development."

Over the past two decades the environmental values that many Montana citizens developed as a reaction to historical events have been translated into public policies, laws, regulations, and citizen initiatives that challenge and often conflict with economic progress.

The foundation was provided in the 1972 State Constitution, Article II, Section 3 of the Declaration of Rights which guarantees Montanans the right to a clean and healthful environment.

Our system of laws, regulations, policies, and procedures regarding public review and accountability require extra effort, time, and expense by state government and industry to reach final denial or approval of all significant projects. Our environmental laws guarantee that resource development will occur slower and to a lesser extent.

Many Montanans support this philosophy; however, many want not only an aesthetic environment but also want increasing employment and business opportunities.

It is our constitutional right to have created our system of environmental laws; however, it is also our responsibility to exercise reason and vision because natural resource development is the best tool we have to expand economic growth over the next 20 years.

I believe the industrial revolution has passed us by. I doubt that much more industrial processing and heavy manufacturing will occur in Montana. We are relatively isolated with no substantial local or regional markets and suffer increasing transportation costs.

The challenge that confronts us now and in the future is to create a system of laws and regulations that simultaneously provides for the protection of the environment and allows business to flourish.

THE ROLE OF ENVIRONMENTAL REGULATION

IN ECONOMIC DECISION MAKING

Gary Buchanan, Director
Montana Department of Commerce

During the past two weeks, four of the administration's outreaching efforts in the economic development area have reached their conclusions. The Montana Economic Development Project completed its work. I recommend that you look at the recommendations. The Governor's Small Business Council recently met and had a lot of concerns about the role of business regulations. The final reports of the Governor's Council on Management, the Governor's Transportation Council, and the Tourism Advisory Committee have all just been completed.

Recent polls show that an overwhelming number of Montanans support economic development, but they also support maintaining our quality environment.

I think government, business, and environmentalists have to become more aware of the comparative cost of environmental regulations. I think that environmental regulations are not major determining factors in business.

We have oversimplified the discussion. Other factors of markets such as transportation costs, labor costs, demand, and availability of capital are all much more important. We continually find this in our empirical analysis of business decision.

While we must concern ourselves with environmental regulations, I think it has been the whipping boy. According to Belden Daniels and Lester Thurow, who have both been looking at state economies, the state can only make a 10 percent difference in their economy no matter how aggressively they pursue development.

I do think that we have the responsibility of implementing our laws fairly, efficiently, and equitably. We are working to make the procedures more streamlined.

THE ROLE OF ENVIRONMENTAL REGULATION

IN ECONOMIC DECISION MAKING

Leo Berry, Director
Department of Natural Resources and Conservation

I am not sure that we in government are in the best position to know what role environmental regulation plays in decision making. Only those making the decisions know and then there is a different role in each economic decision.

There are those who argue that the regulations play too large of a role and create a bad business climate. Anaconda is frequently used as an example. However, statements by the company indicate that the decision was based on market economics rather than environmental factors.

In the reverse, we learned that Montana's clean environment and "quality of life" was one of the major reasons why Sundstand was considering locating here.

The point is that environmental regulations play different roles in individual economic decisions. A factor considered to be a liability in one instance may in fact be an asset in another.

There is no doubt that Montana has enacted a comprehensive set of resource management programs. Montana was more active in the 70's than many other states. This activity was misinterpreted by many as anti-business.

Although some who pushed for environmental controls opposed development, I believe they were few in number. Instead the regulations were intended to guarantee that the abusive practices of the past didn't continue in the future.

Recent evaluations by the Administration and the Montana International Trade Commission show that Montana has higher standards than surrounding states for some pollutants but lower standards for other types.

I conclude that generally environmental regulations play a small role in economic decision making. However, the time involved in getting project approval and the feeling industry has about whether they will be treated fairly and objectively is important.

A prime example is Colstrip 3 an 4, which was originally projected to be built by 1978 or 1979 for $600 million. Completion date is now planned for 1984 or 1985 at an estimated cost of one and a half billion dollars. This is a case where environmental regulations and more importantly the process was used by those opposed to the project as a social issue to fight it.

It is easy for industry to always blame the process for all delay, but as we have seen with WPPSS 4 and 5, even when environmental regulations are not involved major cost increases can occur. The public, however, ultimately pays the costs of all time delays. We must find a way to streamline and improve the decision making process both in government and within the industry itself.

The most effective way to eliminate the costs of environmental regulation is to eliminate the adversarial relationship between industry, government, and the public. The process should be expanded to involve both state and local government and the public in pre-application site determination. Resource 89 siting was done in this way.

Many of the problems and therefore time delays can be eliminated by the involvement of government decision makers in the planning or pre-planning stages. Identify the problems early so they can be resolved before plans are solidified.

To conclude, it is my belief that environmental standards themselves have a debatable effect on decision making; however, the process through which they are implemented has a profound effect.

THE ROLE OF ENVIRONMENTAL REGULATION

IN ECONOMIC DECISION MAKING

Steve Keil, Chairman
National Association of Wheat Growers'
Farm Chemicals Committee

The economic impact of environmental regulations on agricultural decisions is significant.

To receive a label on an agricultural pesticide product requires from 7 to 10 years of extensive testing and the expenditure by the company of from 15 to 20 million dollars. At any time the product can be denied approval.

Much of the cost involved in genuinely associated with protecting the user and the environment. However, there is also cost involved in the regulatory process itself. Changes in regulations during the process is very costly.

Agriculture is concerned with the environment, we are environmentalists who rely upon it for our living. We don't want to return to non-regulation, but no one is guaranteed a life without risk. We, however, are trying to free the world of one big risk-hunger. The tremendous increase in the productivity of agriculture over the past 50 years is due to technology and science.

Let me discuss the problem that has plagued us for the past year - Endrin. This is not a problem of the chemical itself, but a problem of careless misapplication. However, this has resulted in the effective loss of the use of Endrin to control cutworms in Montana. This has had a direct economic impact upon Montana agriculture. The possible alternative costs about twice as much per acre and relies upon unpredictable rains to work. Cutworms usually occur under dry conditions. In 1981 only 124,000 of the five to six million acres of Montana farmland needed to be sprayed for cutworms. However, without the use of chemicals the problem would have quickly spread resulting in large economic losses.

There s a problem that farmers have that needs to be addressed. If a farmer gets a load of grain for seeding that has been treated (formerly with Heptachlor, now with Lindane) and discovers that the seed isn't pure -- what can he do with it? He can't seed it and take a $1 to $2 bushel loss for impure grain. He cannot take it to the local landfill dump. Time is moving on, conditions are right for seeding, and his truck is tied up. He dumps it hoping to get back to cover it up before something eats it. This contributes to the contamination of wildlife. We must try to find a solution for this problem.

THE ROLE OF ENVIRONMENTAL REGULATION

IN ECONOMIC DECISION MAKING

Bob Connery, Attorney
Holland and Hart

I sometimes wonder if Leo Berry and I live in the same world. My job is to tell a firm what they must do to comply with environmental regulation. My clients tell me a little different version of environmental regulation. Environmental regulation for any new or expanded facility in this state certainly consumes an enormous amount of time and energy and often is a deciding factor in a go-no go decision.

Environmental regulatory costs are front end costs. At this stage projects are vulnerable. When you add between 10-25 percent of the total cost of the facility for all environmental regulations, it can change the feasibility.

One of the results is that there aren't any little guys life. They can't afford the major costs of an EIS upfront.

The natural resource area is a highly competitive, very risky business. Returns must be high to justify risk levels. It is also an internationally competitive field. Many of our clients worry about whether they can remain competitive when companies in other countries don't have the same regulatory burden they do.

There is no question that our laws can stop projects in many ways. This worries companies looking at a new project. Delays cost money.

Although it is contended that environmental regulations were not responsible for Anaconda's closure, there is no question that they played a role. Anaconda admitted that they could not bring the plant into compliance.

Let's just look at the impact of other regulations. If we had not had wage-price controls all the smelters in the country could have come into compliance with the profits in the copper industry.

You can't blame one sector - you can't blame one factor - life isn't that simple, but environmental regulations do have an impact on economic decision making. Sometimes there are positive effects. Companies are forced to examine more alternatives which can lead to better decisions.

When I was given the assignment to speak here, I assembled some numbers on the effects. Using data from the sources such as the Council on Environmental Quality (CEQ) and Congressional Joint Economic Committees.

Employment goes both ways. In 1977 there were 118 plant closings removing 22,000 jobs. On the other hand, employment in the

environmental regulatory related field went from 84,000 in 1976 to 215,000 in 1979. Economic growth was one-fourth of one percent less than it would have been without the environmental regulations. Inflation was 3 percent higher due to environmental regulations.

If you actually want to look at impact, you must look at benefit-cost in every program for each company.

I don't know what is going to happen. I think you have the toughest environmental regulation in the nation. I understand the public support for it and the need for balance.

CONFLICT MANAGEMENT/ENVIRONMENTAL MEDIATION

Christopher Moore, ROMCOE
Center for Environmental Problem Solving

Certainly the 1980's are a decade of environmental conflict, whether dealing with the boom town - bust town in the current economy, oil and gas drilling in wilderness areas, or the opening of coal mines. We're seeing an increase in environmental conflicts that are different than the ones in the 1970's. Then we were clarifying the various acts and policies. Now we are looking at site specific conflicts.

How have we gone about resolving environmental disputes? There are three different areas of our democratic system that we have applied. They have all worked to some degree but they have not worked as well as they should have. These three areas are the legislative arena, the executive arena, and the judicial arena. There are problems that must be faced and questions that must be raised with each arena.

Can representatives really know what their constituents want and need on every issue and on short notice? Can they make trade-offs that reflect constituents' real interests? Sometimes minority and interest group members are expected to shoulder the costs that result from majority decisions (toxic waste). How can local needs be balanced with state and national needs?

In the administrative arena, the staff may be unaccountable to the public. Decisions may be based on technical feasibility and not public interest.

In the judicial arena, there are often yes-no decisions for more complex questions which can lead to a lose/lose outcome. The process is undermined by delay.

Considering these problems, what are the alternatives? Conflict management has been developed to deal with environmental disputes. We have defined three types of disputes: potential, emerging, and manifest.

Potential conflicts involve a potential change in the status quo which will change the environment or the community. At this stage conflict anticipation or just good planning is used. More than half of all conflict is unnecessary conflict caused by the lack of clear and direct communication between parties, intense feelings, or misconceptions and stereotypes.

The second type of conflict is the emerging or clear and present conflict. At this state facilitated problem solving can take place if polarization has not occurred. Facilitated problem solving involves identifying interests and looking for mutually agreeable solutions.

The final level of conflict is the manifest or polarized conflict. At this stage, negotiation with mediation is necessary. The environmental mediator will try to accomplish the following processes.

... Interested parties are identified, determining who should be "sitting at the table".
... Communication links are established between parties, building trust.
... The parties are assisted in defining the parameters of the dispute.
... The parties are moved from positional bargaining to interest-based bargaining through education on effective procedure.
... Issues are identified.
... Parties are moved from feelings to problem solving.
... Interests are separated from positions.
... Data is analyzed/mediated with outside experts.
... Alternatives are generated and assessed.
... Parties are aided in making decisions and in the implementing, monitoring, and enforcing process.

As an alternative to the current judicial route, conflict resolution has a number of advantages. Both litigation and project delay costs are usually lower. Unnecessary emotional conflict is avoided. The process promotes wiser decisions which satisfy a wider range of parties.

CONFLICT MANAGEMENT/ENVIRONMENTAL MEDIATION

Richard D. Mullineaux, General Manager
Health, Safety and Environmental Support
Shell Oil Company

There are several methods for resolving conflicts in our legal and political systems. The methods depend upon whether or not there are areas of common interest and if they are recognized.

When there is some degree of common interest, there is the potential for a win/win solution. Both parties can win and no one need lose. Each party to the conflict may give up some of their objectives and still feel they have come out ahead.

Sometimes there is no common interest. Such conflicts are solved by litigation. Someone must win and someone must lose. This is the basic win/lose situation.

Unfortunately, litigation has become the usual way of life rather than the alternative. In health, safety, and environmental issues, there are large areas of common interest between industry, government, labor, and the concerned public. The conflict arises over how much, how fast, in what manner, and who pays. When there is a common interest, we believe conflict resolution without litigation is worth trying.

Four conditions are necessary before conflict resolution without litigation can succeed. The first is that all parties perceive that there is a sufficient area of common interest. If there are irreconcilable differences, they must not be critical to resolving the primary issue. There must also be an intent by all parties involved to resolve the conflict. Finally, there must be patience, for time is required to identify and describe what is known and to obtain new information. It is not that the total process takes longer than a confrontational one but that there is less appearance of progress in the early stages.

We have increasingly searched for non-litigative solutions that result in reaching better solutions more quickly and at lower costs. In Shell we have developed a process to ensure that we deal with all facets of a risk assessment/risk response issue whether it is a unilateral decision or a conflict resolution process.

The first step is hazard identification. The second step is hazard evaluation or determining the extent of the hazard. We must then determine the probability and extent of harm to humans or in other terms -- evaluating risk. The fourth and final step is risk response. With this approach to conflict resolution, the issues are more clearly defined. Issues, where hazards are not major, are dispensed with.

Legislators can help in the conflict resolution process by framing legislation that does not force confrontation. In the long run, our jobs are the same to meet the needs of society, and to get the job done in a reasonable way.

CONFLICT MANAGEMENT/ENVIRONMENTAL MEDIATION

Robert Turner, Regional Vice-President
National Audubon Society

The proper balance between economic, environmental, and social factors can be compared to a three-legged miling stool. If all legs are not the same length, the stool will not stand.

Conflict management is not compromise where we can only achieve a 50-50 solution. Often in conflict management we can have each side achieve 80-90 percent satisfaction of their goals. In fact, sometimes each side can achieve 100 percent of their goals once they learn about the goals of the other party. On the other side, with litigation, sometimes both sides end up with nothing. Here are some examples of areas where conflict management led to solution.

> Non-game wildlife in Colorado - many problems have been headed off by examining the larger picture. The state has also managed wildlife rather than having national regulation.
>
> Management of forest service lands by the multiple use concept - good management has allowed all people to benefit.
>
> Coal slurry discussion is taking place between the W. R. Grace Company which has coal mines and environmentalists. The company came to environmentalists to discuss methods. They are going to take highly saline water that is already damaging the water and use it to slurry coal to the West Coast. They will exchange clean water from their water rights for the saline water. We have had questions, such as the advisability of mining in certain areas, but basically we are working together.
>
> One last example of an excellent case of cooperation is outside of Casper, Wyoming. There is a large pond of about 1000 acres. It used to be a saline sink area, filled with water about every 10 or 20 years. Now it is always filled with water and is the best refuge for waterfowl and shorebirds in the state.

How did it get there? Amoco was trying to deal with a waste disposal problem. They had a number of alternatives. They developed a system which involves a system of ponds utilizing aerobic and anaerobic action.

Basically we lucked into this solution. We will probably luck into a lot of solutions in our lives. We can also work our way into many solutions when we have an open process and we realize there is not only one other side but many other sides.

CASE STUDY - BILLINGS MAJOR SUBDIVISION

Participants: Tom Llewelyn, Billings Developer
Ed Casne, Montana Department of Health and Environmental Sciences, Subdivision Bureau
Rep. Les Kitselman, Yellowstone City-County Planning Board

Moderator: Robert Turner

This case study was based on a land development on the outskirts of Montana's largest city, Billings. Tom Llewelyn, a Billings developer, and several partners were the initial principals.

The development involved a tract of land of about 950 acres in an undeveloped area in the South Hills area near Billings. When the development was first proposed in the fall of 1978, there was no master plan for the area. This caused the developers to contract with a private firm to design a master plan which eventually encompassed some 14,000 acres. The plan was completed for and accepted by the Billings/Yellowstone County Planning Board.

Upon completion of the South Hills Urban Planning Study, i.e. the area master plan, a specific development called Briarwood was proposed as a subdivision. It requested a Planned Unit Development zoning designation from the planning board, which was approved.

The developer submitted his preliminary plat to the local planning office and the Department of Health and Environmental Sciences, Subdivision Bureau. Ed Casne was then the chief of that bureau. The bureau approved the initial sewer and water system for about 150 units.

The development began to run into some problems at this point due primarily to requirements of the U. S. Department of Housing and Urban Development (HUD) which was reviewing a loan application for the development. The Department of Health and Environmental Sciences undertook an environmental impact study which took approximately nine months to complete. A marketing study was also conducted by HUD in early 1981.

The developer was feeling a great deal of frustration at this point. About two and one-half years had lapsed since the development was first begun, which he felt was adequate. The situation deteriorated further when HUD rejected DHES approval of the sanitation system and requested tests which expert soil scientists said were inaccurate, if not impossible to do.

The development had still not received final approval from HUD or the state as of October, 1982. Mr. Llewelyn, the principal developer, admitted discouragement and cited several problems which he felt were obvious and could easily be overcome.

1. Time is money to developers. Therefore, reviewing agencies should expedite matters as much as practicable.
2. There is too little communication and cooperation between government agencies involved in subdivision review.
3. The Montana Environmental Policy Act should not be applied where the issues are addressed or handled under city/county jurisdiction.
4. In many cases, archaeology reports required by different government agencies are redundant.
5. Although Montana statutes allow only 60 days for DHES review, the period is often extended or ignored.
6. There are simply too many reviewing entities.

The development also can be viewed from the perspective of those who review subdivisions and other developments, however. Ed Casne told the people involved in this case study that the development -- Briarwood -- had little problem gaining the approval of local and state reviewing entities. He pointed out that most of the delays were caused by the financing arrangements with HUD. He also commented that the Subdivision Bureau had met the 60-day review limit on every occasion and that the developer met information requests. He recognized that Mr. Llewelyn disagreed with him on that matter, but Mr. Casne felt his position was supported by documents open to public review.

Mr. Casne agreed that MEPA caused developers problems, but suggested that the problems would be less significant if the EIS requirement was met early on instead of being held until the last item. He did not deny the fact that MEPA requirements were cumbersome, but he did feel they were necessary in many cases.

Everyone involved in the study felt that greater cooperation could be reached through increased communication between the parties involved. The general consensus was that some subdivision and development review was necessary to ensure public health, safety, and the provision of adequate public services.

CASE STUDY - ANACONDA ALUMINUM

Participants: Jack Canavan, Anaconda Aluminum
Lee Smith, Anaconda Aluminum
Pat Driscoll, Montana Department of Health and Environmental Sciences, Air Quality

Moderator: Richard Mullineaux

Mr. Smith began the session by describing the operations of the Anaconda Aluminum Company and the process of regulating its emissions.

The Anaconda Aluminum Company operates an aluminum smelter in northwestern Montana near the community of Columbia Falls. The area is well known for its recreational opportunities i.e. fishing, hunting, skiing, as well as being a prime timber producing area. Glacier National Park is less than six miles from the plant. The plant's location is in close proximity to the Hungry Horse Dam which was completed in 1953. Hungry Horse is a supplier into the Bonneville Power Administration grid. The plant opened in 1955.

The plant is currently in compliance with all applicable Federal and State air quality regulations. However, such has not been the case in the past. It has been a rough road on the way to compliance. After additions to the plant in 1968, it became apparent that the plant would be a source of controversy because of its air pollution problems.

The State passed a fluoride emission standard which was the most restrictive in the country and which the company determined no technology was available to use in order to comply. Many lawsuits were filed against the company and many articles were written regarding the non compliance. The company contemplated filing for a variance and the Department of Health and Environmental Sciences was finishing its EIS on the project. Subsequently, Anaconda requested the variance and the department recommended the Board of Health deny the variance. Finally, after many negotiations, the company and the department agreed upon a control plan for compliance with Montana's air quality standards.

About a year after the plan was agreed upon by both parties, it was proven that the suggested methods for meeting the standards would not work. At that point, the two parties tried a different approach which involved cooperation rather than adversial positions. In that mode, a method of control of emissions purchased from Japan proved to be effective and the company began its conversion.

After over two years of hearings and revisions, new standards for ambient air were established by the Board of Health against the advice of the department. New standards were finally proposed by the 1981 Legislature and passed into law. The company is hopeful it will be able to comply with those new standards and continue its operations.

Mr. Driscoll responded with the following remarks. The state regulations cannot be less stringent than the federal ones but may be more stringent. Public input and economic considerations are major factors in all decision making processes used by agencies.

All parties concerned agreed that the practice of conflict management, negotiation, and open lines of communication are essential in solving the problems which arise between regulatory agencies and developers. Litigation is the end result of a breakdown in communication.

CASE STUDY - TROY MINE, ASARCO

Participants: David Suhr, ASARCO
Ralph Dryer, Montana Department of State Lands

Moderator: Christopher Moore

In 1976 ASARCO, Inc. applied to he Montana Department of State Lands for an operator's permit for a proposed silver mine to be located near Troy, Montana. This was the first major hard-rock permit application since the passage of the Montana Environmental Policy Act in 1971 and as such resulted in the production of the first hard-rock mining related environmental impact statement (EIS) in the state. Partly because of a lack of tested and refined procedures for preparing EIS's, it took 34 months to complete the process, which ultimately resulted in the issuance of a mining permit to ASARCO in November of 1978. The company has since completed its preparatory work and is now engaged in the actual mining of ore.

In reflecting on the events that preceded the issuance of the permit, representatives from the Department of State Lands and ASARCO offered the following observations and comments:

... Early communication between the state, the company, and the local residents is vital to the establishment of a cooperative spirit among the two parties. Cooperation and understanding can reduce the likelihood of unnecessary delays occurring as a result of conflicts between the parties.

... Upfront communication between the company and the state regarding what is needed to satisfy permit and EIS requirements can serve to shorten the overall review process. To facilitate this, the state should prepare and distribute to prospective applicants an informational brochure/pamphlet that sets out clearly what information will be needed, and when, to complete the EIS/permitting process.

... At times the state may have numerous applications pending concurrently and therefore be unable to timely and efficiently complete its actions on each. Rather than impose delays on applicants, the state should utilize consulting services whenever its own staff becomes overburdened.

CASE STUDY - TONGUE RIVER RAILROAD

Participants:	Tom Ebzery, Attorney for Tongue River Railroad Bill Southard, Interstate Commerce Commission Tom Coefield, Montana Department of State Lands Keith Powell, Area Rancher
Moderator:	Dr. Richard McConnen

The Tongue River Railroad case study started with a presentation by Tom Ebzery, attorney for the Tongue River Railroad.

The project began in March, 1980 as a means to ship 10 billion tons of coal located in Southeast Montana in the Ashland-Birney-Otter Creek areas. The ownership is a consortium of Diamond Shamrock, Dallas, Washington Energy, Seattle, Consolidated Coal, Pittsburgh, and Wesco Resources from Billings.

The project is designed to set up a single track railroad to terminal points south of Ashland in the coal fields and connect with Miles City, Montana, where it will connect with the Burlington Northern. The project cost for 89 miles is 150 million dollars.

Approval must come from the Interstate Commerce Commission which grants certificates of public convenience and necessity. The ICC is the lead agency in making the environmental impact statements.

In developing our design criteria we sought to avoid residential and commercial property, developed agriculture and irrigation systems, flood plain and river crossings while not exceeding a 1 percent grade and 3 percent curvature.

The subsequently chosen route goes along the west side of the Tongue River and proceeds down to north of Ashland where it crosses north of the Northern Cheyenne Reservation. In most cases we have avoided developed agriculture. Hopefully, where it is affected, it can be mitigated.

There are a number of EIS alternative routes that were also developed.

Our application will be filed late in 1982 or early 1983. Hearings should be in mid-1983. The final EIS will go to the Council of Environmental Quality in 1982. We hope for approval in 1983. In 1984 right-of-way acquisition could be made and construction completed by 1986.

Tom Coefield from the Montana Department of State Lands, one of the cooperating agencies, outlined the steps they took to avoid conflict and find common ground with the ICC.

We agreed upon several key assumptions about the characteristics of development such as how many mines, where they are located, and how fast

they would come on line. We have had to make arbitrary assumptions about where the mines would be. The department also worked with the firm preparing the EIS, exchanging and providing data. We are still gathering additional information.

Bill Southard, the Director of the Interstate Commerce Commission's Office of Transportation Analysis, made the next presentation.

What is the ICC doing in this? Before a railroad can begin construction, the ICC must make a finding of public convenience and necessity.

Under NEPA (National Environmental Policy Act), we must look at the environmental factors. A rail construction application will normally require an EIS.

We were contacted early in 1980 and told of the contemplated action. By mid-1980 we had contacted a number of agencies to be cooperating agencies in the EIS. We also contacted the Custer County Planning Office. Notices of intent to prepare an EIS were placed giving dates of pre-scoping meetings.

The preliminary EIS includes information received during pre-scoping and scoping meetings held in Miles City, Ashland, and Broadus. The preliminary draft of the EIS has been submitted to the agencies and should be available for review in January or February. After this time a hearing will be held by an ICC administrative law judge.

The final EIS will be completed in the last half of 1983. Assuming that the Tongue River Railroad will submit an application, a decision can be reached as soon as 30 days after submittal of the final EIS. However, it will probably take longer.

Keith Powell, a rancher-irrigator from the Tongue River Valley, presented opposing views to the project.

Is there a need for the coal? I am concerned about what will happen to agriculture in the valley. I don't think the ICC personnel are familiar enough with ranching or irrigating to understand the impacts to our agriculture.

The draft EIS was found to be inadequate. We submitted information about this to the ICC but they would not allow further comment until the EIS is complete. That will not allow us much time for action. The state needs the authority to determine its own destiny in a matter as important as this.

DISCUSSION

Coefield - Unlike NEPA, MEPA does not start with a statement of need. Unfortunately, we can't look at the need for the coal.

Southard - The ICC will determine need for the railroad not need for the coal.

Mike Gustafson, President, WESCO Resources - The legislature decided it was not appropriate for them to decide what economic activity should take place but rather that any activity should be environmentally compatible. We feel there is a market for the coal but many factors have delayed this market.

Powell - The conflict between the people and the railroad is over the need for the coal. The mines and the railroad are twins and their degradation go together. We have had difficulty in addressing these issues because the public has bee omitted from much of the activity, because the activity is taking place before the application has been made.

Coefield - The state EIS does address the mine impacts.

At this point, the question was asked to Richard Mullineaux who was sitting in for the discussion. Is this the kind of issue that can be resolved by using conflict-management?

Mullineaux - Until there is some agreement on the need, it is difficult to turn this into a situation other than a win/lose.

There are obviously a substantial group of people who don't want any railroad. Other than that, I don't know at this point whether the issue is one of "I don't want one period or there are aspects of a railroad that I don't like."

Coefield - A study was done that showed if you are talking about one mine the feelings are split 50-50. As soon as you move to four mines, 80 percent don't want to live around that type of activity. The department expects a long litigation period on this.

Mullineaux - This is a classic case of one party receiving the benefits and another party bearing the costs. The mechanics need to be developed to compensate not only those in the right-of-way area, which has already been developed, but to compensate the others that also bear the cost of development.

CASE STUDY - LOCAL ISSUE CHOUTEAU COUNTY DUMP

Participants: Dale Skaalure, Chouteau County Commissioner
Duane Robertson, Department of Health and Environmental Sciences, Solid Waste Management Bureau

Moderator: Senator Dorothy Eck

Issue: The statewide regulations for establishing and operating solid waste disposal sites. Some small communities or counties object to the requirements that sanitary landfills must be covered after each day of operation. It has been suggested that rules should be changed for the small communities.

Mr. Skaalure described the construction and operation of the Chouteau County landfill located near Loma, Montana. The disposal site is located on land leased from a local owner. The site is fenced and locked except for three days per week. On the days it is open, refuse must be dumped at a prescribed site in a trench. The material is pushed to one end of the trench and covered once each week.

The site is operated by a part-time manager who has closely regulated the waste disposal and maintained a relatively litter-free site.

Construction of the site cost approximately $7,000 and the equipment cost $79,000. It is presently serving 40 to 60 families and a few businesses at a cost of approximately $350/month. The operation is funded by the county road fund.

The issues of concern presented by Mr. Skaalure are summarized as follows:

1. The landfill is unlicensed because it is not in compliance with state regulations that require sites to be covered each day they are in operation. The county feels once a week coverage is cost-effective for the small amount of waste and they believe it is adequate to prevent litter and vermin problems.

2. The county feels it should be allowed to burn large wood products and some waste paper. Although burning permits are available, the landfill must be licensed before a permit is issued.

3. The county feels it should be allowed to solve waste disposal problems without interference from the state. The county feels it has made significant improvements in its methods of waste disposal.

Response to case study presentation:

Duane Robertson, Chief of the Solid Waste Management Bureau, presented the case for state regulation of the landfill. Mr. Robertson complimented Chouteau County for a well-managed waste disposal site. He

indicated the site could most likely be licensed and operated under a variance.

Unlike the Chouteau County landfill, there are many small community landfills which are not operated properly. The Bureau is trying to work with these small communities to bring them into compliance without regulatory action.

The present rates were promulgated in 1967 after a series of studies by consultants had suggested the consolidation of waste disposal sites. Consolidation is intended to eventually lead to successful resource recovery programs.

In 1967 there were 514 open-burning dump sites in Montana, at present there are 220. Eighty-five percent of the operations are licensed and in compliance. Most of the remaining 15 percent are making progress toward compliance. Nearly all small community dump sites have been phased out and 20 counties have central waste container sites. Resource recovery efforts have been initiated in Park County where incineration of garbage provides steam for the Burlington Northern Railroad.

The Bureau feels that all communities can meet the state regulations without hardship. If standards are relaxed or the rules are changed, the progress made during the past 20 years will be seriously diminished.

Some participants expressed concern that poorly operated or unlicensed dumps create serious problems for siting new dumps. It is becoming extremely difficult to find landowners who are willing to lease land for this purpose. If the standards are relaxed or the rules changed, here will be even greater difficulty in finding available sites.

DR. HENRY PESKIN
Senior Fellow, Resources for the Future

I am an economist; I confess that at the outset. Since I am addressing a group of sophisticated legislators and policy experts who are all too familiar with the recent track record of economists, I know I can speak without any fear that I will be taken too seriously. And that's a good thing, since much of what I am about to say is easily open to misinterpretation.

For example, I am going to say that environmental policy hasn't had much overall effect on the economy one way or the other. But this does not mean that we can ignore the fact that certain firms may face serious hardships, or that environmental regulation potentially has very serious economic effects.

I also am going to say that the benefits of existing environmental policies probably are far smaller than what their proponents believe -- especially when these benefits are compared to policy costs. But this does not mean that I am against all environmental policy, especially those forms of environmental policy that may be more effective and promise a better balance between benefits and costs than those we have tried so far.

Finally, I am going to point out that the benefits, costs, and net benefits (that is, benefits minus costs) of current environmental policies appear to be distributed very unevenly among households and regions of the nation. While some may conclude that the policies are thus "unfair", I certainly draw no such conclusions. Policies with more even benefit and cost burdens are not necessarily better policies.

The 1970's, because of the passage of several landmark environmental laws, is sometimes called the environmental decade. Unfortunately, it also marked the beginning of some of the worst U. S. economic performance since World War II. The annual rate of real output growth declined by one-fourth (from about 4 to 3 percent per year); unemployment grew from an average of 4.8 percent in the 60's to an average of 6.2 percent (and still climbing); the rate of growth of real investment fell by half (from 4.8 to 2.5 percent); and we all know what happened to inflation.

It is natural that this juxtaposition of environmental gains and economic woes would lead many to see cause and effect. However, all the hard looks at the data that I know of have led to the conclusion that environmental regulation could account for at most a tenth of our present economic difficulties. This by no means is insignificant, but higher energy costs, changes in the composition of the labor force, and fiscal and monetary policies (especially through their effect on interest rates and investment) seem to play a far larger role.

this finding is not especially surprising when one looks at how the structure of environmental regulations affects costs. One notable

feature of these regulations is their emphasis on the adoption of "best" technologies. "Best" often is defined implicitly by regulators as that technology already in use by the larger, "more progressive" firms. Indeed, for these firms the incremental cost of regulations often is near zero. As a result, the incremental pollution control costs for an industry as a whole over and above what was experienced prior to the legislation of the 70's is far less than what one could guess by looking at reported environmentally related expenditures.

At Resources for the Future, we have estimated that fully-implemented versions of the 1970 Clean Air Act and the 1972 Clean Water Act would account for increased annual costs (including capital allowances) that total less than 2 percent of sales for most industries. The major exception is electric power generation, where the increased annual environmental costs approach 8 percent of sales. Of course, for individual firms the percentages could be far higher. On the other hand, the costs actually experienced by many firms are far lower since neither of these laws have been fully implemented. It is not surprising, therefore, that despite occasional heavy spurts of environmental capital investment during the 1970's, these small costs have had very small observed economic effects.

I hasten to point out, however, that these observations of past economic effects may be very poor predictors of future economic effects. In the first place, we don't know the details of those regulations forthcoming under the 1977 amendments to the air and water acts. More important, we have no way of assessing the negative effects of regulatory uncertainty on business investment decisions. If this uncertainty proves to be important, the Administration -- which desires to lift regulatory burdens from business -- should take a close look at its own behavior. The performance of EPA over the past two years hardly generates clear signals for businessmen contemplating expensive investment decisions.

I turn now to the benefits of these environmental policies. We are all aware that this subject is very controversial. The usually asserted reason for this controversy is the difficulty of measuring the benefits of environmental improvement in physical terms, let alone in dollars. I would, however, like to call your attention to another source of controversy: the confusion between estimates of environmental damages and estimates of the benefits of those policies designed to deal with these damages. To assume that both concepts are essentially the same requires a most optimistic attitude toward policy.

The reason I feel that policy benefits have been largely overestimated is not because I doubt that pollution causes severe damages to society. Rather, I believe that policy benefits are smaller than others assert because many policies are not doing an effective job of attacking those damages.

While we can all agree that damages have something to do with ambient environmental conditions, the fact is that our policies deal with these conditions in a very indirect and imprecise manner. We focus on emissions and not on what these emissions do. The fuzzy focus on

ambient conditions is due partly to poor monitoring networks: it's almost as if we don't want to know what real conditions are. Furthermore, when we do monitor, we tend to concentrate on what is easy to measure, regardless of its importance in causing environmental damage (for example, sulphur dioxide rather than sulfates).

The policies' neglect of ambient conditions is also due partly to reliance on technology-based standards, uniformly applied in very different geographical situations. Not only does this approach lead to the installation of expensive control technology in areas where such controls make minimal contributions to ambient quality, it also neglects important pollution sources -- principally agricultural and urban runoff -- for which easy technical solutions are hard to find. For example, my colleagues and I have estimated that agricultural erosion contributes about as much as industry to dissolved oxygen problems in the nation's water (albeit in different locations). Urban runoff, another essentially uncontrolled sector, in many cities contributes half of such toxic materials as cadmium and lead.

We thus see that environmental policies often are poorly targeted with respect to geographical locations, sources of pollution, and the pollutants themselves. Targeting must improve before we can be assured that the magnitude of policy benefits can approach that of environmental damages. Finally, let me discuss the distributional implications of these laws.

Most analysts have found that the costs of environmental regulations are regressive: that is, the cost burden, as a percent of income, is higher for the poor than for the rich. In addition, these cost burdens on a per capita basis, are fairly evenly distributed across the county: that is, the average Montana resident pays about the same for clean air and water as the average resident of New York. Both these distributional findings are natural consequences of three facts. First, industries are the principal objects of regulation; second, industrial costs generally can be absorbed in the prices of goods, regardless of where these goods are consumed; and third, the poor consume more as a percent of their incomes than do the rich.

In contrast to costs, policy benefits seem to be more unevenly and, perhaps, haphazardly, distributed. Again this result is due to heavy reliance on the uniform application of technical regulations, regardless of local conditions. For example, automobile emission regulations (and, hence, their cost burdens) are pretty much the same everywhere. However, he benefits of these regulations are far lower in he less densely populated states than in, say, east coast cities. Similarly, water pollution control regulations yield far fewer benefits in non-industrialized areas with ample supplies of clean water than in heavily industrialized areas with limited water availability.

The distribution of benefits by income class is equally uneven. Our analyses indicate that, on balance, air pollution regulations benefit the poor more than the rich, while the reverse appears to be true for the benefits of water pollution control. As a result, the air pollution

policy seems more equitable than the water pollution policy, even though the cost burdens of both policies are regressive. With the air policy, the cost burdens are more equitably offset by benefit gains. (One reason the same is not true for the water policy is that the level of benefits that can be attributed to current policy is much lower.) Given the inequity -- let alone the inefficiency -- of current approaches to water pollution, it is ironic that it is the Air Act and not the Water Act that is having the more difficult time getting reauthorized by the Congress.

The message I want to leave with you is that all these findings depend on features that are peculiar to existing approaches to regulating the environment. Effects on the economy, on benefit-cost ratios, and on distribution may change radically with changes in regulatory strategies.

Unfortunately, current policy debate almost totally ignores this seemingly obvious conclusion. Either you are for environmental regulation or you are against it. If you are for it, then you must be for existing "command and control" strategies. In addition, you are expected to assert that these policies yield benefits in excess of costs, have "favorable" distributional consequences (that is, they help the disadvantaged), and are good for the economy (that is, they reduce unemployment).

On the other hand, if you are against environmental policy, then you are expected to work for the weakening of existing regulations and delay in the implementation of new ones. It helps also if you can cite a few good examples of adverse economic impacts of governmental regulation (no need to confine yourself to environmental regulations), with emphasis on their "unreasonable" costs.

The fact is that the public debate ignores the search by economists and policy specialists for more efficient, equitable, and less economically disruptive regulatory approaches. At best this is enormously costly. My hope is that forums like this will be the beginning of a grassroots movement toward rational political discussion of how best to manage both our economic and natural environments.

THE FUTURE COURSE OF ENVIRONMENTAL MANAGEMENT

Mike Gustafson
WESCO Resources, Inc.

For Montana to successfully chart a course for future environmental management, it must look at its legislative and regulatory decisions over the past ten years and ask, "Has it achieved what it intended, or has it exceeded the legislature"s intent?" If after undertaking a comprehensive review, it is determined that Montana's regulatory agencies have exceeded legislative intent, are the legislature and state government willing to endorse corrective legislation to address this situation? I would like to cite examples and pose certain issues for your consideration. If the answers to these questions and issues are in the affirmative, then possibly the decades of the 80's and 90's will see a strong commitment to the environment and at the same time encourage economic growth.

1. Are interest groups (i.e. timber, mining, agriculture), which in one way or another affect our environment, regulated equally, and if not, shouldn't they be? For example, in Southeastern Montana, it can easily cost $5 million and 3-5 years to prepare an application for permitting a surface coal mine. In addition, 2-3 years are required to obtain a decision on a permit after it is filed. In contrast, few permits are required to (a) build an industrial park or shopping center within or on the outskirts of Billings, (b) subdivide land and create condominiums or other uses of the land, (c) allow full scale tilling and activities on agricultural land which may cause degradation to the environment and may contribute to soil erosion. If the overall environment is being adversely affected, and not by the resource industry, is the legislature willing to look at all interest groups, industries, and occupations which affect the environmental quality of Montana and develop consistent and practical laws?

2. What is the role of the state legislature and state government in either encouraging or discouraging development? Is the state willing to promote economic and business growth in the resource industry as it does tourism and agriculture?

3. Is the legislature and state government willing to either work for or with the federal government to avoid duplication and support projects within Montana? For example, I cite the enactment of federal environmental laws such as the Surface Mine Control and Reclamation Act of 1977, which required states to adopt new statutes and rules in order to achieve a "state" program in order to receive federal monetary grants. Environmental and industry groups have acknowledged that rules promulgated by OSM in the late 1970's were excessive, burdensome, and counterproductive. States, like Montana, have simply mirrored these regulations, even when courts have struck them down. How active has the state been to eliminate burdensome federal rules in the new

administration review of these regulations? For an industry which is contributing over $88 million per year in severance taxes alone to the state, shouldn't the legislature and state government look at ways to keep mines producing and encouraging development so long as they meet environmental standards?

4. What about duplication? Are the legislature and executive branch willing to look at burdensome, duplicate laws and propose amendments despite opposition from environmental groups and interest groups which oppose resource development? There are numerous examples one may cite of legislative and regulatory duplication. For example, the Montana Environmental Policy Act creates duplicative staffings, particularly in regards to the Department of State Lands and the EIS team. The MEPA process requires significant additional expenditures for permit applicants. Applicants must pay for the preparation of an EIS even though a majority of the issues discussed in the EIS are addressed in the company's permit application.

5. Is the legislature willing to appropriate sufficient monies to develop pay scales that retain employees who are professionally proficient? Due to the typically low pay scale for state employees, there is consistently a large turnover rate. This turnover causes two problems. First, applicants expend large amounts of time and money developing programs and study designs which meet the approval and discretion of certain personnel in the administrative agency. Eventually the personnel leave to pursue other job opportunities before a permit is granted. Frequently, replacement personnel do not agree with their predecessor's program or guidelines. The company is faced with adjusting their program at additional costs and time delays, or pursuing administrative and legal actions. Secondly, due to the law pay scale, few of the personnel have sufficient experience in their field of regulatory responsibility.

6. Has there been abuses of discretion by regulatory authorities in implementing environmental laws passed by the legislature, and if so, what can be done by the legislature to curb such abuses? For all practical purposes, a resource developer has no timely remedy for administrative abuse of its discretion. Serious conflicts can only be resolved by administrative review and litigation. However, many of the problems experienced today are the result of the developer receiving mixed or conflicting interpretation of the regulations, guidelines, or rules of procedure. Sometimes the rules have changed so dramatically that the developer who has made substantial investments in dollars and time is placed in a "no win" position.

This problem raises the issue as to what steps could be undertaken to mitigate conflicting and changing interpretations of regulations and guidelines. I would suggest the following measures: (1) substantive sunset review legislation; (2) implementation of a strong legislative oversight committee; and, (3) passage of legislative veto legislation which would give the ability to curb agency abuses.

Certainly the existence of such measures would cause the regulatory agencies to be more responsive to legislative intent.

7. Does Montana's current environmental management include a policy to penalize industries from closing down by enacting plant closing laws if financially it is too much of a burden to operate profitably? Instead of penalizing an industry after it is useless to perform again...shouldn't the legislature and the state involve itself with the economic as well as environmental health of the industry early in the process and try to assist prior to the point that the industry is at the point of no return?

Conclusion Any future environmental management policy should make clear to all industries what is required and how long the process will take. The management policy may be strict, but it also must be fair, consistent, and non-duplicative.

The resource industry must be able to assess the cost and time that is required in gaining the necessary permits to put their project in compliance with state or federal laws. Business is entitled to a clear and manageable environmental policy that spells out the rules of the game on the front end.

THE FUTURE COURSE OF ENVIRONMENTAL MANAGEMENT

Dr. John Baden
Center for Political Economy and Natural Resources

I would like to summarize the relatively recent developments in natural resource and environmental policy.

The first phase began in 1970 with Earth Day. At this time people realized there were often tradeoffs between economic growth and environmental quality. This was the time in which market failure was discovered. Market failure is the inability of the market system to optimally allocate resources. This occurs as was mentioned earlier when authority and responsibility are not linked. The idea of externalities became well known.

The second phase involved the growing understanding of property rights.

We are currently phase three which I term Bureaucracy versus the Environment. It began with the understanding that bureaucrats are people who are approximately as self-interested as everyone else. Decisions are made based upon information and incentives. The structure in which they are involved generates tremendously perverse incentives for bureaucrats.

As a result, we find that Americans have accepted the destruction of their environmental quality through projects which cannot be justified in terms of economic efficiency or environmental quality which has been funded by taxes extorted from them.

It is important to realize that bureaucrats are not bad people; it is that the system is perverse. What we find is that bureaucratic entrepreneurs, in conjunction with special interest groups, try to capture many of the benefits do not match the costs.

An example of the degradation that has resulted from this is the "chaining" that was done in many forests in the west to increase the amounts of grassland. Twenty-seven million acres were approved for chaining.

The fourth phase which we are now moving into is the future of environmental policy -- Free Market Environmentalism. Yesterday there was a reference to the differences in vision between environmentalists and economists. However, there has been a tremendous growth in understanding between the two. We now find that every major environmental group has professional resource economists.

The fundamental message of Free Market Environmentalism is that a system based upon markets, property rights, and voluntary exchange has the following characteristics. It is more efficient, equitable, harmonious,

and environmentally sensitive than the command-control system currently in place. The framework of the system called "New Resource Economics" is currently being developed.

THE FUTURE COURSE OF ENVIRONMENTAL MANAGEMENT

Andy Patten
Attorney for Conservation Groups

As long as there is an increasing population in Montana and as long as there is industrial development, people and business will be forced to share the same resources and regulation will be needed to see that the resource is shared in a responsible manner. I think the conservation movement was a result of colliding interests vying for limited and diminishing resources. As an example, the Bob Marshall leasing battle pits the oil and gas developers against the outfitters who rely upon the wilderness character of the area for their bread and butter.

I believe environmental management is necessary to resolve these different claims on the same resources. As our analysis becomes more sophisticated, the direct and indirect benefits of sound environmental management will be more widely recognized. Our experience shows that once regulations are in place, the opposition to them decreases and compliance becomes less costly. Stringent controls can allow more industries to locate in a given area.

It is critical that the regulations that are now in place, remain in place and remain unhampered and untampered with. Once a track record is established with these regulations, industry, government, and the public will know what is expected of them. The legislature's continued tinkering with these regulations only places everyone in a state of confusion and uncertainty. This uncertainty is as great of a deterrent to industrial development as the regulations themselves.

If an industry knows they can obtain a legislative veto, they have no incentive to comply.

Problems are not going to go away. In fact, as competing interests increase more regulations may be necessary.

There is no one sector that is solely important to Montana. Environmentally based business such as agriculture, outfitting and tourism are just as important as the extractive industries. I think we must look at where we would like Montana to be 50 years from now and retain those regulations that will enable us to meet that goal.

THE FUTURE COURSE OF ENVIRONMENTAL MANAGEMENT

R. E. Erickson, Director
Environmental Studies Program
University of Montana

Environmental scientists share a common perception of the world that includes, first and foremost, a respect for the absolute immutability of the laws of thermodynamics, a respect for the mathematical realities of exponential growth, and an understanding that human beings are dependent upon ecosystem services in ways that cannot, or at least have not, been taken into account by economists.

The environmentalist's vision tends to be very "futures" oriented. Clearly we care about immediate risks -- toxic substances, the health effects of dirty air or water, protection of wildlife -- but our strongest pleas are often for future generations. And in line with these concerns for the future we constantly strive to change public policy in particular directions, such as encouragement of energy conservation and of the development of alternative energy technologies.

Long term considerations which value our connectedness with the rest of life on the planet seldom work their way into a free market society.

Our argument is not just that the market can't handle externalities, the common properties such as air and water. Rather it's that societies need governments which will protect resources over the long term -- that societies are more than the sum of their parts -- that individuals acting in their own self interest may on occasion act well for the benefit of future generations (the recent spate of energy conservation brought on by higher energy prices is a case in point) but markets are quixotic.

I suggest that Montana's policies ought to begin to recognize the challenge of promoting a sustainable economy. For us that means doing all we can to develop agriculture, renewable forests, and tourism.

Meanwhile, we like the idea of benefit/cost analysis when applicable and demand only that environmental costs be included in calculations and that the future be counted.

Management is necessary. History is replete with examples of civilizations which failed, societies which crumbled, because no thought was given to the future and natural resource amenities were lost.

It's clear that corporations and individuals cannot (in fact, ought not) be trusted to internalize future external costs voluntarily. Our society has always employed several kinds of systems for risk management (e.g. private actions at common law, tax measures, governmental regulations, and more recently mediation-negotiation) and I suspect that each of these systems needs to be a part of the overall management picture.

At which level of government (federal, state, county) ought regulations be promulgated, managed, and enforced? How can regulations be made less burdensome and more efficient? The environmentalists answer to the question of which level of government should do the managing is, it all depends.

Clearly there are resources which must be managed through international agreements and treaties or at the federal level. On the other hand, Missoula County is now dealing with its own air pollution problems and we believe that local governments should be much more involved in managing community resources than presently occurs.

There is another problem in environmental decision making which has not yet been discussed. That is, it's not just the distinction between federal and local decision making, it's who makes the decision at each level. Simon Ramo (the director of TRW, Inc. -- see "Regulation of Technological Activities: A New Approach", Science, Vol. 231, 837, 1981) points out the dangers of federal agencies which have both investigatory duties (e.g. understanding disbenefits) and promotional duties. He mentions the Nuclear Regulatory Commission as an example of such an agency. His idea is to create a new federal investigatory agency, charged with and enabled to determine the negative aspects of technological activities. However, decisions would be made by politically-appointed decision boards.

We, of course, have such boards in Montana, and they're clearly a good idea -- that is, listen to economists and listen to scientists but please don't let either group make the decision.

Environmental regulation is sometimes accused of leading to a loss of jobs. Not true. In just two fields affected by regulations -- air pollution and water pollution -- total employment stood at 340,000 people in 1981. Employers have claimed that 32,611 people lost their jobs between 1970 and 1981 due to all environmental regulations and some sources claim even those figures are exaggerated (source: Fear at Work: Job Blackmail, Labor and the Environment, Richard Kazis and Richard L. Grossman, 1982).

Some have argued that such jobs aren't productive. But I suggest that their argument rests on an outdated definition of "productivity". According to the CEQ benefits from air pollution control totaled 21.4 billion dollars in 1978 from reduced death and injury, increased agricultural productivity, etc. That is, our accounting method for productivity counts numerous items, such as nuclear bombs, which are of doubtful value and doesn't count the increased health benefits which preventive measures afford.

Environmental regulation is sometimes accused of leading to inflation. One estimate even suggested that there was some truth in this. Thus CEQ indicated that a tiny fraction, 3 percent of the inflation of 1980 (13.4%) was caused by pollution control. But even that figure is grossly exaggerated and is quoted only because real social benefits such

as reduced hospital bills, decreased mortality, and cleaner air aren't counted in the Consumer Price Index (source, ibid).

Let me turn to MEPA. It is patterned after the first clear statement of federal policy toward the environment and if it can't be made useful in solving the problems of environmental management perhaps no legislation and no governmental rule making can. The most obvious point about MEPA is that its interpretation has evolved. We all remember the ponderous and useless environmental impact statements of the early 70's.

It seems to me that what has evolved is something worth keeping. First, mitigation works. In all kinds of ways decisions have been made which have affected the environment in a positive manner. Second, we now have a process designed to give us a relatively short, useful document upon which decisions might be based, and a set of procedures (scoping) which allows meaningful citizen participation very early in the decision making process.

Clearly the Montana Legislature has been puzzled over MEPA. Nineteen attempts have been made to modify the law in ten years (memo, Deborah Schmidt to EQC, July 13, 1981). It is just as obvious that administrative agencies remain puzzled over their obligations under the law and of course we do not have the final judicial word on the question either.

My suggestion is simple: MEPA is a good law. Clearly the Montana Legislature of 1971 showed remarkable foresight and concern for future generations of Montanans. The law ought to be carried out both procedurally and substantively. If there is any doubt in the legislature's mind about their predecessors' intent, let's have a 20th try at a revision of the law. But we must recognize the act as the cornerstone of environmental management for this state for the rest of this century.

THE FUTURE COURSE OF ENVIRONMENTAL MANAGEMENT

John North
Attorney for Governor Ted Schwinden

There has been an evolution in the environmental regulatory process since the passage of the first air and water acts 15 years ago. When you have a new process that is being implemented, it is not going to be perfect in the beginning. It is not possible to write a perfect law, but it is possible to perfect the law. It is not possible to write perfect rules, but it is possible to improve them. At the beginning it is easier to make mistakes.

Perhaps Montana's anti-business reputation came from some of our early mistakes. Despite this, we have had major development in Montana in the form of major strip mines, hard rock mines, and power plants.

I do feel the process has improved. In 1977 the legislature passed a resolution asking the agencies to take economic impacts into account when writing an EIS. The agencies have done that. In 1979 the agencies developed procedures to streamline the process.

When we talk about the future of environmental regulation, I don't see the scrapping of our system. Rather I see the fine tuning of our present system.

I see several areas where fine tuning can take place. We need more pre-application coordination, both between the agency and the permit applicant and between the agencies themselves so that projects requiring more than one permit have coordination.

In the area of federal-state relations, we need coordination. The move to turn more power over to the state is welcome. We should encourage it more in the future.

Finally, although conflict management and mediation isn't always applicable, it has its uses.

THE FUTURE COURSE OF ENVIRONMENTAL MANAGEMENT

Representative Robert Marks
Speaker of the House, 47th Legislature

During the previous panel the terms environmental law and environmental regulations were interchanged. There are important differences between the two. Some of the panelists suggested that the Legislature change the laws, some suggested that they change the rules.

If you didn't need to change the laws, you would never need another Legislature. Times change and laws need to be changed to reflect them.

However, changing rules is very difficult for the Legislature to do. The Legislature makes the policy and the administration makes the rules. There has been a great amount of time spent between legislators and administrators in trying to determine if the rules are following the intent of the law.

Some states have developed legislative vetoes over regulations. In our state the court didn't want us to pass joint resolutions to do the same thing. So the Administrative Code Committee is in a never never land situation.

The way to change rules is working through the executive branch to regulate the regulator. Regulators should enforce rules in a positive manner, by helping the applicant to meet the regulation.

One of the panelists said we shouldn't tinker with environmental law. That's absurd. If we hadn't tinkered with the laws in the first place, we wouldn't have our environmental laws. It works both ways, sometimes laws need to be made stronger. No laws are perfect. All laws need to be subject to review, to make them more applicable to what we are trying to accomplish. Let's keep our options open.

What level of regulation is the most effective? For the average individual, the more local the control is, the easier it is to work with.

THE FUTURE COURSE OF ENVIRONMENTAL MANAGEMENT

Ed Zaidlicz
Board of Health and Environmental Sciences

After two years as a public member on the Board of Health, I can say I have been amazed at the professionalism and competence of the people in the Health Department.

I like the system we are using in the Health Board. There is a lot of interchange with the public in our hearings and our meetings. We are not as structured as many of the federal boards I have worked with but as an old Polish adage says "It is better to be grossly correct than precisely wrong." Many times in the federal sector they are beautifully programmed but precisely wrong.

Reviewing the Health Board and Department, I see no evidence of excessive regulation or shifting targets. Compared to the other nine western states, Montana is very well off. When decisions are made in the Health Department, there are always concerns about whether everyone is being treated fairly, if the rule is reasonable, and finally if the rule is in the public's best interest.

I can understand the concerns of the business community about what the environmental regulations may be doing to the business climate. The exercise we went through in 1969-1979 in NEPA was a wasteful, frustrating experience. There was a tremendous proliferation of regulations, many that are still on the books. In many instances the regulation was not designed to mitigate or eliminate impacts but to set up roadblocks. The EIS was not used to improve decisions but to harass and stop unfavorable decisions.

The federal and state arenas are separate. Let's let our system work. Don't mess with MEPA. MEPA is a good law and it is working reasonably well.

We must accept the stewardship. Whatever problems we can settle here, we should. If the federal sector wishes to delegate regulatory responsibility to the state, we should accept it.

We must change to avoid the negative mind set that leads to litigation. Business and industry need certain assurances and stability, but while there is a need to streamline and fine tune the permitting procedure, we should avoid one-stop permitting. That could turn into a bureaucratic "Frankenstein".

SPEAKER BIOGRAPHIES

ANDERSON, TERRY

Dr. Terry Anderson is an Associate Professor of Economics at Montana State University. He did his undergraduate work at the University of Montana and received his Ph.D. from the University of Washington. Author of numerous publications, his works include Growth and Welfare in the American Past (co-authored with Douglas North) and Water Resources: Bureaucracy, Property Rights, and Environment. He is also an Associate in the Center for Political Economy and Natural Resources.

BADEN, JOHN

Dr. John Baden has long been an advocate of the efficient management of natural resources. As Director of the Center for Political Economy and Natural Resources at Montana State University, he has written and lectured extensively on the need for scrutinizing how government and private interests manage this country's natural resources and how it can be done more efficiently and productively. Dr. Baden has a long history of interest in natural resource issues. He has been a logger, a Forest Service consultant, and the director of an environmental study program. In addition to being Director of the Center, Dr. Baden bought and restored what is now a thriving sheep ranch. He has published widely in such journals as Public Choice, Journal of Law and Economics, Environmental Law, and Policy Review. He is also co-editor of Managing the Commons and Bureaucracy vs. Environment: The Environmental Costs of Bureaucratic Governance. His latest book, Natural Resources: Myths and Management, which he co-authored with Professor Richard Stroup, was released by Ballinger Publishing Company in the fall of 1982.

BERRY, LEO

Leo Berry is a graduate of Gonzaga University and the University of Montana where he graduated from the School of Law in 1973. He is currently Director of the Montana Department of Natural Resources and Conservation. Mr. Berry was previously employed by the Department of State Lands, serving as Commissioner of State Lands for five years. He is a past president of the Western States Land Commissioners Association. He is a member of the Technical Policy Committee - Montana Bureau of Mines and Geology and the Governor's Wilderness Advisory Committee.

BUCHANAN, GARY

Gary Buchanan is the Director of the Montana Department of Commerce. He has served as chairman of the Montana State Banking Board, and as director of Special Projects for the Montana Board of Crime Control. Mr. Buchanan has a B.A. degree from the University of Colorado, and has been project director-research associate for the Center for Action Research, Inc., Boulder, Colorado.

CONNERY, ROBERT T.

Robert T. Connery received his B.A. degree in 1962 from YALE University, and LL.B. in 1966 from Harvard University. For the past 16 years, he has specialized in the practice of environmental law and litigation, with particular emphasis on air quality and environmental impact planning and assessment for new projects, including mining projects. Mr. Connery is Chairman of the Air Quality Committee of the American Bar Association Section of Natural Resources. He has written several articles concerning energy and the environment with a focus on the laws that relate to them. He is currently representing the American Mining Congress and several mining companies in an appeal of EPA's revised PSD regulations. His litigation experience includes several trials and appeals involving air quality and environmental impact statement issues in federal district court and circuit courts of appeal. He is a member of the Denver and Colorado Bar Associations.

CROCKER, THOMAS D.

Currently Professor of Economics at the University of Wyoming, Dr. Thomas D. Crocker has previously served on the faculties of the Universities of California and Wisconsin. A native of the State of Maine, he received his A.B. from Bowdoin College and his Ph.D. in agricultural economics from the University of Missouri. He is a former member of the U.S. Environmental Protection Agency's Science Advisory Board and several National Academy of Sciences committees and panels, including the Committee on the Prevention of Significant (environmental) Deterioration. Author or co-author of more than seventy publications, his major research interests are in the development of methods to value non-marketed, particularly environmental, goods, and the description of the properties of alternative allocation systems. Since the late 1960's, he has been project director and principal investigator for nearly $2.5 million in research grants and contracts.

CROWLEY, FRANK

Frank Crowley is originally from the New England area and graduated from college with a degree in foreign languages and economics. After working as an insurance underwriter he attended and graduated from the Boston College Law School in 1973. After four years in practice with a Boston law firm, he took up studies in 1977 for a Masters of Science degree at the University of Montana and is currently completing his masters thesis. A member of the Bars of Maine, Massachusetts, and Montana, Mr. Crowley has worked since 1979 as a full-time attorney for the Department of Health and Environmental Sciences and has labored in virtually every area administered by the Department of Health including subdivisions, public drinking water, air and water quality, solid waste and hazardous waste, and major facility siting.

DUFFIELD, JOHN

Dr. John W. Duffield is a specialist in Economics of Energy and Environmental Economics. He received his B.A. in Economics from Northwestern University, and his Ph.D., also in Economics, from Yale in 1974. He is currently an Associate Professor, Department of Economics, University of Montana in Missoula. Dr. Duffield is the author of many publications covering many phases of energy and the environment. He is an expert in the field of solar heating.

ERICKSON, RONALD E.

Dr. Ronald E. Erickson is the Director, Environmental Studies, University of Montana, Missoula, a position he has held since 1976. He holds a B.S. degree in Chemistry from Bradley University and a Ph.D. in Organic Chemistry from the University of Iowa. Dr. Erickson is very active in citizens' groups working towards cleaner air and an improved environment, as well as energy conservation and development organizations. He has written many articles about energy and the environment.

FITZGERALD, MIKE

Mike Fitzgerald is president and executive officer of the Montana International Trade Commission, a position he has held since 1978. He was co-founder of that organization in 1974. He received his B.A. in political science from Carroll College, Helena, Montana in 1970. He served as administrative assistant to Governor Forrest Anderson and Governor Tom Judge.

GUSTAFSON, MIKE

Mike Gustafson is currently president and chief executive officer of WESCO Resources in Billings. He graduated from the University of Denver College of Law. He has been involved in the natural resource industry for 16 years during which time he organized many successful natural resource acquisitions.

KEIL, STEVE

Steve Keil, a native Montanan, attended the University of Utah and Montana State University. He returned to the family farm at Conrad in 1966. He has been active in the Montana Grain Growers Association, having served as president for the 1977-78 term. He also was elected to the Board of Directors of the National Wheat Growers from 1976 to 1979, and to the executive board during the 1977-78 term. Mr. Keil represented the United States spring wheat producers on a three-man inspection team traveling to the U.S.S.R. in 1978. He is presently chairman of the National Wheat Growers Farm Chemical Committee charged with presenting wheat farmers' views on environmental pesticide issues.

MARKS, REPRESENTATIVE ROBERT

Representative Bob Marks was born and raised in Clancy and is a third generation rancher. He has served in the Montana Legislature since 1969 and has filed for his eighth term. He served as minority whip in 1976, minority leader in 1977, and was chosen as speaker in 1981. He was a member of the Legislative Council from 1973 through 1981, serving as chairman in 1975 and 1976 and presently is a member of the Legislative Finance Committee. In a poll of fellow legislators and lobbyists in 1981, Bob was the highest rated legislator.

MARSHALL, GEORGE

George Marshall, a native of Montana with a B.A. in Economics received at the University of Montana, now resides near Seattle, Washington, where he attended the University of Washington and earned his M.A. in Economics. He has served for nine years as Regional Economist with Seattle District, U. S. Army Corps of Engineers. His specialties are hydropower and deep-draft navigation economics. He is the author of a brochure, "Electrical Energy in the Pacific Northwest", which is an evaluation of the assumptions and methodologies used in five northwest electricity demand forecasts.

MOORE, CHRISTOPHER

Christopher W. Moore, Director of Conflict Management Training for ROMCOE, is a professional mediator with broad experience in community dispute settlement. He has handled environmental conflicts, inter-racial neighborhood disputes, housing disagreements, domestic disputes, and criminal cases. Mr. Moore has conducted educational programs in facilitation, negotiation, and mediation for federal, state, and local government agencies; educational institutions; social service organizations, and community based groups. Mr. Moore has conducted training programs in Europe, Japan, and Mexico on creative techniques to manage conflict. He is a doctoral candidate in political sociology at Rutgers University and co-author of two books on conflict resolution.

MULLINEAUX, R. D.

Richard D. Mullineaux is General Manager of Health, Safety, and Environment Support for Shell Oil Company. He received a B.S. degree in chemistry from the University of Washington in 1948 and a Ph.D. in organic chemistry from the University of Wisconsin in 1951. He earned membership in Phi Beta Kappa, Sigma Xi, and Phi Lamba Upsilon. Mullineaux joined Shell Development Company in September, 1951 as a chemist. In 1969 he became General Manager of the MTM Research and Development, Head Office (Houston); in 1974 he became General Manager of Research and Development, Products-Research and Engineering and assumed his present position in 1978. He holds membership in the American Chemical Society, the New York Academy of Science and the American Association for the Advancement of Science.

NORDELL, LARRY

Dr. Larry Nordell is the Senior Economist in the Energy Division of the Department of Natural Resources. He has been employed in this department for six years, during which time he worked on the Northern Tier Pipeline EIS, the Northern Border Gas Pipeline EIS, the Kootenai River Hydroelectric Project EIS, and other similar projects. Dr. Nordell received his Doctorate in Economics from the University of California at Berkeley. Prior to coming to DNRC, he taught at Stony Brook and the University of New Hampshire.

NORTH, JOHN

Originally from Big Fork, John North graduated from the University of Montana Law School. He is currently legal counsel to Governor Schwinden. Previously, he was Chief Legal Counsel for the Department of State Lands. He has been the Governor's designated representative on the Environmental Quality Council since 1977.

PATTEN, ANDY

Andy Patten is currently an attorney in private practice in Billings. After graduating from the University of Montana Law School, he became staff attorney for the Northern Plains Resource Council. He has represented numerous conservation interests including the Sierra Club and Friends of the Earth.

PESKIN, HENRY

Dr. Henry M. Peskin is currently Senior Fellow, Quality of the Environment Division, Resources for the Future, in Washington, D. C. His education includes a B.A. in Political Science, Wesleyan University, and a Ph.D., Economics, Princton University. He has many years of experience doing research with various economic and environmental organizations. Dr. Peskin has had numerous publications, many of them concerning air and water pollution with economic impact.

POWER, TOM

Dr. Thomas M. Power is Professor of Economics and Chairman of the Economics Department at the University of Montana. He received his Ph.D. from Princeton University where he taught before coming to the University of Montana in 1968. His primary field of specialty is resource economics, very broadly defined to include environmental and social resources as well as water, energy, and mineral resources. His book on the Economic Value of the Quality of Life sought to incorporate the important qualitative dimensions of environmental resources into the economic analysis of the determinants of well-being. He has been an active participant as an expert witness in many of the environmental debates in Montana and throughout the West.

STROUP, RICHARD L.

Richard L. Stroup is Professor of Agricultural Economics and Economics and Co-Director of the Center for Political Economy and Natural Resources at Montana State University. He received his B.A., M.S., and Ph.D. from the University of Washington and is presently serving as Director, Office of Policy Analysis, U. S. Department of the Interior.

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