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Hawaii Coastal Zone Management Program

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HAWAII COASTAL ZONE MANAGEMENT PROGRAM

Technical Supplement No. 9

An Economic Overview of the Coastal Zone Problems in Hawaii

by

Dr. Laurence Miller, Jr.

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2234 SOUTH HOBSON AVENUE
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INTRODUCTION

This paper examines the subject of coastal zone management in the State of Hawaii drawing on well established principles of economics and the existing literature on coastal matters. It aims in part at an overview of the subject: a complement to studies by geographers, marine biologists, and others of problems viewed from the standpoint of those specialities. A second objective is to summarize briefly in non-technical language the major economic realities and ideas relevant to coastal zone management. Considerable attention is given to the concept of "market failure". An attempt is made to explain the nature of the coastal zone problems in Hawaii as seen by an economist and to formulate some guidelines relevant to formulating a program for Hawaii.

It is sometimes hard for an economist to realize that there are people who believe that Economics is irrelevant. Nothing could be further from the truth. It has been said that, after the inevitability of death, the most basic fact of life for both individuals and societies is that neither can have as much of everything as they wish. At any time the amount of all scarce resources--land, machines, human resources and water,--is fixed. Resources can be increased over time. But that option is subject to the same considerations that apply to the fixed resources at a point in time. A society cannot have all it wants of everything. It must forego some goods in order to obtain others. The term "good" in this context includes physical commodities, non-material services, psychological goods and esthetic goods. Air quality and water quality

(less pollution) are goods. That is to say, abatements of "bads" are treated as goods in economic analysis. Economics is concerned only with "economic goods" or "scarce goods" as opposed to "free goods". Free goods are in sufficient supply relative to demand that they command a zero price in the market. Relatively clean air to breathe is a free good in Hawaii at the present time, except in some places for non-smokers.

There is no need to present a detailed listing of the concerns leading to legislation such as the California Coastal Zone Conservation Act, popularly known as "Proposition 20", which was approved by more than 55 percent of California voters in November 1972, to proposed or actual legislation in other states including Hawaii, or to the Coastal Zone Management Act of 1972, in the absence of which this particular paper would not have been written. Suffice it to say that many persons have become worried over the way in which the private marketplace and existing governmental regulations are allocating the coastal zone areas of this country, and with the effects present and probable future uses will have on the environment.

Anyone who knows anything at all about Hawaii is aware of its close relationship with the surrounding ocean, and of the fact that much of its appeal lies in mile after mile of lovely beaches. In few states are the residents' lives so intertwined with the coast and sea. Of course, coastal areas can be of enormous significance in different respects elsewhere. New York City might be a small town were it not for its magnificent harbor.

Hawaii is very fortunate, if not unique, among the states so far as coastal zone problems are concerned.

(1) There is an abundance of coastline in Hawaii on a per

capita basis.

(2) Although many lament what they describe as the concrete jungle in Waikiki, and are properly concerned with the pollution of Kaneohe Bay, and with sewage disposal off Sand Island, the coastline in Hawaii is still relatively unspoiled. The air and the water remain relatively clean. Many areas are virtually or completely untouched by modern life.

(3) The State's isolation from the mainland, some 2,400 miles away, and from other bodies of land, enables the State to pursue its residents' interests free of the negotiation and enforcement problems encountered in managing New York harbor and Lake Erie.

(4) Combining City and County governmental functions in Hawaii, as in the City and County of Honolulu with jurisdiction over the whole of Oahu--whatever demerits, if any, it may have on other counts--effectively eliminates one of the major problems of coastal areas on the mainland. Local municipalities typically focus--properly--on local benefits; they usually ignore--as viewed in a broader context, improperly--the external benefits and costs of their decisions. The "parochial benefits" of a new factory, refinery or whatever--as one study terms them--in the form of local employment and property tax revenues, which wash out for a State as a whole, constitute a means by which developers beat down claims for the environment.[1]

Many people would add to this list of pluses the fact that the State of Hawaii has pioneered in the adoption of statewide land use planning. A State Land Use Commission possesses and exercises powers to classify all land for urban, agricultural, conservation, and rural use. This classification is in addition to City and County zoning. The extent

to which this is in fact a plus depends upon the actual and probable future use of such powers.

If Hawaii is fortunate in the matters just noted--as it surely is--it is also, for some of the same reasons, especially vulnerable to mismanagement of its bounty.

It is alleged that the private market operates to allocate the coastal zone in a manner which is inconsistent with the values of society. It is also alleged that local government considerations operate in many if not most cases to do the same. I have just argued that the second point is less important in the State of Hawaii than in coastal states on the mainland, but the contention is not wholly inapplicable to this State. What, in fact, is the situation in Hawaii? What, if anything, can be done to improve it? In what ways do private markets fail? What principles are relevant to formulation of a policy of coastal zone management? As we proceed to an examination of these and related questions in the following sections, not necessarily in the order indicated, it will be useful to keep in mind a theme that recurs throughout the lengthy Massachusetts Institute of Technology report on coastal zone economics cited earlier.

> "Perhaps the basic thesis of this report is that the institutional measures that society has evolved to correct market failures in the coastal zone usually have not only not corrected these failures, but in concert have often exacerbated them or at least replaced them with other sorts of inefficiencies. Thus, present imperfection is a necessary <u>but not sufficient</u> argument for an institutional change. One must also argue that the proposed change will achieve the desired result and achieve it efficiently which can be a much more difficult argument indeed."[2]

Alternative Systems for Making Economic Decisions and the Nature of "Market Failure"

Although different societies exhibit enormous differences in the ways in which they deal with economic problems, there are only a few analytically distinct systems for making decisions about allocating scarce resources amongst alternative uses. They are: (1) the dictator, (2) representative government, and (3) the private enterprise or market economy. The first two are often grouped together as "command economies"; the draftee in a democratic country has no illusions about the fact that he or she has been commanded into military service. But the differences in intent, degree, and results are significant. As is well known, actual economic systems in the world today combine these different methods in differing measures. Each system "works" in the sense that answers are provided to the almost innumerable decisions to be made, including ones as mundane as whether copper or silver will be used for electrical wiring (they have essentially identical physical properties in ordinary uses), and whether swimmers, surfers, boaters, fishermen, or campers will have exclusive, partial, or no use of a particular beach. Compatibility with other goals is another matter.

It is sometimes suggested that "intrinsic suitability" can be the basis for making allocation decisions. The difficulty--indeed irrelevance--of intrinsic suitability is well illustrated in the choice of copper versus silver for wiring. Conductive properties tell us what is possible, but not what is efficient (economic). A similar argument applies to the problem of determining the optimum proportions or mix of land, labor, and capital in growing rice, or the best use of a beach. The economist's way of putting the point is to say that <u>efficiency</u> is

is always an economic, not an engineering concept.

Implicit in each system is an answer to the question: Whose values will count? In a dictatorship it will be the dictator's and his or her friends. In democratic decision making, legislators are responsible in a rather complex way to an electorate with each member entitled to one vote. In the private enterprise economy, value is identified with individual willingness to pay. How much of one thing, e.g., money, will A give up to have an additional unit of another? That this is a relevant measure of value in a world where we cannot satisfy all of our wants is almost self-evident. It is recognized in everyday sayings such as "to put your money where your mouth is". It makes both economists and many non-economists skeptical of surveys which find out that people would like additional campgrounds, or symphonies, or whatever, but fail to ascertain how much the respondents themselves are willing to pay for these uses of scarce resources!

Note that a benevolent dictator who truly wished to give his or her subjects what they, rather than he or she, wanted, would have to find out what they want, and would presumably be guided by what they would be willing to pay.

Of course, the private enterprise economy does not work simply to decide the kinds and amounts of goods that will be produced subject to some ideal initial distribution of endowments. It operates to determine incomes as well as goods--returns to superstar professional football quarterbacks, rock idols, Ph.D.'s in Economics, busboys, asbestos workers, the able-bodied, the badly handicapped, etc.--in a world of unequal endowments and talents. Even the most ardent supporters of the market

system usually favor some sort of redistribution measures by the government to reflect societal values. I know of no economist who would give no role whatsoever to government in altering the distributive results of a market economy. Many economists would limit redistribution measures to money transfers based on the extent to which an individual or family is judged to be poor. But American political realities and processes--in view of the apparent majority of politicians in favor of helping the poor, it is sometimes amazing that we still have any poor--have taken the country in the opposite direction (state subsidized and produced schooling, public housing and food stamps.)

It is neither appropriate nor necessary to comment at length in this paper on the pros and cons of alternative economic systems. The Coastal Zone Management Act does not envisage great departures from the prevailing system. But the references in Sections 303-305 to criteria, standards, etc. and the need for "broad guidelines on priority of uses in particular areas, including specifically those uses of lowest priority" do require some thought on the subject of how one might make decisions of the sort envisaged.

The United States and many other countries have placed great reliance on the private marketplace as a means for solving economic problems, modified extensively by the decisions of representative government at various levels. In the eyes of its friends, and even some of its critics, it has many virtues. It is hospitable to the ancient and fundamental feeling that one is entitled to the fruits of one's labor. It places the consequences of decisions (profits and losses)--by developers, speculators, and consumers,--on the decision maker (except as

noted below). No other means has been found or is likely to be found that allows as successfully for the expressions of individual preferences as the dollar ballot. In contrast, the difficulties of representative government include placing the consequences of decisions on the decision-makers, logrolling, tyranny of the majority, and indivisibility of the ballot.

The Role of Property Rights

Enforceable private property rights including both the right to exclusive use and to voluntarily transfer ownership (buy and sell) occupy a key role in the private enterprise system. What farmer would cultivate his field if there is little likelihoood that he will reap the harvest, if someone can take the grain at will? Transferable ownership rights enable someone who thinks that he or she can do better with a parcel of land, a building, or whatever, to obtain it, and put it to the higher valued use. He or she could be wrong, of course. So may an individual or collection of individuals. No one can predict the future perfectly. Different economic systems offer alternative ways to link decisions about the use of scarce resources and the consequences.*

*Perhaps this is as good a place as any to say something about the terms "speculation" and "speculators", which are almost always used pejoratively. Many bills are introduced in the Hawaii Legislature every session designed to "curb speculation".

In every society someone must make decisions about whether to store some of today's corn, cotton, or silver for possible use tomorrow. Someone must decide whether to hold back a piece of land for future development. Some people are more willing to bear risks than others. Speculators buy assets now in the hope of selling at a higher price later.

Risk-taking is inevitable. Consequences are inevitable.

> Different systems for making decisions about the disposition of assets will have different consequences. The point is: Who bears what risks under the different systems and what are the consequences of the different systems?
>
> Speculative profits may originate in relationships with government officials, provision of goods by government at below market prices, violation of trusts, inside information, or market rigging. They may be the result, simply, of one man's being smarter, or just luckier, in forecasting next year's crop of coffee. In all cases, what is the alternative system? It has been said that an individual can be classified as an economist or non-economist by his or her reaction to the statement "Anything worth doing is worth doing well". Perhaps an infallible guide could be formulated by adding a statement on speculation.

It is well understood that property rights depend upon and are subject to the rule of law. Actual property rights may be strong or weak in the sense that an owner may be relatively unrestricted or relatively restricted in exercise of these rights. A very substantial portion of Anglo Saxon law is concerned with the nature of property rights, contracts, and related matters. A literature has emerged in the last five years or so investigating the interrelationships between Economis and Law. a) In many cases the courts appear to have been struggling--not always successfully--toward decisions (e.g., who should bear the consequences of sparks emitted by a railroad) that make economic sense, by putting scarce resources to highest valued uses.[3]

As we shall see, many of the examples of private market failure, including most the problems in the coastal zone, can be traced to the absence of effective property rights. If someone owned the ocean where sewage is dumped, or just that part of the ocean that would be affected by sewage, and could enforce his or her rights, only that amount of sewage would be put into the ocean that was economically justified in the eyes of the decision-makers. If someone had effective rights to a particular

stretch of scenery along the highway around Oahu, and could effectively exclude benficiaries, the market would increase or decrease the amount of scenery in exactly the same way as it now allocates scarce resources between Beethoven recordings and Kris Kristofferson recordings. Some readers may regard these remarks about someone owning the ocean, and owning the scenery, as farfetched (or insane). But it is important to remember that choices must be made amongst alternative decision making systems, and to realize that new techniques and ideas can be developed. The American system of commercial but non-market (in the proper sense of the term) radio and television programming with its "free" programs stems in part from confusion regarding the possibility of establishing property rights in transmitting radio signals.

The major alternative to private property is government property. History is a long story of fluctuations and variations in the relative development of private and government ownership. One can offer a few simple generalizations on the subject, for example, that communal ownership will under certain circumstances occasion overuse and even disappearance of an asset such as some of the forests of England. That use of government owned assets is seldom determined by the highest market value use applicable to private property. But the subject is too vast and has been too little studied (systematically) to be treated here, even in brief fashion. The history of Hawaii, of course, includes the period of feudal ownership and use of the land under the monarchy prior to the Great Mahele.

Our concern here is chiefly with the consequences of effective private property rights, ineffective private property rights, government ownership, etc., rather than legal precedent. All governments, other than tyrannies, exercise powers that are in some ways defined according to law.

There is a body of law relating to "public rights" in land and water resources which has a place in a definitive view of the subject of coastal zone management, but provides no guide to the question of how to allocate coastal zone areas amongst alternative uses.[4]

It is almost unnecessary to say that there have been in the past, are now, and probably always will be some people who believe that their self interest, and, perhaps, the interests of others, are best served by a system in which government makes most economic decisions. And many people are hostile to the very idea of relying on private markets.

"Market Failure"

But let us now turn to consider the inadequacies of the private market as viewed even by those who find many virtues in the working of a competitive market economy. Economists have examined this matter in great detail, sometimes under the heading of "market failure". The quotation marks serve to remind us that one should always compare a system, technique, or whatever with its alternatives, not with Utopia. If the alternative is action by government, one needs to recall that government is not costless, is not necessarily efficient, and is subject to the criticisms noted earlier. By the same logic, we should put "failures of representative government" in quotation marks.

We are not concerned at this point with the subject of income distribution or such matters as oligopoly, inflation, unemployment, etc. We will assume that markets are effectively competitive as a result of vigorous enforcement of antitrust laws, plus government restraint in fostering monopoly, inasmuch as government is the source of much monopoly power. And we assume full employment. What concerns us are circumstances

in which (reasonably) well functioning markets may not allocate scarce resources correctly, may produce discrepancies between "private" and "social" benefits or costs. The term "social" in this context refers simply to the sum total of individual effects. There is no suggestion whatsoever that the whole is greater than the sum of the parts. It will be useful to distinguish five not mutually exclusive types of difficulties, without worrying too much about the extent to which all can be traced to a smaller number of fundamental considerations. They are:

(1) external economies and diseconomies, also known as spillover effects or neighborhood effects

(2) public or collective goods

(3) conservation of natural resources

(4) decreasing costs of production due to indivisibilities or other factors resulting in (natural) monopoly and oligopoly

(5) transaction costs

Each of these will ordinarily result in a non-optimal allocation of resources even in an otherwise well functioning economy. One widely used criterion of efficient and desirable allocation <u>which is not completely satisfactory due to its dependence on a given income distribution and which says nothing about other virtues of the market</u> is <u>Pareto optimality</u>. A situation is Pareto-optimal if it is impossible to improve one person's well-being without worsening another's. A perfectly competitive economy would in the absence of (1) - (5) above produce an optimal result in this sense; so, in principle, could a democratic socialist society following certain rules. But the income distribution could make either non-optimal. A true optimum would involve a Pareto-optimal allocation result for an

acceptable income distribution.

I can do no more than sketch the nature of each of the difficulties enumerated above. The interested reader can easily find extended discussions elsewhere.

Externalities

In a great number of transactions that occur in a private enterprise economy, perhaps the vast majority until very recently, the only parties significantly affected by the transaction are the buyer and seller. The price the buyer pays is a legitimate indicator of the benefits (utility) received by the buyer as he or she sees them (or saw them *ex ante*). We will suppose that there are no other benefits. If the price a seller obtains just covers costs including a competitive profit, with no effects on others, such as polluting the atmosphere, the price also correctly estimates the value of the opportunities foregone by using the resources in this manner. An example, would be a hot dog I buy and eat that is produced by a non-polluting competitive enterprise. I have a hot dog rather than something else. And my having the hot dog means that the resources used to produce it are not available for others. But that is all. And that, we must remind ourselves, is what allocating scarce resources amongst alternative uses is about. In the situation envisaged, the economist says that private and social benefits are equal and equal to private and social costs.

The term private property suggests that private consequences to the owner of a good (including money) dominate his decisions about the use of privately owned goods. And they do. Yet the way we use our goods can affect others. If I wear attractive clothes and have a well-

kept lawn I may increase some other persons' well-being (utility). Social benefits from my private decisions would then exceed private benefits.

An analogous situation exists when the cost of producing a good including a competitive profit fails to include all of the costs to society defined as the sum total of all individuals. A classic example is the paper factory that uses clean water in its production processes and discharges water unsuitable for swimming, fishing, etc. downstream. Another example would be a candy factory emitting smoke that increases the cost of a neighboring laundry. Social costs exceed private costs--the costs borne by the paper factory and the candy factory--in such cases.

These constitute examples of what economists call externalities, or spillover effects, or neighborhood effects. The private market may not in these cases allocate resources in an optimal fashion. Too few resources may go into enterprises with external benefits; too many resources may go into enterprises with external costs. Note that these problems would not arise if the buyer of a good had effective property rights to all of the benefits created by his purchases, and could exclude beneficiaries who did not pay up, and if someone owned the rivers and air, and could charge for pollution, and if contracting costs did not make such arrangements uneconomic. One of the ideas set out in a justly famous paper by Ronald Coase on the subject--which stipulated many subsequent articles--is the fact that allocation will not be affected under certain circumstances if the law is clear about who bears the liability.[5] But contracting costs and the "free rider" problem work against this solution.

There are a number of ways of trying to deal with these

discrepancies from optimum results.

(1) Internalizing the externalities. This is an easy matter in the case of a factory polluting a small lake also used by a resort hotel. Common ownership of the factory and hotel would internalize all of the consequences. The market already operates to this end in many instances. Ownership or control of a large piece of land will enable a developer to construct a shopping center or residential community capturing the interdependence effects.

(2) Subsidies and taxes designed to change private incentives. The idea is to make it profitable to produce more when there are benefits in addition to those received by the parties to the transaction, costly to produce as much when there are costs not borne by the parties to the transaction. A much discussed example in this era of environmental concern would be effluent charges.

(3) Direct regulation of behavior. A familiar example is mandatory installation of smog devices on automobiles and smokestacks. Non-smokers' efforts to have smoking prohibited in public buildings and elevators fall into this category. Some readers might like to think through this apparently minor example to test their understanding of the concept of an optimum situation in terms of willingness to pay.

(4) One could include zoning under the preceding heading but zoning is so important it merits separate mention. Zoning presumably originated as an attempt to lessen negative spillovers. Location of all heavy industry in a particular area worked toward preservation of residential amenities, property values, etc. One large American city relies on subdivision rules and a building code with no zoning in the formal sense.[6] Once instituted, zoning takes on a life of its own with

consideration given to effects on property taxes, "need" for development, etc. Some of the criticisms of developers' and others profits, as a result of variances and changes in zoning essentially miss the main point. Zoning gives great power to government. Actual and proposed use of zoning for special purposes is very much in the air in Hawaii (State Capitol, Punchbowl, Diamond Head, the shoreline) and elsewhere.[7]

(5) Government ownership with the hope that the government will take the externalities into account.

(6) Do nothing at all on the grounds that government action will make matters worse.

There is an extensive and growing literature on these problems which I cannot treat here with full justice. Suffice it to say that any coastal zone program concerned with externalities should give very close and expert attention to the probable consequences of alternative ways of dealing with these problems including the alternative of doing nothing at all. We should recall the MIT report's advice on the subject cited earlier.

There are many examples of externalities in the coastal zone of Hawaii that will require attention or more attention than they have received so far. A simple example is discharge of heated water into the ocean with consequent effects on coral and marine organisms.

Pure Public Goods

The hot dog referred to early in the discussion of externalities is an example of what economists call a private good. If I eat the hot dog, you can't have it. The amount of hot dog I have plus the amount you have adds up to the total amount of hot dog. For some kinds of goods the amount I consume does not reduce the amount you consume. These are known as pure public goods or collective goods. The amount I have equals the amount you

have equals the total amount available. Examples are some forms of national defense, television programs, and intellectual achievements like Calculus.

Some goods have a mixture of public and private good attributes. An open air concert is an example. A second and third person can join the audience without diminishing the enjoyment of the first person for awhile. But the space around the performance is limited and a better space for some means a poorer space for others.

The economist's concept of a pure public good differs significantly from the man in the street who tends to equate the term with any good that government at any level has decided to produce for one reason or another. Although an antimissile missile system does approximate the economist's concept of a pure public good, an air raid shelter does not. When I go into the shelter, it deprives someone else of a place. When I go to a public park, it leaves less space for others. A child at school deprives someone else of a place in school.

There is a close relationship, of course, between the externality case and the case of the pure public good. In a sense the pure public good is simply the polar example of the externality problem.

The consumer of a public good has an incentive not to reveal his interest in it; to become a "free rider". Why pay for an anti-missile missile system or a community television antenna if you can hold back and let others pay for it? For this reason the private market will presumably produce too small an amount of public goods. In some instances it may be possible and practical to exclude beneficiaries who do not pay for the services of the public good. In other cases it may not. It is important to look into this matter carefully. In the past it may have been difficult or impossible to exclude beneficiaries of lighthouses and

television broadcasting. Modern scrambling and descrambling devices make this an easy and economical matter today. Even when it is possible, however, it may not be desirable. After the decision has been made to, say, televise a particular program, the marginal cost of supplying it to any potential viewer is zero. Economic analysis of this problem has progressed significantly in the last few years but there is no easy solution. Neither the private market nor government can be assumed to guarantee optimum results[8]. Introduction of the government's powers to compel payment tends amongst other consequences, toward overproduction of public goods. Many residents of this country objected strenuously to taxes financing expenditures in the Vietnam War and other items, claiming, probably correctly, that they were not beneficiaries of these expenditures; objections that were to no avail.

Conservation of Natural Resources

Conservation of natural resources need not be treated as a separate topic under "market failure". Anyone concerned with coastal zone issues will have to be thinking about the matter, however, so it will be useful to give it some separate attention here. Moreover, many people have a very poor understanding of the subject.

One of the basic economic problems facing all societies is the choice between "today" and "tomorrow". Decisions about the use of resources today will affect how much we will have tomorrow, and how much will be around for our children and their children. Aggregate saving--not consuming now--is the end result in a free enterprise economy (mainly) of myriad decisions by individuals and firms. One of the variables entering into these decisions is the market rate of interest. The

inflation-free interest rate is the market's estimate of the value of a dollar today relative to a dollar "tomorrow".

By way of contrast, aggregate saving is a (mainly) political decision made at the level of the Politbureau in the Soviet Union.

Amongst the scarce resources used in the production process in all countries are ones commonly termed "natural resources". Land in its original form is a God-given perpetual asset, though this statement has limited value. Most land can be allowed to deteriorate. Other natural resources include coal deposits, iron ore deposits, petroleum deposits, wild ducks, grizzly bears and fish in the ocean. Some of these resources like coal will be used up eventually if replacements are not found. Others like forests can be maintained indefinitely through proper management.

The market works quite well in solving the problem of conservation when someone has effective property rights to the resource. The self interest of the owners leads them to estimate future as well as present demand for these items and act accordingly. Correct estimates increase the owners' wealth--the present value of all returns ever accruing to the asset. The same system is at work in the case of animals and birds when the owner has effective control. Consider the stock of beef cattle, dairy cattle and chickens. There is no reason to worry about depletion of these assets.

Of course, private owners of these resources may make incorrect estimates of future demand. Indeed. But absolutely no one knows with certainty what will be available and what will be wanted in the future. And there is good reason to suppose that people and firms whose self interest--wealth--depends upon good forecasts will make wiser decisions

than government officials who do not bear the consequences of their decisions in the same way. I know of no evidence at all that government agencies predict as well as the private market.

Consider, however, a hunter who has a wild duck in his gunsight. If he is a good shot he has .99 probability of getting the duck. Killing the duck will leave fewer ducks for him and for others in the future. But if he does not shoot, he may have only a 0.000001 probability of ever seeing a descendant of this duck. Bang! The problem is that no one effectively owns wildlife that can fly around, perhaps from Canada to South America. Even if the government auctioned off exclusive rights to shoot ducks, and some group purchased this right, how could it be enforced?

It was this absence of effectively belonging to someone that led to the extinction of the passenger pigeon. Government has stepped into this void with mixed results with the imposition of limited legal hunting seasons, etc. The residents of the oceans of the world--whales, seals, etc.--remain in jeopardy--because the ocean is not even subject to the jurisdiction of one government.

In general, the "problem" of conserving natural resources is handled very well by the private marketplace when owners of the resources have a stake in conserving them. Problems arise when this is not the case, common property resources like wildlife that wander around in the sky, and fish that go out to sea.

In many cases the problems we are discussing appear in concert in the real world. Deforestation may lead to soil erosion for people downstream or downslope (externalities). A satisfactory analysis of the situation and, hopefully, policy for dealing with any problem requires

correct identification of each problem separately. This will be no mean task in the case of the coastal zone.

Decreasing Costs

It is a very common happening that as production of an item increases, the costs per unit will decrease for a while and then level off and increase. When costs of production per unit continue to decrease indefinitely, or do not begin to increase at an output allowing for many efficient sized firms, one firm or a few firms will dominate the industry. This is the case economists designate as decreasing costs as a result of indivisibilities or other factors. It is the case known as "natural monopoly." It gives rise to "public utilities." More than one telephone company would (alledgedly) be uneconomic. Monopoly violates Pareto-optimality because price exceeds relevant costs. Traditionally solutions to the situation include government ownership (municipal sewage disposal) and government regulation (telephone companies). One should not assume that these two "solutions" will have identical consequences nor that they do not introduce new difficulties. It is generally well known that regulatory agencies soon begin to be overprotective of those they are supposed to regulate. And onetime natural monopolies (the railroads) lose that status but continue to be regulated.

Transaction Costs

It may have occurred to the reader that the same problem has been reappearing throughout our discussion of "market failure" whether the subject was externalities, conservation of wild ducks, or whatever. If so, he or she was right. It is the problem of bringing all of the beneficial and harmful effects of any action to bear on the person

authorizing that action. In a sense, all of the apparently diverse phenomena we have considered can be traced to two factors: the fact that some goods produce benefits that can be consumed by one person without decreasing consumption by others, and the costs of negotiating contracts and policing property rights, called transaction costs.

It would be difficult to overemphasize the significance of these costs. Imagine a world in which they were absent. Everyone would know at no cost of time or resources what everyone else wants. It would cost nothing to enforce agreements, contracts, and property rights. All the beneficial and harmful effects of any action would bear on the person who makes the decision, the property owner. All mutually profitable opportunities for exchange would be realized. All production would be efficient. And, believe it or not, the uses of resources and the output produced would depend only upon the demand patterns and not upon who owned the rights to various property.[9]

In the real world, transaction costs do exist. In some cases they are trivial; in others, prohibitive. The Coase argument that under certain circumstances the market will take care of the problem of the factory polluting the river was noted earlier. Private action of the desired sort is more likely the fewer the number of parties downstream, and the lower the transaction or contracting costs. Clear liability under the law (i.e., that the factory has the right to pollute the river, or that the parties downstream have a right to clean water) is crucial to the argument. The same principles are involved when we consider dumping sewage in a river, lake, or ocean, airport noise, or impairment of views of Diamond Head.

It is quite common in some parts of the United States to charge

for the use of long distance throughways (as well as bridges). The Pennsylvania Turnpike Authority has done this for many years. But it is assumed that transaction costs make charging for the use of local streets out of the question. Use of the streets is consequently provided without charge except for (sometimes enormous) congestion costs and taxes on gasoline. Actually, William Vickrey of Columbia University suggested more than a decade ago that it would be feasible and desirable to institute some sort of simple, easily understood system--of on-peak, off-peak prices--with devices that record when a particular car is on a particular street--for the use of New York City streets. One argument against this proposal is that a government agency would be able to keep track of peoples' whereabouts, of men cheating on their wives, and vice versa. Perhaps this difficulty could be overcome. Many people would regard the idea of charging for the use of the streets (beaches, parks,...) as UnAmerican. But anyone truly concerned with economic allocation of scarce resources amongst alternative uses should be open to various possibilities.

Thus, in a world with no transaction costs, a system of effective property rights for all of the planet's scarce resources would take care of virtually all, if not all, of the problems of "market failure." In the world we live in, we have no alternatives other than attempting to improve the system of property rights, turning to government along one or more of the lines indicated earlier in this section, or doing nothing at all.

I have examined the nature of "market failure" at considerable length because it is pointless--or worse--to map out a program dealing with the failure of the private market in the coastal zone without a

clear understanding of the issues and the alternatives available.

The Coastal Zone Problems of Hawaii in a Nutshell

I believe that I have a good understanding of "the coastal zone problems of Hawaii." This is not to say that it will be easy to solve them. Far from it! But it is hard to know where to begin in describing them. I will attempt a brief summary of the whole situation as I see it and will then come back to matters requiring additional consideration.

Some Examples

Let us begin by looking at some concrete cases.

I am writing this paper in a University of Hawaii office with a lovely view of Diamond Head and the ocean beyond. That view is a valuable output produced by the location of the building where I am sitting and the absence of a highrise between me and Diamond Head. My having a view interferes with someone else being able to live in a highrise between me and the extinct volcanic crater. Their living in a highrise will interfere with my view. This is a problem of externalities or spillover effects or neighborhood effects. What we learned in the preceding section was that we would like a system which would find out how much my view is worth to me, how much living in the highrise is worth to others, and takes the externalities into account.

But there are also pure public good elements in the problem. If I or my employers buy the right to the view of Diamond Head, some neighbors will also be able to enjoy the view, and could become free riders. Probably more important, an individual parcel of land half-way between the building and Diamond Head jointly contributes to my views, views for many others along the straight line between me and Diamond Head,

and views along a different line through that piece of land. The situation is similar, though not identical, to the one encountered in acquiring parcels of land along a railroad right-of-way.

The view problem is also similar, though again not quite the same, as the sunshine problem. The City of Palm Springs prohibits construction of buildings whose shadow will fall on some other person's property between 9 A.M. and 3 P.M. Is that law a move nearer to some optimum as described in the preceding section or simply a reflection of certain groups' political power? The same question can be asked of existing and proposed legislation designed to protect views of Diamond Head, Punchbowl, and the entire coastline of Hawaii.

Consider next an example of externalities with no apparent public good complications. Or at least with no important public good complications. An official of Hawaiian Electric Company testified a few years ago that alternate methods of cooling hot water discharge from its Waiau and Kahe plants to prevent killing of coral would cost about $2.5 million.[10] He pointed out that adoption of these methods would make the coral off Kahe worth four to eight times the value of Diamond Head residential lots. Assume that his figures for the cost of cooling water were correct. What, in fact, is the coral (which no one owns) worth? How do we optimize destruction (preservation) of coral?

One could suggest many other examples of externalities with no apparent public good complications. Sewage disposal off Sand Island probably falls into this class. Pollution of Kaneohe Bay is probably another case.

Note that there is no necessary connection whatsoever between joint production or multiple uses--terms not used previously in this

paper--on the one hand and pure public goods on the other. Many economic activities have multiple outputs. Sheep produce wool, hides, and mutton. Petroleum produces heating oil, gasoline and kerosene. All of the outputs are "private goods" as defined in the preceding sections. A bay may be used by swimmers, surfers, and sailors. But as more sailboats take to the water, there is less room for each sailboat and for swimmers and surfers. The term "public good" is always used here to refer to goods like Calculus and a television program: where one person's consumtpion of the good does not diminish another person's ability to consume it.

Are there important conservation problems in Hawaii? There are legitimate concerns for the general environment. There are worries about the future of endemic and indigenous Hawaiian plants and birds, and some programs for dealing with them. There are no important matters like the wild duck problem here. The whales are usually far offshore and beyond the jurisdiction of this State.

At least at first glance, there do not appear to be any natural monopoly or oligopoly problems iwth peculiar to-the-coast attributes.

What are some of the other things that people worry about?

Destruction of older life styles on the windward side of the island?

Preservation of ancient Hawaiian sites?

Too few beaches?

We are now ready for a capsule view of "coastal zone problems in Hawaii."

I was aware from the beginning in working on this paper that

if someone, or a group of someones, owned all of the land in Hawaii, and the offshore waters, and operated as a profit seeking enterprise does in a highly competitive market, many of the problems of the coastal zone would vanish. Establishing effective property rights would internalize the externalities as described in the preceding section. The actual situation is quite different.

True Cases of "Market Failures"

The only really serious problems of "market failure" in the technical sense in the coastal zone of Hawaii at the present time fall chiefly into two categories. There are, first of all, the externality, sometimes-public-good-problems involving views. Then there are the externality problems traceable to the absence of private property rights to the offshore waters.

I will elaborate on this thesis below. I do not mean to suggest by using the term "only" that these are minor matters.

To the problems attributable to "market failure" in the technical sense we must add problems not originating in the market.

Non-use of the Market by Government

There is a serious problem in allocation of the coastal zone of Hawaii due to government's failure to use the market in the coastal zone when it would be easy to do. "Free" or subsidized beaches, campgrounds and boat harbors, are used as a device for redistributing income and wealth, and are produced by the political process, with little concern for what would probably be the highest valued uses in a free market even with many alternative income distributions.

I know of no serious efforts to estimate the resulting misallocation quantitatively.*

*A somewhat similar task is estimating the consequences of effective price controls. There has been some good work published recently on gains and losses from New York City rent controls.

How far present use diverges from some sort of optimum when we consider the view problem--since public beaches and campgrounds preserve the view for coast highway and inland viewers--can only be guessed.

Present government practice can be traced to several interrelated factors. One is little understanding amongst the general public (coupled with much misunderstanding) of how the market works and how the alternatives work. Political realities evidently preclude serious attempts to redistribute income soley or mainly via money transfers, as compared to programs to establish "fair prices." (Consider the history of farm legislation and minimum wage legislation in the United States.) Low prices are established for politically favored consumption items. And the political process works via legislators satisfying constituents' interests (the pork barrel) without worrying about how the system works against us all.

The Peculiar Pattern of Land Ownership in Hawaii

To complete the picture of allocation of the coastal zone we need to give some attention to the matter of land ownership in Hawaii. The discussion of "market failure" in the preceding section took profit seeking individuals and firms for granted. "Market failure" occurred when in-fact private incentives failed to reflect fully the benefits and costs of activities as would occur with a fully effective system of property rights. (But a very substantial proportion of the land in

Hawaii is not owned by private profit motivated individuals or businesses.) As of a recent date the State and federal governments and the largest 72 private landowners owned approximately 95 percent of all land area within the State. Twenty-two major private landowners owned about 72.5 percent of the land on the island of Oahu. Moreover, one eleemosynary institution owns a large proportion of the most valuable land in the State! But this pattern of highly concentrated ownership of land with important ownership by governments and eleemosynary institutions makes Hawaii quite unique amongst both coastal and non-coastal states. It constitutes an additional reason for worrying about the coastal zone allocation in Hawaii.

There is no suggestion here that the Bishop Estate and other not-for-profit institutions are misusing their powers. Some of their policies requiring maintenance of lawns and limiting commercial endeavors benefit me personally. I am simply pointing out that it is well understood that not-for-profit institutions do not behave as profit seeking institutions do and are not subject to the discipline of the market. I have argued elsewhere that the very unusual system of leasehold land tenure in residential housing that is widespread in Hawaii can be explained by ownership of land by a few not-for-profit institutions operating in an unusual environment.[11] I cannot do justice in this paper to the subject of land ownership in Hawaii, and all of its ramifications, including effects on the price of land. But no coastal zone program worthy of the name can ignore the matter.

The big picture of the coastal zone area of Hawaii, as I see it, thus involves three elements:

(1) Some major instances of "market failure" in the technical sense.

(2) Government failure to use the market when it would be easy to do so.

(3) A pattern of land ownership in Hawaii that can and probably often does result in decisions that differ from those that would be made by profits seeking enterprises.

Let us now return to my contention that most of the problems of true "market failure" in the coastal areas center around views and the absence of ownership of offshore waters.

We have already seen that the Diamond Head case involves views and includes elements of the pure public good problem. A similar situation exists in the case of Punchbowl, the State Capitol, and probably the entire shoreline of the State.

Can we not say the same thing about beaches <u>if we are concerned with problems of market failure in the true technical sense</u>? It would be a simple matter for private owners or the government to charge swimmers, campers, and boaters a sufficient price to allocate beach areas as simply and efficiently as the private market now allocates resources between Beethoven and Kris Kristofferson records. This presents no problem of "market failure." Problems arise as individuals and developers bid for land to build low-rise housing which will block views of the ocean from the coast highway. The same point arises <u>a fortiori</u> in the case of high-rise condominiums and resort hotels. Some people will complain, of course, about the rich getting the shoreline for view homes and about well-to-do mainlanders building vacation retreats. But that is a matter of income distribution. A non-optimal income distribution is a case of

"government failure", not "market failure."*

*By definition, a rich person has greater command over scarce resources than a poor person. It is easy to show by economic analysis that giving poor people goods (in this case cheap beaches, campgrounds, etc.) rather than money is not Pareto-optimal. Ask yourself whether you would prefer to have the writer give you some specific amount of money or some specific goods--a season ticket to the Islanders baseball games, a case of whiskey, etc.--purchased with that amount of money. I am ignoring political realities.

The fact that low-rise and high-rise buildings along the shore will block the view from the highway and other points inland is in all essential respects the same problem encountered in our discussion of the view of Diamond Head.

Indirect Estimation of Demand for Outdoor Recreation

When governments provide parks, beaches, campgrounds, etc. at no charge or a nominal charge--a common practice throughout the country--we have no direct evidence on the value of these facilities to users. Asking people what something is or could be worth to them is a notoriously unrealiable method of ascertaining true willingness-to-pay. A number of economists, beginning with Hotelling, have developed various methods of indirect estimation of willingness-to-pay for outdoor recreation. A recent study by Moncur of demand for beach and mountain parks in Hawaii illustrates the potential and limitations of such efforts.[12] The essential idea is use of distance travelled to different parks (the cost of traveling) as a surrogate for price. Moncur obtains a somewhat lower value of the parks to users than some might have guessed. In any event, all such studies to date can be criticized on one ground or another, and can only tell us the value of the beach or whatever in that use. The beach may be worth much more in alternative uses and often is. An

efficient allocation--relative to some income distribution--requires that the alternatives be considered (with interdependence effects--externalities--taken into account.) It is official policy in the State, of course, to keep some agricultural land in agriculture when the market indicates that it would be of greater value in other uses.

To return to our main point, the market is quite capable of efficient allocation of the shoreline amongst beaches, campgrounds, boat harbors and housing, if the owners of the shoreline (including the government) would use the market. There are no important uses of the coast like State defense, television programming, or production of ideas with public good properties. Pearl Harbor and other defense facilities in Hawaii are not public goods in Hawaii. To the extent that they are public goods they are public goods at the national level. Uses of the shoreline that block inland views may be a problem.

Views

In many cases the market functions very smoothly to allocate views. Houses on the slopes of Koko Head with outstanding views sell for more than equivalent houses in the Hawaii Kai basin with lesser views. And ownership of large portions of land can capture the value of views, and already does so to a considerable extent. Entrepreneurs in cities like New York City and Chicago have not found it profitable to buy up or lease enough land to space buildings to obtain better views. This suggests strongly that people will not pay enough for them!

But with many different views crisscrossing different individual pieces of land, and high contracting costs, there is undoubtedly a hard core problem that is difficult to treat via market or government.*

*Government ownership of land would almost certainly worsen the problem.

There are many advocates of government ownership of land. Some cite the well-known fact that "pure rent" serves to allocate "pure land" (as in pure site value), but is not required to keep land available to society. In principle, the government could own land and auction it off to the highest bidder. In practice, most land can be allowed to deteriorate, private owners have a much greater incentive to seek out possible alternative uses of land, and auctioning of government owned scarce resources is unusual rather than customary. Consider the process and the results of giving out radio and television broadcasting rights in the U. S. A significant amount of costly resources is devoted annually to influencing decisions by public officials.

These considerations apply with equal force to the idea that increases in land value over time (Do we also include similar elements elsewhere in the economy in the returns to Elvis Presley, Joe Namath, and Elizabeth Taylor?) are attributable to "society" and should be taxed or eliminated through government ownership. The ghost of Henry George is still around. As explained earlier, the different systems for making decisions should be judged on the basis of past and probable future consequences. Present market values of all assets capture everything about the future that is known to the people who are putting their wealth into the decision making. There is no reason to suppose that government officials will make wiser decisions. They are taxed by the responsibilities they already have in the area of land use reclassification and zoning variances.

Offshore Waters

The other clearly significant problems of "market failure" in the true sense, it was suggested earlier, stem from lack of private ownership of the offshore waters. The ones that come to mind immediately such as destruction of coral by discharge of hot water appear to involve externalities chiefly, with no important public good aspects. The idea of establishing private property rights to the offshore waters is probably not "an idea whose time has come"! It is important to understand, however,

that private ownership would bring the private and social benefits and costs as discussed in the preceding section more nearly into line. Plants would have to pay the owners of the offshore waters to discharge sewage or hot water. And the marginal benefits and costs that are the key to optimizing would be brought into play. There would be problems of ocean current interdependences, etc. if there were many small holdings. There would be navigation rights problems just as there are on land. But the principle is clear.

Property right systems do not exist in some forever-frozen form ready to be "accepted" or "rejected." Precisely the opposite is true. Property rights have evolved over time in relation to changing circumstances. The pressures population growth and affluence are putting on the environment may be exactly the stimulus required for the development of new techniques. It would be relatively easy for plane owners or an airport to compensate nearby residents for airport noise, i.e. to establish property rights to air in this sense. Smog-free air presents much more difficult problems. So may uses of coastal waters. But one should remain open to all possibilities. There is much current research into the nature and consequences of property rights.[13]

In the absence of some system of property rights, one must turn to direct regulation, payments, or effluent charges as discussed in the preceding section, or do nothing at all.

To Complete the Picture

I should emphasize that this paper constitutes a preliminary effort--a working paper--not a final report. And it has been written prior to completion of the papers other specialists are contributing to

this project. A better understanding of what is happening to marine organisms in the ocean may lead to modifications and extensions of the ideas in this section.

It should also be noted that there are elements in the Hawaiian scene that will influence public policy to which I have given little or no attention.

For example, the Trustees of the Bishop Estate are undoubtedly sensitive to the emotional attachment many native Hawaiians have to "their land" even if they do not hold legal title to much land, and to actual or potential political pressures.

Similarly, many residents are worried about growth, and about the extent to which the State can and cannot chart a course independent of its membership in the Union. The more attractive Hawaii is relative to other places, the greater will be the number of people moving to this State. An opportunity to convert agricultural land to condominiums may be a move to a higher valued use from the standpoint of the country as a whole, but some residents will see it simply as a development accommodating newcomers.

There is concern about growth in general and about growth of tourism (the visitor industry) in particular. The growth of tourist facilities has already led to substantial changes in life on outer islands such as Maui. A major development is planned for Molokai.

Increases in the standard of living, an increasing population, and an increased reliance on the visitor industry, all lead to an increased demand for the scarce resources of the coastal zone and environmental consequences we no longer want to ignore. Analysis of what is happening and the design of appropriate policies is hindered rather

than helped by indiscriminate attribution of the resulting strains and difficulties to "failure of the private market."

Concluding Comments

Most of this paper has been concerned with "what is" rather than "what ought to be." A knowledge of what is a precondition for effective policies to make the world into something different. And setting out the nature of the coastal zone problems of Hawaii as an economist sees them is undoubtedly a useful contribution. To go farther, offering a detailed blueprint for dealing with all of the problems, would take me beyond what I have been asked to do. It would also lead into areas where there are important differences of opinion. I can hardly assume that every reader of these words will share my preference for maximum reliance on private markets, coupled with income redistribution chiefly if not solely via money transfers.*

*I have attempted to minimize the influence of my own preferences throughout the paper.

It is possible, however, to suggest some guidelines for management of the coastal zone that draw on widely accepted principles of economics and/or appear to be capable of winning widespread acceptance amongst the general population.

<u>One of the premises of this paper, of course, is that Economics is applicable to the problem of allocating the coastal zone of Hawaii amongst alternative uses with their various market and nonmarket values</u>.

Furthermore, there is no special economics of the coastal zone that can be distinguished from the economics of inland areas or Economics in general.[14] Some of the goods are different, like vistas of the sea. There are different bads to be abated, like destruction of coral. There are--as we have seen--thorny problems traceable to absence of property rights to major resources in the area. There may also be less knowledge of the effects of man's activities on the ocean as compared to the effects

on land.

Any definition of the "coastal zone" is somewhat arbitrary and dependent on the purpose at hand. The California Coastal Zone Conservation Act defines the area as extending from three miles out to sea inland to the highest elevation of the nearest coastal range, except that it is five miles inland or the mountain range in Southern California, which ever is shorter. (Immediate powers are applicable to the water area and the 1,000 yard strip of land just inland from the sea.). Some southern states are suggesting an area as much as 100 miles inland.

All discussion of the coastal zone presupposes that certain uses are and other uses are not consonant with society's values. Section 303 of the Coastal Zone Management Act of 1972 refers to "wise use of the land and water resources of the coastal zone giving full consideration to ecological, cultural, historic, and aesthetic values as well as to needs for economic development." Economics equates the value of any good to any person, whether a market or a nonmarket good, with the amount he or she is willing to pay for the commodity. This is the value of the good from the standpoint of positive economics. It is the value evidenced in people's behavior, when it can be, even in countries such as the Soviet Union which explicitly disavow the private market system of economic organization. It is necessarily dependent, as explained earlier, on some distribution of income. Economics also suggests that willingness-to-pay under some postulated income distribution is the value relevant to evaluating the efficiency of any coastal zone allocation, if individual preferences are to count.

If one takes the willingness-to-pay criterion seriously (as the writer does), one would require legislative bodies to include careful

studies of the dollar amounts people would pay under some postulated income distribution for, say, a special zoning district to protect views of Diamond Head.

I cannot deal at length with arguments against doing so. The two chief contentions are:

(1) People do not know what is good for them.

(2) The present distribution of income is undesirable.

It is true that architects, artists, and the like are experts on designs and views and that we must turn to biologists for estimates of the effects of various activities on marine organisms. We can and should find out what the experts think. This information can be disseminated widely. In the end, a decision must be made. Should we leave the members of the State Legislature and the City Council to vote as they think best for us? Or should we insist upon some guidelines? One guideline with obvious allocative appeal--grounded in our own behavior--is the willingness-to-pay criterion. Exactly how one might estimate willingness-to-pay for views need not be considered here

I will not add to my earlier observations on the thorny subject of income distribution other than to say that allocative efficiency can, in principle, benefit everyone, and that the distinction become allocative efficiency, on the one hand, and a socially desirable income distribution, on the other, seems useful.

We have moved in the last few years beyond the early concern for the environment when arguments were heard for 100% clean air and 100% clean water. It is fairly well understood now that air quality and water quality are achieved at a price, and that few of us would choose a 50% reduction in our real standard of living in order to have 100% clean air

and water. (Some equally uninformed notions are evident in current discussions of the "energy crisis.") A rational rule regarding pollution would be that any given pollution level should be achieved by the least costly means available, and as nearly as possible should be the level where the cost of further reduction will just exceed further benefits. Effluent charges are more likely to achieve desired results than direct regulation or payments to install anti-polluting equipment. There is now a large literature on the subject which need not be summarized here.[15] One can test any proposal by asking how well it would approximate the outcome two people would agree to if one owned, say, a refinery discharging pollutants into the ocean, and the other owned the ocean.

There are good arguments for increased employment of user charges for beaches, campgrounds, and other government-provided services when it would be inexpensive to do so. They constitute the only direct method for ascertaining the value of resources in particular uses and can be a means for improving allocative efficiency. Institution of such charges can be coupled with improvements in the income distribution to insure political feasibility and equity.

The writer would obviously urge that more attention be given to creation of new types of property rights. It is very important to note in this connection that the income and wealth effects of creating property rights are entirely separable from the operation of property rights once instituted. Individuals can always be compensated for any change in the existing system which will work to their disfavor.

These are some of the guidelines I commend to anyone thinking about the problems of the coastal zone of Hawaii. An understanding of

the nature of these problems is much more important, of course, than any list of guidelines. I have already offered the reader a description and analysis of the situation in Hawaii in the preceding sections of this paper.

It is appropriate in closing to repeat the words of caution in the MIT report quoted more fully in the introduction

> "Perhaps (our basic thesis) is that the institutional measures that society has evolved to correct market failures in the coastal zone usually have not only not corrected these failures, but in concert have often exacerbated them or at least replaced them with other sorts of inefficiencies."

These words should be taken seriously.

FOOTNOTES

[1]J.W. Devanney III, E. Derbis, W. Seifert, W. Wood, "Economic Factors in the Development of a Coastal Zone," M.I.T., Cambridge, Mass., Report No. MITSG 71-1, November 20, 1970, mimeo.

[2]Ibid, pp. 111-112. This report written prior to actual passage of the Coastal Zone Management Act of 1972 offers an extended and excellent treatment of some of the ideas presented here. Its chief weakness, perhaps, is failure to come to grips with the point just emphasized: alternative arrangements may worsen rather than improve the existing situation. The discussion of locational interdependece--which the authors clearly recognize and describe (p. 94)--would benefit from added emphasis on how the free market handles the problem.

[3]See, 3.g., Richard A. Posner, Economic Analysis of Law, (N.Y.: Little, Brown and Co., 1973), esp, Chas. 1-5.

[4]See, e.g., Thomas J. Schoenbaum, "Public Rights and Coastal Zone Management", North Carolina Law Review, 51 (November 1972) 1-41.

[5]Ronald Coase, "The Problem of Social Cost", Journal of Law and Economics, 3 (October 1960), 1-44. Reprinted in several readings books.

[6]See Bernard H. Siegan, "Non-zoning in Houston", Journal of Law and Economics, 13 (April 1970), 71-147.

[7]An examination of zoning as a means of maximizing aggregate land rent appears in William J. Stull, "Land Use and Zoning in an Urban Economy." American Economic Review, 64 (June 1974), 337-47.

[8]For an excellent introductory discussion of the problem, see Armen A. Alchian and William R. Allen, University Economics, 3rd ed. (Belmont, CA., Wadsworth, 1972), pp. 147-54, 245-47.

[9]See Alchian and Allen op. cit., pp. 240-41.

[10]Honolulu Advertiser, April 25, 1972.

[11]H. Laurence Miller, Jr. "Leasehold Land Tenure in Residential Housing in Hawaii," in progress.

[12]James E. T. Moncur, "Estimating the Value of Alternative Outdoor Recreational Facilities in a Small Area," Journal of Leisure Research, forthcoming.

[13]See the Posner book cited earlier for a useful introduction to the subject. An excellent recent volume with contributions by many different authors is Henry G. Manne, The Economics of Legal Relationships: Readings in the Theory of Property Rights, West Publishing Co., 1975.

[14]I am not saying anything new here. e.g., Clifford S. Russell and Allen V. Kneese make the point in "Establishing the Scientific, Technical, and Economic Basis for Coastal Zone Management," Coastal Zone Management Journal, (Fall 1973), 47-63.

FOOTNOTES

[15]For a brief discussion of the subject including the preference for effluent charges, see the study by J. W. Devanney III, et. al., op. cit., referred to earlier.