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State Budgeting for Natural Resources Programs

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PREFACE

The major presentations by invited discussion leaders are presented in this volume. The record should be of continuing value to budget and natural resources administration personnel, whether for use in group training within particular states or for individual perusal. Unlike the previously published "proceedings" of institutes, this volume places at the end a significant dinner address which was not integrated with the program but which was generally parallel.

The editorial policy leads to transcribing here the principal papers substantially as the speakers presented them with only editorial changes--reviewed by the speakers if more than formal--to omit such valuable adjuncts of oral presentation as jokes, analogous anecdotes, and occasional "asides" or connectives, all of which seem inappropriate to a record such as this. On rare occasions, the editor adds explanatory or cross referencing notes each signed: "Ed."

The Institute Director and editor is indebted to a wide range of cooperation. The first obligation is to the participants in the institutes, especially the speakers. The sponsors noted on the title page contributed significantly. The Ford Foundation and the states contributed financial support. The NASBO Committee on Professional Development and Training, its secretary Dr. George A. Bell, and the Association's Training Advisory and Evaluation Committee and its members assisted at every opportunity. The editor is grateful for the counsel of Joseph M. Robertson, Administrative Assistant to the U. S. Secretary of Agriculture and William D. Carey, Assistant Director of the U. S. Bureau of the Budget. Immediate aides Miss Anne Davis, Mrs. Judy Holladay, Miss Betty Rae King, and Mrs. Martha Whiteside have assisted with such cheerfulness and generosity as to render this acknowledgment wholly inadequate.

James W. Martin
Institute Director

Lexington, Kentucky
November 1968

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NATURAL RESOURCES AND THEIR ADMINISTRATION: AN INTRODUCTION TO THE SUBJECT[a]

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Maxwell Graduate School, Syracuse University

What are we talking about, in respect of natural resources? We are not talking about the simple concept set forth in the American College Dictionary. That authority says that a natural resource consists of the wealth of a country, including land, forests, mines, water, and energy resources. That's a rather simplistic definition; so let me modify or amplify, trying my own definition. A resource is a commodity, thing, or attribute which is, or which may be made, available for human use; and a natural resource is one which exists as a bounty of nature. So far so good.

But when you start enumerating these resources, you soon get into trouble, at least you soon get into a controversial area. There is no difficulty so long as you stick with the standard enumeration--land, forest, water--for this is the time-honored trilogy which all accept. These are basic resources; but, to my way of thinking, not *the* basic resources, only *some* basic resources. I would add quickly minerals and fuels. I would also add wildlife, which we have recognized for a good many years as a natural resource. Then I would add three or four categories of resources that only recently have begun to find their way into discussions like these. How about the air about us as a basic resource? The air we breathe has always been a fundamental resource, of course, but only recently have we begun to pay any attention to it. As a matter of fact, only in the last 20 years has the city of Los Angeles, with its admittedly grave pollution problem, been forced to pay serious attention to the air its people breathe; and only in the last five years

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[a]Professor Roscoe C. Martin opened the institute with four addresses entitled: "Natural Resources and Their Administration: An Introduction to the Subject"; "Public Administration and Natural Resources: General Considerations"; and "Organization for Natural Resources Administration," the last of which comprised two lectures. Because of taping failure only the first of the presentations is available in more or less complete form. This paper is the substance of that discussion except for omission of an enumeration of several resources administration problems. If the record of the institute must suffer the loss of much of Professor Martin's text it is especially fortunate that the present paper is substantially intact, as it lays out an approach to the management of natural resources which can very helpfully introduce the materials that follow.--Ed.

has the national government taken any serious interest in air quality. Yet anyone will allow, once he gets it in his bombsight, that air is a basic resource.

I would name space as a natural resource. The question remains as to whose natural resource it is; but with the experimentation going on in our own space program and in the Russian space program, surely space has emerged in the last ten years as a resource. I would also list the ocean as a basic natural resource. So long have we taken the ocean, the high seas, for granted as a natural resource that we paid no attention to such problems as pollution of the ocean until just recently.

Finally, I would list people as a natural resource. People, shall I say, are a concomitant resource, a resource without which no other resource is of any consequence. All other resources are relevant to our consideration only as we incorporate into our thinking population as a resource. Populations are of varying numbers and densities and of varying qualities in the sense of differing stages of economic development; but I choose to pass over these variations in favor of emphasis on people as such. They are what make "natural resources" meaningful.

Here, then, is a list of the natural resources which I propose to talk about. Scanning my notes I see ten or twelve, and the list could easily be expanded. Any one of you could add another one, two, or three to the inventory.

Characteristics of Natural Resources

When we define natural resources in this broad fashion, we discover that they have certain general characteristics--but only very general ones--in common. We need to get these characteristics in mind if we are to address the problem of natural resources administration with intelligence and purpose.

Among the characteristics of natural resources which I identify (and again you may identify others) is their physical and geographical distribution. Natural resources occur without any reference to political or national jurisdictions and without any reference to recognized or accepted geographic limits. Natural resources are freakish and illogical in their distribution; they are totally noncooperative so far as the institutions of mankind are concerned. They occur--or seem to a layman to occur--without much reference each to any other. This, of course, is not totally true, but it is true that natural resources are quite capricious in their physical or geographic distribution.

A second characteristic which might be noted is the interdependence of natural resources, not the interdependence of each and every natural resource with all the rest, but the interdependence in their totality of natural resources: "the seamless wealth of nature," some quasi-poet has called it.

Let me also mention the variable utility and accessibility of natural resources. Some potential natural resources lie hidden, unrecognized, or unidentified, while some which we know exist are of no use because we can't get at them. Thus, for example, the vast iron ore

deposits of Labrador have been known to exist for many, many years; but only in the last decades have those deposits come to be made available. So we may mention, in relation to variable utility, that some resources are potential only; they are raw (or latent, or inert, or underdeveloped) resources. The vast uranium deposits of the American Rocky Mountain area and of Canada have been there for, I suppose, millions of years. They became resources subject to, or available for, human use only in the last twenty years.

Resources become available as technology develops and as population grows. Inert or raw resources become actual resources through a process which I want to discuss briefly in a moment. Let's note that some resources are actual resources--they are available or they are converted or are readily convertible; they are improved; they are operational resources. My adopted state of New York has magnificent water resources which, one can see without being very well versed in the subject, lend themselves to human utilization or to development for human utilization rather readily. Resources are of variable utility; they are also variable in quality and quantity.

Resources are exhaustible. We have operated in the United States as though our natural resources were limitless. The lumber interests of three-quarters of a century ago conducted themselves and their businesses as though the timber supply were inexhaustible. Under this philosophy, there appeared no need to give thought to the future.

If resources are exhaustible, they are also destructible. Fortunately, they are at the same time elastic. Thus in deep East Texas 65 years ago, a great oil field was brought in at Spindletop in the Beaumont area. Shallow wells produced vast quantities of oil. Presently the Spindletop field, pretty well drained, fell almost dormant. Some little oil continued to come, but not a great deal. Then machinery for deep drilling came in, and development interests came back to Spindletop, drilled through the old oil bearing stratum to a greater depth, and produced vast new quantities of oil. The elasticity of resources is demonstrable in many ways. We increase the yield of coal mines by improving the technology of coal extraction; we increase the utility of water resources by improving the devices for bettering the quality of water; and so forth.

Again, natural resources are replaceable, they are substitutable. This is something that twenty or thirty years ago escaped the notice of, among others, John L. Lewis, who supposed that he could jack up prices of coal indefinitely because it was at that time a basic fuel. It turned out that natural or manufactured gas is a very good substitute. The coal business went into the doldrums because substitutes were found, and not in natural gas alone.

Natural resources are also convertible, they may be changed from one character to another. Thus coal can be converted into gas, while natural gas contributes to a great variety of materials ranging from fabrics to fertilizers. It follows that resources are improvable; their quality can be upgraded. The simplest illustration is to be found in developing technologies for improving the quality of water resources.

From this enumeration of their principal characteristics, it is clear that natural resources are uneven and unequal in practically all

respects, and that, in addition, they are highly unstable. Poets speak of the bounty of nature, of a kindly nature. More realistic observers point out that, over much of the world, nature is not particularly bountiful, and it certainly is not very kind, with recurring droughts, floods, earthquakes, and hurricanes. If mankind did not intervene to convert natural resources into commodities available for human use at the place where people need them, at the time when they need them, in the form in which they need them, then, nature and its bounties would not be of very great benefit to mankind. This is particularly true with respect to the growing numbers of urban dwellers, whose very lives depend upon the day to day availability of vast quantities of converted natural resources.

Environmental Conditions of Resource Use

This comment brings us to some observations on the changing environment and its relations to natural resources and their management. I will mention four or five points familiar to all of you but necessary to get our subject in focus. On the one hand, we have a series of natural resources which answer to the description which I have sought to give you here. On the other hand, we have an environment which determines--or largely determines--the significance of these natural resources. What are the environmental factors which we have to keep in mind, and what are the most significant of the current environmental changes?

In the first place we must list population growth. This is one of the most traumatic of all factors confronting human kind today. This country has 200 million and a few thousand people. There was a time back in the 1930's when a project with which I was associated found that there were 120 million, and we predicted with high confidence, because our population experts told us this is what would happen, that the population would level off at about 150 million. That, thank goodness, is in a report not under my signature. We will have 225 million within perhaps one or two decades and another 25 million, or a total of 250 million, by the end of the century. And, of course, we are nowhere near the world's champions in reproduction!

The significance for our purpose of the world's unprecedented population growth is to be found in the increasing demands on natural resources and more particularly on land. Chemists say that we will not always be dependent upon the products of the world's land. Nevertheless, we are now so dependent, and there are 3 billion people in the world, with 5 billion in prospect by the end of the century. This is the most starkly realistic and dramatic environmental development of all. The city of Calcutta, India, now has about 6 million people. It draws on a water supply devised by the British many years ago for a population of 750,000. Those who observe such things say that Calcutta will have 25 million people by the end of the century, and Bombay, 30 million. I am suggesting that this population "explosion" is a worldwide phenomenon and that it will have increasing significance for the world's natural resources.

Let me allude to a second environmental development--already mentioned in another connection--the growth in urbanism. This subject is a specialty of mine and a hobby which I ride whenever the opportunity presents itself and sometimes when it doesn't; so I have to be careful

not to take more than two or three minutes to call attention to the fact that in the last 40 years we have become an urban nation. Seventy percent of all our people now reside in urban places, not in the five largest cities with more than a million people, but in those cities and in scores of other sizable population centers. Moreover, this is a worldwide trend, as my references to Bombay and Calcutta suggest. Tokyo is now the largest city in the world. A central fact about Tokyo is that only 18 percent of that city is sewered. This is another overwhelming fact which has to do with the preservation and the management of natural resources, preservation in particular of the purity of water supplies. Water supply and sewage disposal are central problems of an urban society which involve natural resources; air pollution is another.

I am suggesting that the furious trend toward urbanism is a factor which must condition our thinking about natural resources. In New York State, our governor recently sponsored a bond issue of a billion dollars to make available to the cities financial assistance for the purification of water. The steady growth of the cities in New York has made it necessary for the state to take a hand in the business of water pollution.

A third, highly significant development is the technological revolution. Technological changes are of many descriptions, one of which makes it possible to transmit electric power long distances.[1] Developments of the last 15 or 20 years have therefore radically changed the character of the electrical industry. The very simple adaptation of aluminum pipe to irrigation uses has led to the marked increase of irrigation in New York State during the last 15 years. The permanent energy revolution ushered in with atomic fission is well known to require emphasis. There is, of course, no end to the technological changes which have affected and which will affect natural resources.

Note next the worldwide national revolution. Observe the fact that, in the last 20 years, the number of nations in the world has more than doubled. Many of the new nations are on the African continent. Many of these are small and weak; many have resources inadequate to support their people; many are poorly equipped to govern themselves; but all clamor for independent nationhood, each is jealous of its national sovereignty; and all seek--and most receive--assistance from the developed countries. This means a new kind of drain on our resources. All countries which are even moderately prosperous share this drain with, of course, Russia and the United States chief among them. The emergence of the new nations is a highly significant aspect of the changing environment.

Let us see what we have said to this point. We have said that resources occur in wide variety, without any kind of plan, and without any intelligence beyond that of a fickle and unpredictable nature. We have said that these resources are subject to important modifications and influences because of changes in environment. All of this adds

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[1]Just 15 years ago, New York State and the province of Ontario, Canada, joined to construct a tremendous hydroelectric development on the St. Lawrence River. The New York State Power Authority maintained that electric power could not be economically transmitted more than about 150 miles. So New York's share of St. Lawrence power is marketed within a radius of 150 miles of the point of generation.

up to an ever-shifting pattern of resources and resource use. Resources change substantively in response to expressed human needs. They change also temporally, so that what was a resource at one time is not useful as a resource at another time, while other things which formerly were not useful suddenly become highly valuable through developing technology or some other cause.

So we have an ever-varying pattern of resource identification and resource use. It used to be supposed--and this country was guilty of this supposition for much of its history--that natural resources were a God-given thing with which mankind should not interfere. It was the doctrine, furthermore, that if there were any need to interfere with natural resources, that need should be answered by the private rather than the public sector of the economy.

The Administration of Natural Resources: Preliminary Considerations

Only belatedly did the federal government or the governments of the states and localities, get into the business of resource development. Let us now examine briefly the improvement, the conversion, the development--in short--the administration or the management of natural resources.

I am suggesting now as another major aspect of the discussion that resources may be improved, new resources may be brought into being, and old resources may be brought into more profitable relationship--all for the use of mankind. We call the means by which these adaptations are brought about resource management, or development, or administration.

Let us discuss for a moment the conversion process--the process by which water, for example, a raw commodity, water flowing uncontrolled down the Columbia River or the Tennessee River is made available for home, factory, and farm, for navigation and flood control. Consider, also, how water is made available for pollution abatement, for sewage disposal, for low-flow augmentation, or for hydroelectric power. Forty years ago the Tennessee River yielded only a modicum of electric power--some little bit was produced by private utilities, but not very much. Or consider the utilization of a river for low-flow augmentation. The Delaware River is regulated to guarantee a minimum flow at Trenton, New Jersey--a very important factor for industry in the Trenton vicinity and for the city of Trenton as well.

Water as a significant element in recreation is largely a new development so far as water resources management is concerned. People have enjoyed fishing and bathing in streams for a long, long time, but only recently did the United States government plan its facilities in such fashion as to make recreation a fundamental purpose of development. Only a few years ago the Folsom Dam was finished on the American River above Sacramento, and on completion the announcement was made with a flourish that the dam would be open for public visitation. Those who made the announcement were quite unprepared for what happened. Twenty-five thousand people turned out in mass, many of them bringing boats along behind their cars. As they approached the dam they found traffic backed up for 15 miles and, once on the grounds, they found an almost wholly inadequate boat ramp, and for the 25,000, two portable johns.

The nation's thinking has progressed rapidly since that day; still, we are inclined to give only incidental attention to recreation.

I have said enough, perhaps, to suggest that, with respect to one resource alone, there are many and varied and sometimes conflicting interrelations among uses. This is a fundamental factor with respect to resource administration. Fortunately we are rarely called upon to range over the whole spectrum of water usage in any one project. The requirements of water for municipal, industrial, or agricultural supply; for recreation; for navigation, flood control, or drainage; for sewage disposal, hydroelectric power, or low-flow augmentation do not often converge into harsh and unavoidable collision. Even so, it may be seen that there are many interrelations within this one field of water resources, and that not all of them are mutually compatible. In the business of administering natural resources, or even water resources alone, hard choices have to be made including many value judgments concerning the uses to be made of the resource.

Let us pursue the subject further by introducing the topic, the agencies of conversion. Who does (or who do) all these things? Where does the leadership come from? Where does the developmental capital come from? Who develops, who conceives, establishes, and supports the social institutions necessary to management? Who provides the administrative skill? Who, in short, does the administering: who is responsible for it? These are the kinds of questions I propose to raise and to try to answer.

Public and Private Roles in Resource Administration

The agencies of development may be either private or public, a fact well known to you through observation; but let us explore some of the implications. Let me call attention to the significance of private development in the United States, to the American tradition and practice of free enterprise. This American stress on private rather than public action stemmed largely from American experience under the British Crown in the years just preceding 1775. That experience caused the colonists to think in terms of personal freedom, but also, in terms of freedom of use and enjoyment of property; and both kinds of freedoms were written into our Constitution. The American system of democracy imbedded in this charter rests upon the doctrine of individual worth, the importance of the individual entity--and that's what most of the shooting is about these later days! That's what the poor people's march on Washington meant. Such action means that individual citizens have been denied, or feel they have been denied, the personal liberties implicit in the democratic ideal. But there's another kind of democracy to--at least we relate this other side of the coin to our concept of democracy. It resides in the doctrine of free enterprise.

The notion is that a man is free not only in his person, but also in the control of his property. He is free to own, utilize, and develop his property in any legitimate manner he may see fit. And this was literally true in the early days. One hundred and fifty years ago he did in fact develop and use his property as he wished without any kind of public regulation, and indeed, without recognition that there might be some need for public regulation. So in New York the lumber industry developed as it pleased: it destroyed the forests; it polluted the

streams. A little later the paper mills came along to complete the process. They clogged the streams with industrial wastes--mostly forest material wastes. They operated with very little public oversight or constraint.

The major instrument of this development was the corporation--a legal entity created by law which consisted, not of the people who owned the stock nor of the people who managed the business, but which was rather an intangible, incorporeal being which existed only in law. It was, in short, nothing more than a legal concept, but it was perhaps the principal instrument in the forging of the free enterprise system. By mid-19th century, virtually all of the big developers were corporations. The railroads were major developers of natural resources. The vast coal interests were early developers, as were the lumber companies; and, toward the end of the century, the so-called "public utilities." This term, by the way, represents one of the neatest of sleight of hand tricks I know; for the "public utilities" are not public utilities at all, but rather private utilities which serve the public. Virtually all the great developers in the fields mentioned, and in many others besides, were (and are) corporations.

There is a vast body of law which has grown up around the concept of the corporation. The Constitution itself, which does not include any reference to corporations, has been turned to the protection of the corporations. The corporation has been the principal bastion of American free enterprise and under its cloak most of natural resource administration in this country has taken place. This is a cardinal fact which must be recognized.

At the same time, we need to note that there has been growing interest on the part of government in the development and management of natural resources and in the regulation of private companies vis-a-vis that field. There was an early emphasis on laissez-faire--which means in effect, a policy under which government will leave private interests alone to develop their concerns as they will. Our commitment to individual liberty required that there be as little government as we could get along with. You all know the old aphorism that that government is best which governs least. This was literally the national doctrine for the first quarter or third of a century after the establishment of the nation. Since that time, let us say for some 150 years, there has been a steady progression away from raw laissez-faire in the direction of a more active, a more *concerned* government.

About the middle of the last century, it came to be seen that reliance upon the marketplace to take care of economic equities in an emergent industrial state--to say nothing of other social equities--standing alone, would not suffice. So we began to get government regulation--to begin with, government regulation of hours, then, of working conditions, of wages, of health conditions in the tenements, of fire conditions, etc. And so from laissez-faire in the early days we progressed gradually in the direction of more, rather than less, government. The progression was from simple protection to regulation to positive concern for economic and social well-being.

This evolution is highly significant for the decision on the issue, who develops and manages natural resources? Natural resources and

the public use and enjoyment thereof were beneficiaries of this trend from little government to more government and presently to the welfare state. A short 20 years ago the term "welfare state" was a phrase of scorn, employed for the purpose of showing contempt for the subject referred to. No longer so. Mr. Goldwater's quixotic campaign is instructive on this point, for he would have stripped government back to nineteenth (eighteenth?) century "essentials." As the saying goes, the people of the United States didn't "buy" that proposition, nor did they buy Senator Goldwater. The country has in fact come to wide acceptance of the proposition that we need, not less, but more government.

You will ask a little later what is the end to this trend; so I will ask the question now and give you my answer. There will be more government--more governmental involvement in natural resources administration in all countries of the world. This will be particularly true in the underdeveloped countries, because they have little, and sometimes almost no, private enterprise. They have an insufficient infrastructure, an inadequate institutional base of a private nature for the management of their resources. So they turn to government almost entirely, as to joint public-private ventures.

The question then is not whether there will be a large measure of public participation in the management of natural resources, but rather, what the relations will be between public action and private enterprise in the natural resources field--that, at least, is the problem in this country, although not so much so in underdeveloped countries which have less choice. There are numerous illustrations to suggest that this is by no means a foreclosed issue or a problem that will solve itself. Atomic energy is under the direction of the Atomic Energy Commission, a United States government agency. In the beginning it was exclusively under the direction of that agency. This is so no longer.[b] The Tennessee Valley Authority, which was originally exclusively a federal regional agency, has developed a vast network of business and intergovernmental relationships in its 35 years of history. The space communications corporation, Comsat, is part private, part governmental in management. The Hells Canyon controversy between proponents of public and private power resulted in a triumph for the privately owned Idaho Power Company, which is now developing the Hells Canyon hydroelectric power project on the Snake River. In every instance, from total governmental development through mixed public-private development to wholly private development, there was a battle on the question of who does the developing--the government, private industry, or both. In every case, however, the influence of government was preferred. The point I seek to make here is that there is a broad and expanding role for government in the development and administration of natural resources.

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[b]It is now reported that the Atomic Energy Commission's 1962 estimate, that by 1980 40,000 megawatts of electrical capacity would be atomic powered, has been raised to 150,000 megawatts in private business installations.--Ed.

Government and Natural Resources Management: an Introduction

What are the methods of government in natural resources administration? They graduate from the simple to the complex, from little involvement to maximum involvement. Let me suggest ten or a dozen major methods employed by government in natural resources administration, private and public.

(1) At the least controversial end of the spectrum the government renders services to private enterprise in the development of natural resources. It provides water supplies, sewage disposal, schools, police and fire protection, and recreation facilities to name but a few of the more common services.[2]

(2) Government may provide special educational services to private enterprises involved in natural resources development. The University of Kentucky is a public institution maintained by the taxpayers of the state. Its business school conducts short courses for many businessmen involved in the development of natural resources. The Agricultural Extension Service offers another example of government sponsored educational service to private enterprises. This sort of illustration could be multiplied many times over.

(3) Government conducts research in natural resources problems and makes its findings available to private enterprise. The work of the National Fertilizer Development Center at Muscle Shoals in this field is internationally known.

(4) Government officials may give advice and information to the developers of natural resources. Again the technical assistance rendered by TVA in such fields as forestry, power systems, and fertilizer technology is well known.

(5) Government may regulate development of natural resources. Regulations to be effective usually must be accompanied by a system of inspection. This represents a modest shift from services, education, research, advice, and information--all available to natural resource developers at their option--to a service performed in behalf of all of the people at the option of government. This is something different, and here private enterprises may begin to complain. They seldom complain as long as the government is building roads, supplying water, running educational programs, or providing protection for them. This is the point at which natural resources corporations begin to resist; their enthusiasm for government action decreases from this point forward.

(6) An important method of government in respect of natural resource administration is taxation. A tax may be designed to produce

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[2]Some years ago the Wolverine Tube Division of the Calumet and Hecla Consolidated Copper Company set up a big new plant in the vicinity of Decatur, Alabama. The Vice president in charge of that operation wrote a little pamphlet in which he recognized the importance of the services provided by the state of Alabama and the city of Decatur to his company.

revenue or to provide an incentive or it may have regulation as its purpose.

(7) Government may also utilize its control over the public purpose to subsidize private development. On the outskirts of Meridian, Mississippi, there used to be a roadside sign, as big as the side of a barn, which read something like this: "Meridian, City of Opportunity, Free Plant Site, No Taxes." This is an extreme illustration of a general practice, for government assists in the financing of private businesses in a variety of ways.

(8) Government may contract with private enterprisers. We are really getting into deep water here, and very interesting water. An illustration that comes immediately to mind is provided by the larger manufacturers of airplanes, which are heavily dependent on their contracts with the United States government. A full-page advertisement by a major company in the *New York Times* some years ago conveyed a message of optimism and good cheer. It ran to some such effect as this: "Last year was a great year at _____ Aircraft Company. We produced X hundreds of aircraft and sold them all: 9 percent to foreign governments, 6 percent to American carriers, and 85 percent to the United States government." The condition so starkly portrayed by the advertisement speaks volumes for the relations between government and private enterprise. It suggests that it is becoming increasingly difficult to tell the difference between the two, and indicates the growing importance of government activity to the private sector.

(9) There is a partnership concept under which government does part of a job and private enterprise does the rest. Thus, the Tennessee Valley Authority has spent a great deal of time and energy in setting up conditions favorable to private development. TVA-industry collaboration led the Bowaters Southern Paper Corporation to establish a major plant at Calhoun, Tennessee.[C] President Eisenhower evidently thought that he had hold of something new in his advocacy of partnership, but, in my view, the practice of partnership between government and business is very, very old. In any event, old or new, a partnership arrangement represents another kind of relationship between government and private enterprise.

(10) The device of intergovernmental fiscal transfers carries important implications for governmental assistance to private enterprise in the development of natural resources. If it were not for the federal purse, a good many of the things the states do wouldn't get done; and if it were not for the state purse, a good many of the things local governments do wouldn't get done. Under the federal system each lesser government is dependent in considerable measure on the one higher up. Many billions of dollars a year pass from the larger governments to the smaller ones--from federal to state, from federal to local, and from state to local. In the sense that governmental participation in the development (direct or indirect) of resources is largely dependent on fiscal strength, this is a very important aspect of natural resources management.

[C]See the paper below by Peter Stern.--Ed.

(11) Government may participate with private enterprise in the administration of an undertaking. Comsat has a board of 15 directors of whom AT&T and two or three kindred communications companies appoint six, public investors appoint six, and the President of the United States appoints three.

(12) Government may simply own and operate a natural resource facility outright. The most universal illustration I can cite is that of local waterworks systems, most of which are publicly owned. Illustrations, of course, do not stop there. The United States government owns and operates many dams on streams throughout the country; many cities have park and playground systems; most states have parks and forests; TVA power is consumed by the customers of almost 160 cities, towns, and cooperatives (all public agencies) as well as by a number of major private users.

More than enough has been said to indicate the variety and complexity of the problems to which we have addressed ourselves. It is not difficult to propose simplistic, armchair solutions to these problems; that is done all the time. It is difficult, however, very difficult, indeed, to come upon solutions--even partial solutions--that will meet the tests of logic on the one hand and political acceptability on the other in the workaday world of reality.

MANAGEMENT COORDINATION - PREREQUISITE TO RATIONAL BUDGETING

Freeman Holmer
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Wisconsin

Arthur W. Macmahon, for many years a professor at Columbia University, entitled one of his books *Federalism: Mature and Emergent.* It is probable that we are not yet ready to claim maturity for the management of our natural resources, but certainly it is fair to say that this function is emerging.

The nation used to operate on the theory that our resources were so vast as to be virtually inexhaustible. Resource management consisted of slaughtering the "varmints," clearing the forests to make room for the plow, and legislating about riparian rights.

Management of Natural Resources and Ecological Unity

Slowly and fumblingly we began to recognize that we were getting into trouble; and we began (piecemeal) to protect (by law) our forests, fish, game, water, and other resources. We tried, however, to deal with one problem at a time. Like Hercules in his encounter with the Hydra, we tended to find our troubles doubling--just when we thought we had accomplished something.

We hailed the advent of DDT because it is persistent enough to destroy a wide range of pests--then Rachel Carson wrote of a "silent spring" in which fish and birds had turned out to be the inadvertent victims of our inadequate knowledge.

We got rid of the excess foam from our detergents because the foam was clogging our sewer treatment plants--then found that we should have been even more concerned about the phosphate base from which the detergents were concocted.

We built the Welland Canal to open the ports of the Great Lakes to world commerce, and the lamprey destroyed our trout; we controlled the lamprey, and the alewife (a perfectly useless fish) adorned our beaches. Now we are planting trout and salmon--quite ignorant of the next danger.

We drain or fill our marshes to procure more farm land (or to take it out of cultivation)--and wonder what has happened to our fish and game.

We develop superb fertilizers for our farms and flowers--and are surprised by the prolific growth of waterweeds.

In Herculean fashion, we believe that the world is ours to remake. Like Hercules, we divert rivers, create lakes, move mountains. We transplant trees and flowers and hearts. Then one Thanksgiving weekend, the Governor of New York pleads with the people in our largest city not to drive their automobiles lest they suffocate. During those three days, the Mayor of New York City barred the use of incinerators; it took 200 men six weeks to dispose of the solid waste that wasn't burned in those three days.

We are learning, slowly, something about ecological unity. We are learning that men and *all* of nature are interrelated; that water pollution is not *a* problem but a series of problems. The solution of the air pollution problem is not *a* solution but a comprehensive program.

Institutional Arrangements in Natural Resources Administration

There is a tendency--in a democracy--to rely on oversimplification and slogans. But the span of public attention is limited both in scope and in time. This adds another factor that complicates resource planning, organization, and management.

Perceiving the public interest--and acting in its support--is not always easy. Our knowledge and understanding are limited. We fail to comprehend what it is and what it means and often fail to apprehend the consequences of our actions.

In this context, I am sure you will understand if I approach the subject of management coordination in natural resources administration with a huge dose of diffidence. As a nation, as states, and as local governments, we have paid far too little attention to the kinds of institutional arrangements that will best identify and serve the public interest, maximize the effectiveness of research, and create and maintain needed public support.

The management of our natural resources is not an exclusive responsibility of the state government. The federal government is deeply involved--in the national interest. Local governments have a substantial share of the management problem. However, our primary concern is state government so let us keep our focus there.

The substantive role of state government can be embraced in five categories: (a) the development of our human resources; (b) the protection of the public safety; (c) the guidance of economic development; (d) the provision of needed public works; and (e) the management of our natural resources. The idea of creating large government agencies runs directly counter to the folklore that a large department will be more remote and less responsive to the people than a multiplicity of small departments.

The reality, of course, is quite different. By simplifying the structure of state government, public understanding of government operations can be increased; state policy is more likely to be consistent; and state administration is likely to be more responsive to the governor, the legislature, and the people. When it comes to securing policy change in response to popular desire, the shorter the lines of responsibility, the better.

Coordination of Natural Resources Agencies in Wisconsin

Wisconsin, within the past year, made a substantial step toward coordination of its natural resources management in a Department of Natural Resources. However, two issues connected with the Wisconsin reorganization are sufficiently typical to merit a footnote.

First, there is the question of inclusion. In Wisconsin reorganization, three agencies with substantive natural resources responsibilities were omitted: the Department of Agriculture, the Soil and Water Conservation Committee, and the State Geologist. The coordinative response to this was to continue the Natural Resources Council of State Agencies (on which these agencies and the university are represented) and to make the council advisory to the Secretary of Natural Resources. In addition, it should be noted that closely related functions, such as control of septic tanks and control of air pollution *within* factories are still the responsibility of the health agency and the labor agency respectively.

The second issue was over the abandonment of what is known in Wisconsin as the "adversary system." It has been traditional in Wisconsin for the Conservation Department to appear as a party to hearings before other state agencies and to challenge decisions by such agencies in the courts. The anomaly of state agencies, members of the same executive branch, following uncoordinated policies has not seemed strange to Wisconsinites. It does seem odd to me.

Many conservationists in Wisconsin felt that it would be a mistake to put the fish management agency in the same department with the water pollution control agency. There was a feeling that the fish interest might be compromised. But the real question is where the compromises, reconciling competing needs for water, ought to be reached.

It is my judgment that ecologically valid decisions are more likely to be reached within the administrative structure--in collaboration rather than in conflict. The appeal to public emotion in the course of a quest for scientific truth is not likely to be as helpful as an organizational structure that focuses administrative responsibility for related functions.

Although these issues are, for the moment, settled in Wisconsin, it is virtually certain that similar issues will appear from time to time. The administrative structure is a dynamic thing. The nature of activity in state government reflects the changing multiplicity of needs in our society and it will never be possible to establish neat, self-contained, and mutually exclusive departments.

Natural resources management in state government will not be able to avoid significant independent operations by state universities--as in agricultural, water, or forest research. The challenge is to integrate or coordinate the academic and administrative enterprises.

A more challenging organizational problem is that of providing the mechanism by which seemingly unrelated programs are correlated whenever correlation is appropriate. A recent magazine article was entitled "Pollution and Poverty, A Strategy of Cross-Commitment." The thesis

was simple: that we should design our programs of pollution abatement to make a maximum coincidental contribution to the abatement of poverty.

This requires, in addition to a unified department of natural resources, a mechanism (such as a governor's council) for interdepartmental coordination. And it may be facilitated by an alert and imaginative budget staff.

It is not clear that Wisconsin has solved these problems, but at least they have been recognized. If resource management in state government is to become mature, it must surely address itself to an approach managerially comprehensive enough to avoid the piecemeal errors of the past.

THE POLITICS OF FEDERAL RESOURCES ORGANIZATION

Harold Seidman
National Academy of Public Administration

Sixty-one years ago President Theodore Roosevelt proposed to the Congress that a single executive agency be established to coordinate water resources development and administration. President Roosevelt argued that:

> No single agency has been responsible under the Congress for making the best use of our rivers, or for exercising foresight in their development. . . . We shall not succeed until the responsibility for administering the policy and extending the plan is definitely laid on one man or group of men who can be held accountable.

Roosevelt's words have a familiar and modern ring. His arguments have been echoed time and again and expanded upon in various forms by countless distinguished study commissions, legislators, and scholars. Presidents Harding, Hoover, and Eisenhower each went so far as to recommend that the civil works functions of the Army Corps of Engineers be transferred to the Department of the Interior, although it should be noted that Presidents Hoover and Eisenhower did so shortly before they were to retire from office.

We have made some progress with the establishment of the Tennessee Valley Authority, enactment of the Outdoor Recreation Act of 1963 and the Water Resources Planning Act of 1965, water pollution reorganization, and the development of improved arrangements, short of consolidation, for the management of public lands and forests. But we are no closer to centralizing responsibility for resources planning and administration than we were in 1907. Sponsors of bills now before the Congress to establish a Department of Natural Resources are under no illusions about the ultimate fate of their proposals.

Organization and Policy of Federal Resources Programs

If it were our intention in organizing federal resources programs deliberately to violate each of the organizational commandments handed down by Herbert Hoover, we could not have done a better job. Few would dispute the Hoover Commission's findings that existing organizational arrangements result in poor planning, overlapping and duplication, working at cross-purposes, and wasteful competition. It by no means follows, however, that the simple act of grouping water resources agencies (the commission minority would have included land agencies) in a single executive department would produce the result sought by the commission--"elimination of disastrously wasteful conflict."

The myth persists that we can resolve deep-seated and intractable issues of substance by reorganization. Our organizational ills are the reflection, not the cause, of our inability to come to grips with and to reconcile basic conflicts concerning land and water rights, priorities of use, cost sharing, method of congressional authorization, and local vs. federal control. Probably in no other program area are the policy and organizational issues so closely intertwined.

One of our elder statesmen, Dean Acheson, vice chairman of the first Hoover Commission, has warned that "organization--or reorganization in government--can often be a trap for the unwary." He went on to say that

> . . . the relationships involved in the division of labor and responsibility as well as the channeling of communications in any activity is far more subtle and complex than the little boxes which the graph drawers put on paper with their perpendicular and horizontal connecting lines.

Organization is not neutral. Each of the resources boxes--interior, agriculture, the Army Corps of Engineers, and a latecomer, the Department of Housing and Urban Development--represent institutions with divergent histories, legislative charters, sets of priorities, administrative habits and, perhaps most important, separate although sometimes overlapping constitutencies in the Congress and outside community. Proposals to shuffle the boxes and straighten and simplify the connecting lines immediately raise the questions: Who gains? Who loses? Who controls?

The contestants are playing for high stakes. Federal outlays for conservation and development of our natural resources are estimated at almost $2.5 billion for fiscal year 1969. In determining how these funds shall be allocated, hard choices must be made among competing and often conflicting land and water uses. Cost benefit analyses and the more sophisticated analytical techniques such as PPB can assist materially in making discriminating choices among alternatives, but the ultimate decision necessarily will require a political judgment. We will never see the day when a computer can tell us whether lands should be drained for flood control, reclaimed for agriculture, or maintained as wet lands to preserve unique and valuable forms of aquatic life.

Whatever may be their philosophies as preservationists, conservationists, or developers, or their interests as farmers, stockmen and cattlemen, sportsmen, power consumers or producers, or municipal and industrial water users, each of the contestants has endeavored to manipulate the organization structure and assignment of program responsibilities so as to enhance his power and position in the decision-making processes within the executive branch and the Congress. Each has sought and found an advocate.

As early as 1905, the desire to influence organizational focus and environment motivated the transfer of the national forest reserves from the Department of the Interior to the Department of Agriculture. Conservationists deeply distrusted the Department of the Interior and complained that it "is organized not to manage natural resources, but to dispose of them." Gifford Pinchot argued that "land office business"

in common parlance had come to mean large and rapid sales. The expression was derived from the Department of the Interior's General Land Office. Secretary Ickes' attempt to recapture the Forest Service was thwarted by the congressional committees and outside organizations which had developed close and mutually supporting alliances with the Forest Service in the pursuit of common objectives. These included such diverse and influential groups as the Society of American Foresters and the Association of State Foresters; the Izaak Walton League; the American Farm Bureau Federation; the National Lumber Manufacturer's Association; and the National Livestock Association.

The current organization of federal water resources functions results from a series of laws, each of which was directed toward a single objective, such as improvement of rivers and harbors, reclamation, flood control, and watershed protection. Given the original limited missions, the logic of assigning rivers and harbors and flood control functions to the Army Corps of Engineers, reclamation to interior, and watershed protection to agriculture could not be reasonably disputed. West Point was our first engineering school, and the corps alone among federal agencies at the time possessed adequate engineering competence. The lands to be reclaimed were mostly arid western lands under interior's jurisdiction. Agriculture pioneered a watershed improvement program which extended to the major watersheds of the Mississippi and its tributary the Missouri.

In contrast to the early laws directed toward a single objective, the Federal Power Act of 1920 expressed a multipurpose concept of river basin planning and development. The clientele groups and congressional committees who had come to identify their interests with those of the corps, interior, and agriculture did not object to the new concept--provided that it was carried out on their terms and by "their" agency. Power was so evenly balanced among them that none could hope to wrest control of multipurpose development. Instead of awarding custody to a single agency or dividing the baby in three parts, the Solomon-like decision was to produce triplets. The corps, interior, and agriculture have obtained parallel, and in some respects identical, authorities for multipurpose development of water resources, although reclamation's jurisdiction is limited to the western states and agriculture's authority by the 1954 act is limited in terms of the size of the structure for watershed improvement. A somewhat comparable evolution has occurred with respect to public lands and forests, which are also managed for multiple purposes.

Except when all parties are agreed on the dominant project objective, the decision as to which agency will undertake a particular multipurpose project requires a time-consuming, complex, and often bitter collective bargaining process. At some point the President must make a determination but it is rarely final and can be upset by appeal to the Congress. Even the "peace treaties" negotiated by the corps and reclamation under which one assumed responsibility for construction and the other, responsibility for the operation and maintenance of certain projects have been negated by subsequent congressional actions.

I have alluded from time to time to the Congress and congressional committees. Congressional organization and executive branch organization with respect to natural resources are so closely interlinked that they cannot meaningfully be considered separately. Control over

projects and project authorizations and funding is the essence of congressional power. Jurisdictional rivalries within the executive branch pale by comparison with those among congressional committees. The schism in the executive branch has its counterpart in the Congress where the Public Works Committees exercise jurisdiction over the corps, interior committees, over reclamation, and agriculture committees, over soil conservation service and other agencies of agriculture. The one exception is the assignment of responsibility for the Forest Service to the Interior Appropriations subcommittee.

Congressional reorganization is much too sensitive even for the boldest congressional advocates of a Department of Natural Resources. Senator Edward Kennedy reassured the Congress that the sponsors of the Moss bill had no such intention and that because of the special expertise acquired by the committees and their staffs "legislative authority should remain where it is, relying upon effective administration of the programs to provide essential coordination." With at least six congressional "bosses," the position of the Secretary of Natural Resources would be somewhat less than ideal.

The Kings River project in California is often cited as a classic illustration of the inherent weaknesses of federal resources management. More significantly, this case history shows the linkages between organization and policy. The Bureau of Reclamation and the Corps of Engineers were in agreement on the design of the project. The differences resulted from the conflicting water-use philosophies developed by the two agencies in keeping with their individual legislative mandates. Reclamation emphasized water conservation and maximum water use, and the corps, local flood protection. This was no bureaucratic contest for power. Economy and efficiency were not the issues. The significant disagreements centered on the policy implications of the assignment of organizational responsibility. These included differences with respect to repayment and distribution of benefits, restrictions on acreage and speculation, operation of irrigation facilities, power development, and method of congressional authorization. Such issues cannot be resolved by reorganization, and regardless of where the initial decision is made, the final arbiters will have to be the President and the Congress.

Former congressman and TVA director Frank Smith has concluded:

> Ideally, the old concept of one single department of conservation and resource development, responsible for all Federal planning and action in the field, might still work if it could be achieved by waving a magic wand. It simply cannot be achieved, however, without a bloody, bone shattering fight, which would leave the landscape so scarred that the conservation cause would be lost in the critical years immediately ahead.

What then are the alternatives?

The status quo has its strong defenders. Competition is believed to stimulate initiative and greater responsiveness to state and local needs. The diversity of federal resources agencies and programs increases the options available to state and local authorities and minimizes the potential for federal domination.

Consolidation

We have been able to achieve consolidation in two geographic regions. The TVA was established in 1933 to carry out all federal functions essential to a unified program of resource development, use, and conservation. Efforts to duplicate the highly successful TVA experiment in the Columbia and Missouri river basins ran afoul of the same forces which have blocked a Department of Natural Resources. Apparently when they created the TVA they broke the mold.

The Delaware River Basin Commission, established by interstate compact in 1961, represents another and less drastic approach to geographic consolidation. The commission enjoys a broad delegation of federal and state powers, but it does not replace existing agencies. Thus far it has not engaged in direct operations, but it has adopted a comprehensive river basin plan to which actions by federal and state agencies must conform. The Delaware River compact does take into account the growing importance of state and local water resources functions, particularly with respect to urban and industrial water supplies, flood plain zoning, and water pollution prevention and control. Given the difficulties of negotiating interstate compacts, the Delaware River Basin Commission is also likely to remain one of a kind.

In the absence of central responsibility for resources policy and management, the Bureau of the Budget has endeavored to fill the vacuum. The budget process, however, is at best an awkward instrument for developing a national resource program. For a time, under Bureau of the Budget Circular No. A-47, the bureau attempted to set uniform standards and harmonize the inconsistencies and conflicts among federal laws and policies concerning the planning and evaluation of water resources projects. As might be expected, the circular was highly controversial and in 1962 President Kennedy bowed to the congressional demand that the circular be rescinded.

The Sharing of Power

Current approaches to improving resources planning and coordination recognize that agencies can be persuaded to share powers, but not to surrender them. Both the Council on Recreation and Natural Beauty and the Water Resources Council are assemblies of equals and decisions are to be reached by consensus.

The Outdoor Recreation Act of 1963 authorized the Secretary of the Interior, in consultation with other federal agencies, to prepare a nation-wide plan for meeting national needs, taking into account the plans of other federal agencies and state and local governments. Coordination among federal agencies is accomplished primarily through the Council on Recreation and Natural Beauty established by executive order. The council does not have authority to issue orders to an agency head, but through it agency heads receive staff assistance in analyzing common problems and come into agreement on policies, programs, and major operating issues affecting their outdoor recreation activities.

The Water Resources Planning Act of 1965 was the culmination of 15 years of study, experimentation, and negotiation involving the Congress, federal agencies, and the states.

Under the act state representatives are able, for the first time, to participate in comprehensive river basin planning as equal partners of the federal representatives. The act authorizes the establishment of river basin commissions to be composed of a chairman, appointed by the President, and representatives of interested federal agencies and the participating states, appointed by the agency heads and governors respectively. Four commissions are now in operation. The commissions prepare joint, coordinated, and comprehensive plans for federal, state, interstate, local, and private development of water and related land resources and recommend priorities for action. The commissions' recommendations are not binding upon any of the members, and the act directs that their methods of operation be designed to achieve a consensus with respect to their recommendations. Each member reserves the right to present his views independently.

The act also established the Water Resources Council composed of the Secretaries of Interior, Agriculture, Army, Health, Education and Welfare, and the chairman of the Federal Power Commission. The chairman of the council is designated by the President.

The council is responsible for (a) reviewing the plans and recommendations developed by the river basin commissions and making such recommendations to the President, the Congress, and the states as it deems desirable in the national interest; (b) assessing, at least biennially, the adequacy of water supplies in relation to requirements in each region of the country, taking into account the national interest as it is affected by conditions in the region; (c) maintaining a continuous study of the relation of regional and river basin plans to the requirements of larger regions; (d) appraising the adequacy of federal machinery for interagency coordination; (e) making recommendations to the President with respect to federal policies and programs; and (f) *establishing, with the President's approval, principles, standards, and procedures for federal participants in comprehensive regional or river basin planning and project formulation and evaluation.*

Final judgments concerning the Council on Recreation and Natural Beauty and the Water Resources Council must be withheld until we have had more experience. If they are evaluated as embryo Departments of Natural Resources, they certainly will be judged a failure. Even with its far reaching authorities and responsibilities the Water Resources Council remains an interagency committee with all the inherent strengths and weaknesses of such bodies. The two councils should be judged for what they are and what Congress intended them to be--not in some other terms.

We are dealing here with politics in the most fundamental sense. Politics is the art of the possible. In the words of Frank Smith:

> The paths worn by the pork barrel process in both the legislative and executive branches are too deep to be readily erased. To make the most effective attack on the great problems which demand immediate planning and the earliest possible action, conservation forces cannot afford the luxury of leisurely regrouping. The fight has to be made with the tools at hand.

PROGRAM BUDGETING TO COORDINATE RESOURCE USE

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Natural resources are conceived of by men for men. The air, water, soil, forest, fish, game, and man himself are conceived by man as a heritage, which he uses to create wealth. Then, he uses some of this wealth to conserve these resources for future years of his life and for future generations.

This is a kind of cycling process, a system if you will, the bounds of which may stagger the imagination. It is only man among all resources who can conceive ideas and then articulate them. In this talk, we will examine program budgeting to see if it could help coordinate our use of natural resources.

Program Budgeting: What It Is

Program budgeting is the assembling of information into an orderly structure according to agency objectives and grouped about endproduct oriented programs. Program budgeting covers a multiyear programming period; a typical budget may include three past years and five future years. The program budget comprehends both outputs of the programs and money and manpower costs. Whenever possible, the endproduct outputs are quantitatively measured; the costs are total system costs, including those contributed from outside the agency. Thus, program budgeting is tailored to executive decision making. It is structured by defined objectives, which are translated into quantitatively measured endproducts whenever possible, associated with the total of all costs.

Program Budgeting: What It Does

Program budgeting is the preparation of information for decision-makers that enables them to allocate resources according to their objectives, measured by the outputs of programs. The program budget displays the long-term consequences of present-day decisions. It can be the basis for determining mixes of activities of several agencies or several locations to meet objectives. It can be the basis for identifying gaps or overlaps in activities. Program budget puts the plan and the program before the appropriation.

Program Budgeting: How To Do It

The program budget is built by a structure that coincides with the agency's major mission. In the Department of Agriculture, for

example, Secretary Freeman has six major missions for the department by the year 2000. In the jargon of the planning-programming-budgeting system (PPBS), these missions are called program categories. These major missions are in turn divided into more explicit program planning packages, called program subcategories, each having its own statement of objectives and output oriented targets. An example of the program structure is displayed in Figure 1.[1]

A program structure is not a permanent thing. In its development, the executive and his staff must tailor several structures, each time considering agency objectives and the corresponding endproduct outputs.

Not all endproducts can be quantified. The attempt should be made to identify endproducts of program packages that would give a closer approximation of the success in attaining a particular objective or mission. For some products, there are units of measure that are both good proxies for estimating program success and for which data are or could be collected.

Since the data to be assembled are not only endproduct outputs but also costs, and over long periods of time, a modern information system would be useful. Information systems often imply some kind of computer capability. The important thing is to have a means of assembling relevant output and cost information for a multiyear period at a degree of accuracy that will satisfy the agency.

Although most agencies of the federal government have instituted program budgeting as part of PPBS, the federal budget considered by appropriation committees of Congress continues along the more conventional lines. To facilitate translation from the program budget to the conventional budget, cross-walks are prepared. These are two-way tables that display either inputs or outputs according to both budgeting systems. An example of a crosswalk is shown in Figure 2.[2]

Program Budgeting: Who Makes It Run

Budgets are made by people; program budgets entail the work of people with many kinds of talent. Activity planners within the agency are closely acquainted with the work that produces the various products. On a continuing basis, they plan the activities that contribute to the effectiveness of an agency's program. They assess the effect on output of a change in the mix of men or money; or the effect of a change in the output target upon the number of men and the amount of money needed to reach that new target level.

Cost accountants play an important role. The program budget depends upon the availability of good estimates of unit cost of production. In

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[1]William A. Carlson, *Planning-Programming-Budgeting System in the U. S. Department of Agriculture* (Washington: U. S. Department of Agriculture, 1968), p. 24.

[2]*Ibid.*, p. 9.

FIGURE 1

USDA PROGRAM STRUCTURE
(Dollars in Millions)

PROGRAM CATEGORY Program Subcategory	FY 1967 Actual
INCOME AND ABUNDANCE:	
Farm income	$3,783
Agricultural Production Capacity	591
Agricultural Marketing and Distribution System	79
Total, Income and Abundance	4,453
GROWING NATIONS--NEW MARKETS:	
Food for Freedom	1,618
Export Market Development	20
Agricultural Development	3
International Agricultural Services	7
Imports	13
Total, Growing Nations--New Markets	1,662
DIMENSIONS FOR LIVING:	
Diets and Nutrition	823
Health	73
Education and Training	24
Services for Living	49
Total, Dimensions for Living	970
COMMUNITIES OF TOMORROW:	
Community Development Services	22
Housing	131
Public Facility and Business Expansion	561
Resource Protection and Environmental Improvement	220
Recreation, Wildlife, and Natural Beauty	53
Timber	302
Total, Communities of Tomorrow	1,290
RESOURCES IN ACTION:[a]	
Resources for Agricultural Production	(416)
Resources for Timber	(302)
Resources for Recreation, Wildlife, and Natural Beauty	(53)
Resources for Community Development	(58)
Resource Protection and Environmental Improvement	(220)
Total, Resources in Action	(1,049)
SCIENCE IN THE SERVICE OF MAN:[a]	
Income and Abundance	(178)
Growing Nations--New Markets	(7)
Dimensions for Living	(90)
Communities of Tomorrow	(24)
Resources in Action	(61)
Total, Science in the Service of Man	(361)
GENERAL SUPPORT:	
General Administration	4
Program Support	23
Total, General Support	27
TOTAL, USDA	8,401

[a]The figures in these Categories are included for display purposes only, and are not included in Department totals. They represent a reclassification of certain programs included in the other Categories.

FIGURE 2

CROSSWALK--BUDGET YEAR
(Dollars in Millions)

Programs	Research Agency	Credit Agency	Technical Assistance Agency	Statistical Agency	Land Mgt. Agency	Total
Farm income	$ 10	$2,500	$ 20	$ --	$ --	$2,530
Agricultural production capacity	230	100	26	15	11	382
Agricultural marketing and distribution system	50	--	9	12	--	71
Total	290	2,600	55	27	11	2,983

most cases these estimates come from past experience; the data gathered and assembled by cost accountants and turned over to the planners for projecting future outputs.

Program budgeting needs program analysts and budget analysts. While the program budgeting system requires a large amount of explicit data, it also requires intelligent and thorough analysis. Traditionally, the budget analyst has been largely concerned with the input side of the program budget. In programs, such as those in natural resources, analysts who are educated or well acquainted with the field of resources, as well as with economic analysis, are needed for assessing the future demands for output of the various missions and for considering alternate mixes of program packages.

Analysis, cost accounting, and activity planning would be of no avail if not used by the decision maker. Program budgeting implies an executive who is comfortable in a world of input-output relationships, who is capable of assessing the future consequences of present decisions, and who will make explicit choices.

Other Pieces of a Larger System

While program budgeting can be initiated by itself, it must eventually dovetail with long-term planning. We must consider the long-term demand for these natural resources. In a larger sense, natural resources contribute to the economic development of a firm, a state, or a nation. Some natural resources are exchanged in the market place, hence, pricing is a factor in demand analysis.

Long-term planning depends on inventories of natural resources. For example, the Forest Service of the Department of Agriculture conducts a timber inventory on a state-by-state basis. This is a periodic inventory with an average cycle of 10 to 12 years. Other agencies in the federal government, regional agencies, and states all conduct resource inventories. Coincident with resource inventories is the identification of alternate sources of supply of resources. Some resources may be substitutes for others or they may be found in different geographic locations. All are identified in long-term planning.

Once demands have been forecast and supplies have been inventoried, there is an opportunity for analysis of various ways of producing a given level of resource. Natural resources that can be priced are subject to benefit-cost analysis. When outputs cannot be priced or even measured precisely, cost-effectiveness analysis may be used. Since investments for the production of many natural resources do not pay off for long periods of time, discounting to determine present values is necessary in both methods of analysis. Another analytical device now being used in some timber supply studies is the internal rate of return on investments. This kind of analysis generates the estimated rate of return on flows of investments and resource outputs over long periods of time.

The point about long-term planning and analysis is that the results of these endeavors help produce better program budgets.

I have stated earlier that the program budgeting period includes past years of budgeting experience. Thus, some sort of management control of post-budgeting activities is implicit in a program budgeting procedure. The Department of Agriculture has initiated a Program Attainment Reporting System that is structurally similar to the program budget, having the same units of output. Each agency within the Department submits a monthly attainment report comparing its actual output with its planned output. In this way an agency has the opportunity of measuring its production and of making adjustments before the end of a fiscal year. Similarly, accrual or cost accounting systems, with monthly or quarterly statements, provide managers with comparisons of actual and planned costs for jobs. The data gathered both through the accomplishment reporting and cost accounting systems will be extremely useful in preparing program budgets for subsequent years.

Program Budgets as a Unifying Device

Program budgets can be used as a means of bridging formal organization lines. Within a state, several agencies may deal with the same resource. Or several agencies may engage in the same activities but for different purposes. The program budget provides the decision maker with the information which enables him to array the budget proposals in several different ways so that he may better assess the consequences of a particular set of budget allocation decisions. The program budget can maintain the integrity of the organizational structure and provide an unusual output oriented overview at the same time.

RESOURCE BUDGETS--FISCAL AND ECOLOGICAL ESTIMATES

Freeman Holmer
Administrator, Division of Resource Development
Wisconsin

In discussing the general issue of organization of state government for resource management, I touched only lightly on the vertical distribution of governmental responsibility in the area of natural resource management. The role of the federal government is broad and expanding--but it is essentially beyond our sphere of concern today. Rather, let me underscore the significance of the decisions with respect to the division between state and local units of government in such management.

The provision of county parks, municipal water supply systems, metropolitan sewerage treatment, the operation of soil conservation or irrigation districts, and many other local government activities is a part of the totality of resource management under the jurisdiction of the states. The present patterns of the distribution of these political powers are compounded of many factors, not the least of which is political tradition.

In somewhat similar fashion, the state role in fish and game management, forest conservation, and certain other practices has been constrained by the patterns of the past, notably the use of earmarked revenue. The idea that the forest products industry should carry a major share of state action in protecting and propagating forests is not far off the mark. The reliance on hunters' and anglers' licenses for support of state programs designed for their special benefit makes equal sense.

Let me digress to observe that the case against earmarked funds is not as clear-cut as many believe. Although there is a theoretical advantage in requiring every program of a government to compete each time against every other program for its share of the total resources, practical considerations intervene. Legislators believe in the theory, but the pressures on their time and attention limit the number of decisions they can make during a legislative session.

As a matter of practical fact, there is a rough justice in continuing existing programs at existing levels--making adjustments "at the margin." It is politically easier to raise license fees than it is to support an expansion of the same program financed from the general fund.

I begin this discussion of resource budgeting, therefore, with reference to two significant facts of political and fiscal life. Earmarked funds and local responsibility for natural resource functions are obviously significant elements in budget planning for natural resources management but they ought not be taken as immutable.

Budgetary Issues in Natural Resources Management

What the budget analyst for natural resources agencies must assure himself is that the agencies have recognized the real fiscal issues and are proposing programs which are both fiscally and ecologically valid.

Issues in water resources administration

My own sphere of responsibility is a concern for water resources management. The issues here cry out for comprehensive and creative analysis. We must analyze and evaluate a great many established practices. Take, for example, the business of sewage treatment. There is, as many of you know, a tremendous interest in finding a more effective fiscal tool in the quest for clean water. We have been using state (and federal) grants to municipalities to encourage construction of treatment plants. We sugarcoat the industrial pill with some minor tax concessions for construction of pollution abatement facilities. This is probably not enough. For one thing, it encourages the proliferation of small (usually inefficient) facilities.

Out of this concern has come a call for development of a system of charges against any one discharging waste that degrades any public water. The goals of such a system would be to encourage private initiative and local action and maximize pollution abatement. Similar questions about existing procedures include weighing the relative merits of a permit system (which would bar all discharges except under specific conditions), against those of a system which permits discharges until damage has taken place.

A permit system or an effluent charge system seems clearly desirable, but they are economically and politically fragile. "A license to pollute?" Even with a fee, it somehow seems immoral and the possibility of inequity is very great. Still, the idea deserves exploration.

Appropriate jurisdictions

Another issue in this area relates to the establishment of appropriate jurisdictions. Watersheds and airsheds ignore local boundaries. The bulk of park users may be concentrated in a relatively restricted area without desirable recreation areas. Forest, fish, and game management have been recognized as state responsibilities because they are not easily assigned to local government. Resource planning (especially for water and recreation purposes) has been assigned in part, at least, to regional agencies.

Natural resource budgets, I am suggesting, should reflect a careful evaluation of the proper area for the administration of a function. In the case of sewers and public water supply, adherence to existing separate municipal jurisdictions may be quite wrong. Budget decisions ought to reflect a concern for means of adjusting administrative areas to relate to the areas of origin and of disposition of the wastes of society.

Integration of the state program

By now you realize that I do not propose to dispense any rules of thumb as to staffing or equipment patterns for forest or agriculture or

mining or other natural resource agencies. I believe it would be a fraud to do so. The resource inventory of every state is so different that I could not do so in a meaningful way. In reaching this decision, I do not mean to minimize the need for analysis to detect inefficiencies of planning for agency activity. Such study is important. Agencies can be overstaffed and overequipped and oversupplied.

But it is even more significant for you to focus on the integration of the state program--both internally and externally. I do not suggest that you substitute your judgment for that of the responsible agency administrators, but no responsible agency administrator will find your inquiries about interrelationships and seeming inconsistencies impertinent or unimportant.

Other Kinds of Budgetary Issues

In addition to the kinds of issues I have suggested earlier, let me suggest some of the other kinds of budgetary issues I believe you will encounter.

Benefit-cost ratios

Among these is the quicksand of benefit-cost ratios. This concept reminds us that a goodly share of the public expenditure for natural resource management is in the nature of an investment, and the investment frequently falls in the realm of public works. The justification of such works is not by faith but by benefits--real or imagined. The costs of a dam or a canal or any other facility can be estimated with some accuracy. This side of the equation is relatively straightforward. The assignment of dollar value to benefits is more treacherous. To borrow a gross federal example: Flood control projects provide substantial benefits in the protection of downstream property values. Now, however, after the investment of billions of dollars, property losses from floods are greater than ever. The reason, of course, is that the existence of flood protection encourages investment in property in the flood plain. There are those who would insist that a wiser public policy would be to restrict or forbid the placement of buildings of any kind in the flood plain.

Or assume that a hydroelectric or flood control dam will pay its way in a correlation of costs and benefits but in the process destroy a stretch of scenic but isolated river. How does one measure the cost of such a loss?

Consideration of long-range impact of proposed programs

To shift gears rather abruptly, consider the management of deer in the cutover forest lands of Wisconsin and other states. Here, surely, is evidence of man's ability to manage nature. But the secret of his success is in the fact that cutover forests offer almost precisely the environment most conducive to the maintenance of larger deer herds. This is not, however, a normal balance. In the future, if we choose to try to maintain deer herds at present levels, we will find the effort increasingly expensive.

Similarly, on Lake Michigan, two states are engaged in a massive and expensive effort to stock the lake with salmon as a part of the means to control the alewife population. So far, the project has been encouraging for virtually the same reasons the deer have multiplied--the forage is excellent.

In park management we are beginning to see another issue arising as we synthesize the camping experience, creating in wooded areas temporary canvas slums for three months of every year.

Balance is the essence of nature. Predators and prey, growth and decay, drouth and flood are natural. We can tamper and adjust only within very narrow limits without courting disaster.

The implications for natural resource budgeting are clear. Are we in possession of sufficient facts about the impact of a proposed program on natural resources to warrant moving ahead? In many instances, this test will suggest that our programs should be tentative and experimental rather than a total commitment.

The relationship of natural resource management to issues of state economic development is particularly close. It is not unusual, however, for natural resource agencies to proceed with their programs with minimal attention to the work of the economic planners. Let me leave that one just by stating it.

Data systems

Finally, I would address your attention to the budgetary implications of natural resources management information. My impression is that information about quantity and quality and costs and uses of our natural resources is, in most states, either desperately limited, inaccessible, or both. In this area of state government (as in other areas) it is possible to collect a great deal of perfectly useless data or collect it in forms that defy correlation and comparison.

The budget analyst is not responsible for the design of an appropriate information system, but his work will be greatly facilitated if such a system exists. He should, therefore, give particular attention to those portions of the natural resources budget that support the maintenance of a natural resources information system. Of course, the analyst must ask whether the system provides the information required for sound management decisions. He should also ascertain whether the data classification is integrated or compatible with federal and local schemes. It is legitimate to ask whether the information is collected and stored economically, if it can be retrieved efficiently, and if data useful to more than one state agency is easily available across departmental or divisional lines.

Conclusion

I seem to have been discussing policy issues. I do not deny it. (Nor do I apologize.) It is the business of the budget analyst whose assignments include natural resources programs to worry a lot more about the budget implications of policy questions than about staffing ratios and tables of equipment.

You must recognize the constraints of structure and tradition but must encourage their modification on occasion. You must be wary of the seemingly simple formulas that purport to weigh benefits and costs; you must be conscious of the delicacy of the balance of nature; you must relate natural resources management to plans for the state's economy; and you must help assure the availability of sufficient information on which to base resource management decisions.

DETERMINATION OF SUPPORT ALLOCATIONS AMONG THE STATE'S NATURAL RESOURCES ACTIVITIES

Jack Booher
Indiana Budget Director

As all of you well know, administrators of natural resources have experienced and will probably experience more changes in dealing with and financing of their programs than perhaps any others in state government. The changes in your role as budgetary analysts in implementing the needed program and financial rearrangements cannot be left to happenstance or present management-type studies. It must be an ongoing process. Also, regardless of the size of the organization, someone should engage in program planning, management analysis, and the development of sound financial structures.

Historic Appropriation of Funds

For the most part, financing for natural resources, as practiced, has been one involving dedication of revenue. Funds from certain specific sources could be used only in each particular area. In consequence each area develops as a separate empire.

I would like to outline the appropriation structure that was used before the reorganization of our Indiana Department of Natural Resources. The approximate yearly appropriations for operating expenses are shown to enable you to see the relationships[1] that existed:

Soil Conservation	Committee	$ 30,000	G
Soil Conservation	Districts	20,000	G
Soil Conservation	Watersheds	150,000	G
Department of Conservation	Forestry	850,000	D
Department of Conservation	Fish & Game Opr.	760,000	D
Department of Conservation	Fish & Game Enf.	870,000	D
Department of Conservation	Hunting & Fishing Sites	450,000	D
Department of Conservation	Entomology	90,000	G
Department of Conservation	Oil and Gas	100,000	G
Department of Conservation	Geology	480,000	G & D
Department of Conservation	Topographical Survey	50,000	G
Department of Conservation	Administration	180,000	G
Department of Conservation	Parks & Memorials	1,300,000	D

[1]The character of the appropriation is also noted by "G" (general fund) or "D" (dedicated revenue).

Flood Control and Water Resources		310,000 G
Water Resources	Administration	90,000 G
Water Resources	Ground Study	41,000 G
Water Resources	Gauging Stations	48,000 G
Water Resources	Lake Stabilization	24,000 G

In each instance the appropriations from dedicated funds for operating expenses had to be taken into consideration before funds could be appropriated for capital projects. Oftentimes one division had more funds available for operation and construction than it could possibly use. Other divisions were barely able to meet operating demands. Management was strangled; integrated and multiuse planning was nonexistent, and coordination of staff and objectives, impossible. In many instances the programs that were carried on were a direct result of federal legislation, most of this federal legislation being "pork barrel" type projects to be matched with state funds. The state in this case really did not have an opportunity to set its own priorities, but only that of trying to meet an obligation to utilize available federal funds. I do not wish this presentation of the case to be interpreted as being against these projects but only as a statement that the state was often required to commit funds for projects before it had an opportunity adequately to assess its position.

The Reorganized Department

The present appropriation structure reflects reorganization:

Department of Natural Resources--	
Administration	$ 270,000 G
Land, Forests, Wildlife	490,000 G
Water and Mineral	810,000 G
Geology Division	525,000 G & D
Soil Conservation	190,000 G
Reservoirs	320,000 D
State Museum	150,000 G
Forestry Division	880,000 D
Fish and Game Enf.	1,230,000 D
Fish and Game Opr.	1,300,000 D
Parks and Memorials	1,460,000 D

Under the reorganization the programs that received general fund appropriations were much broader in scope, but still the dedicated funds could be used only for specific purposes. Further complications have entered the picture with the construction of multipurpose reservoirs. These reservoirs needed both operating and capital improvement funds in order to meet the demands of our society. What source of funds could be used? The answer as found by the General Assembly, of course, was based on solid, sound judgment. After meeting the needs of two of the dedicated fund divisions, it was decided that reservoirs could be financed 35 percent from the Fish and Game Division and 65 percent from parks and memorials funds. By doing this we were able completely to strap the operations of three divisions instead of two.

The mix of general and dedicated funds can also cause many problems in central office services performed by the Department of Natural Resources. What methods should be used in determining the appropriations from dedicated funds for engineering services, accounting services, and purchasing? Are these dedicated funds supposed to pay their full share? How do you treat a proposal to set up an elaborate communications system that is a contact with all of the various divisions of the department? I think these questions and many others, which I have not raised specifically, are the types of questions which call for aid through the techniques of management, accounting, and budgeting.

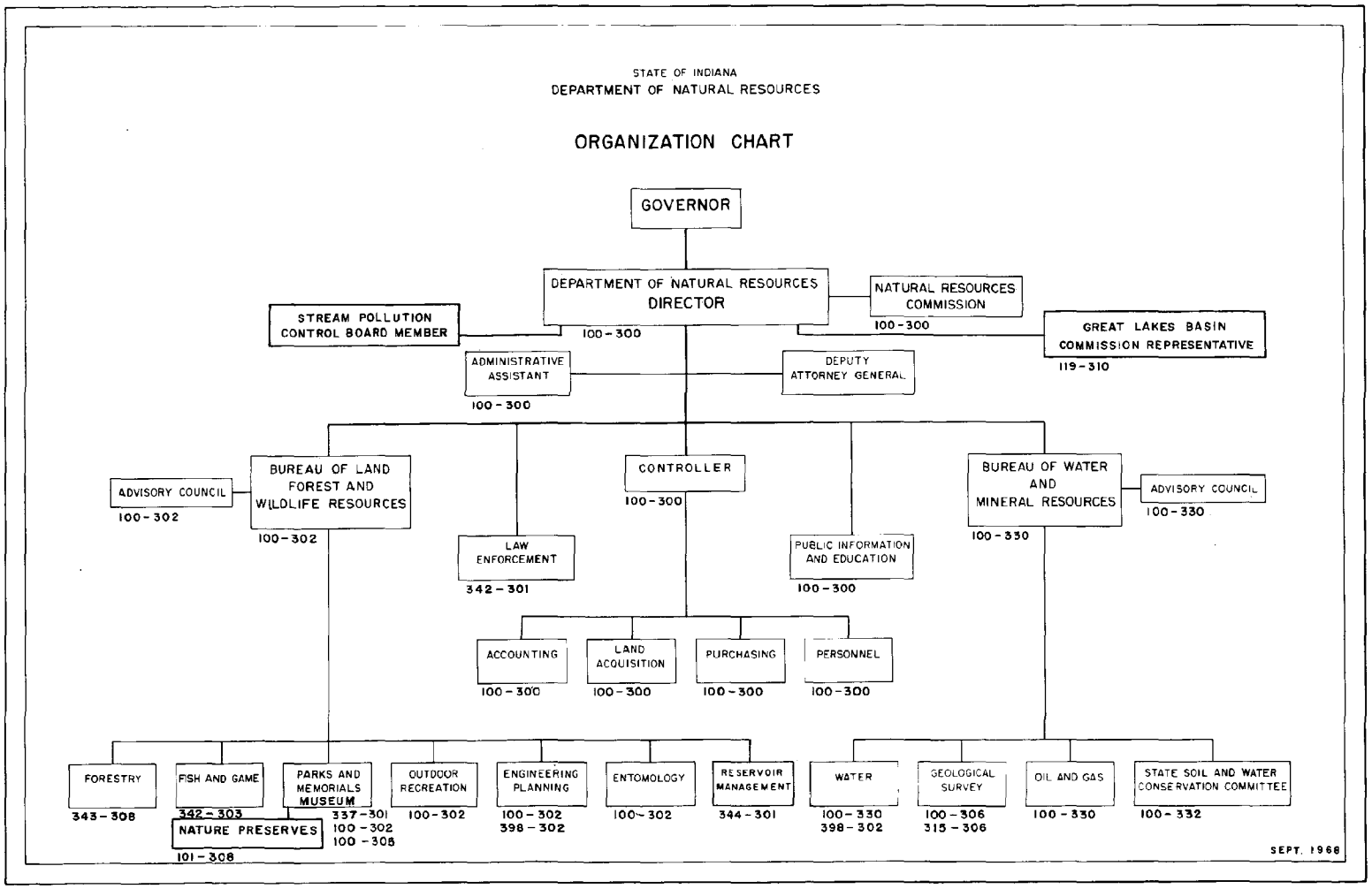
The first problem we face is the use of the general fund. Most legislators feel that this fund, which is of course limited, is not a prime resource to be utilized in conjunction with dedicated funds. On the other hand, the special interest groups feel that the earmarked funds should be spent in only the area in which they were collected. We have here two forces pulling in opposite directions.

To me the complications and ramifications of the new type of multipurpose reservoir, a natural resource property, have demanded that appropriating and budgetary techniques be completely changed. Many of our forestry division landholding areas are now being utilized by people for hunting, fishing, boating, swimming, camping, and almost any other kind of outdoor recreation that you wish to name. In fact these areas are the same as our state parks. Our reservoirs being built are all designed for multipurpose use.

Monroe Reservoir is an example of the complex problems that are created by the multipurpose reservoir. The reservoir complex is located in south central Indiana and covers over 25,000 acres, of which 10,750 acres are covered with water at normal pool elevation. Intensive use sites in the area include three major recreation areas, a major forest area, three upland game hunting areas, and several launching ramps with adjoining parking lots and facilities.

Forestry lands must be managed by the professional forester; recreational facilities, operated by the park specialist; and fish and game areas, attended by the biologist. While these professionals are within the Department of Natural Resources, they must be brought together under one management in order to insure proper management practices and control in the case of the reservoirs.

Why then do we maintain our landholding divisions as such a separate entity for operation and source of funds? Why not make this Department of Natural Resources a single department with a defined purpose?



OPERATING APPROPRIATION ACCOUNTS AS LISTED.

ALLOCATION CRITERIA FOR NATURAL RESOURCE PROGRAMS

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> It is the clear duty of Government, which is the trustee for unborn generations as well as for its present citizens, to watch over, and if need be, by legislative enactment, to defend, the exhaustible natural resources of the country from rash and reckless spoilation. How far it should itself, either out of taxes, or out of State loans, or by the device of guaranteed interest, press resources into undertakings from which the business community, if left to itself, would hold aloof, is a more difficult problem. Plainly, if we assume adequate competence on the part of Governments, there is a valid cause for *some* artificial encouragement to investment, particularly to investments the return from which will only begin to appear after the lapse of many years.[1]

A growing population and an expanding economy are exerting increasing pressure on the resources entrusted to governmental agencies. To maintain the quality of natural resources demanded, powerful and sophisticated planning tools are required. Accordingly, the allocation problem appears to be one of discovering appropriate decision rules that would point to the action to be taken in the present, and in each subsequent period, and that are compatible with attainment of some future goal or mission.

These rules do not fall out readily from benefit-cost analysis, cost effectiveness studies, welfare-economics, or micro- and macroeconomics, McNamara and Rand Corporation notwithstanding. However, a rationale that embodies all of the above criteria allows a partial analysis that may result in a near optimum allocation of resources. This can best be accomplished by bringing into government the most modern management techniques available. But such introduction will *not*, of course, guarantee near optimum allocation.

Consider a specific area of land with some unique natural phenomenon; for example, a virgin stand of redwoods or a vast area of unspoiled scenic beauty. Let us assume further that there are two possible uses of the land. One use, such as a wilderness area, is consistent with preserving the natural environment; the other use, strip mining or possibly destructive logging causes adverse and irreparable damage to the land.

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[1] A. C. Pigou, *The Economics of Welfare* (4th ed.; London: Macmillan Company, 1960), pp. 29-30.

If the criteria for selecting one of the above activities were the activity having the greatest benefit-cost ratio, the use with the highest present value net of costs would be undertaken. If the use that promised the highest benefit-cost ratio is the use that is incompatible with preserving the environment, would it necessarily follow that the choice allocated the resource efficiently?

Benefit-cost analyses, as yet, do not ordinarily take into account certain aspects that are both legitimate social values and relevant to the decision maker.

First, it can be argued that the wilderness area has no close substitutes, while alternate sources of supply of natural resource commodities are readily available. Plastic and steel compete with lumber, but a Grand Canyon once destroyed is lost forever.

Next, since the gate receipts obtained from the use favorable to the preserving of the natural environment would not equal the total social value of the resources, a benefit-cost analysis of the two uses is not comparable.

An economic allocation would require provision to be made for the entire gamut of individual tastes in proportion not only to their representation in the population but also the intensity with which they are experienced. Using this general criterion, a public agency confronted with a choice between providing a good or service that appeals to many or an alternative that pleases a small minority would not necessarily choose what is favored by the many.

Reforms need to be made at the grass roots level to further incorporate this criterion of public taste into the present planning-programming-budgeting system. These include improved mechanisms to transmit downwards information on what is going on in the national or state capitols and better means of transmitting upwards public preferences. To some extent, the former function seems to be increasingly filled by the popular weekly news magazines--although it is doubtful whether these give a sufficiently technical picture of the issues to permit informed judgments. The latter function is partially filled by national poll-taking services, but the same criticism applies. The most powerful pressure for these improvements is likely to come as the increasingly large proportion of college graduates in the population begins to make its influence felt.

Among the assumptions underlying criteria for allocation, then, we include: (a) clearly enunciated management objectives concerning natural resources; (b) a means for the public to state its preferences; (c) economic decision rules to set priorities, modified to include social values (efficiency and equity) and including a delineation into reversible and irreversible decisions; (d) management systems to move the information, perform the arithmetic, and measure the effectiveness of performance; (e) willingness and competence of career officers to prepare allocation proposals using these techniques; and (f) courage of executives and legislators to allocate, using the new decision rules. Among the actual criteria for allocation are: (a) the demand-supply outlook for natural resources, actual and relative; (b) the substitutability among resources; (c) opportunities to optimize production of

several resources by joint production or multiple use; (d) the cost-effectiveness of alternate ways to increase the supply of resources; and (e) the reversibility of allocation decisions. The Hetch-Hetchy Valley of California may never be seen again; it is under water.

The list may be contracted or expanded. But we do not have an overall model for relating the criteria, or for assigning priorities. If and when such a model becomes available, the judgment of the decision maker cannot be replaced. A strong dose of humility is necessary in these allocation activities.

DEFINITIONS-SYSTEMS-PROBES

T. P. Field
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University of Kentucky

We geographers are people greatly concerned with the organization of the surface of the earth. We don't care what the subject is so long as it occupies space and lends itself to analysis. The issue may be a valuable mineral deposit, or it may be an urban slum. Natural resources are noted for the space that they occupy and their influence on the manner of life of the people that have command of these assets. Need I remind you of the oil rich sheiks of the Persian Gulf or the resource-poor people of Lesotho in southern Africa?

Natural Resources: Definition of Terms

What meaning do you attach to the terms "natural resources" and "conservation"? Properly intoned they invoke an aura of respect and reverence that is usually reserved for mother, God, and country. With certainty we can say that the generations since Teddy Roosevelt have been indoctrinated in respect for natural resources and the means of their conservation. So thoroughly have we been indoctrinated that such a distinguished figure as Justice Douglas can induce his disciples to believe the dictum that all dams are the agents of destruction of ecological systems and of the birthright of generations to come.

As for the conservation of natural resources, many civilizations, Chinese, Roman, British, and our own, have considered the virgin forest an enemy to be destroyed. In China or northwestern Europe this story of destruction is 5000 years old. In our world the record involves but a fraction of the time; but, with our greater technical abilities, we have possibly been more effective. Conservation of natural resources means the maintenance of the productive capacities of these natural resources.

"Slash-and-burn" or "strip mining" sound like harsh and negative terms. In reality slash-and-burn can be used as a most efficient system of crop rotation, and some strip mining has the capacity to create a new and pleasing landscape. "Contour farming" or "reforestation," on the other hand, sound most acceptable. In practice we know that contouring is not the complete answer to erosion and that reforestation can create a horribly sterile environment. I would remind you that the term "conservationist" is frequently an honorary title for people who guide state funds into the development of game reserves. Now I would ask, what was conserved? What I am getting at is that we have a glossary of terms on this subject of natural resources and their conservation but that we are frequently careless as to what and how these terms are used to define. Not infrequently too, as noted above, we

allow some words to acquire negative connotations while others, with no better credentials, acquire a halo of goodness. Budget-minded people should be certain of the generic words that are used, and not let something slip by under the cover of a "good" sounding word or get clobbered by one of the so called "baddies." I think that we should look closely at the term "natural resources" to insure that in the future the term is not used as a gimmick or used to identify some fragment of an implied total.

Value of natural resources

Natural resources are the products of nature which have value to man. In their entirety natural resources are one great system which, in relation to man, operates under the terms of scarcity economics. The value to man may be measured in terms of economic worth, esthetic enjoyment, and, as we are beginning to realize fully, biologic necessity.

Economic worth

Natural resources in terms of economic worth must include common and rare minerals, natural vegetation (if there is any left outside of the tropical rain forests), surface water, ground water, the soil that is not too thoroughly altered by man, open space which is just as certainly subject to erosion as the soil, the atmosphere which we hope is a self-regenerating system, marine life, water surface and frontage, the electromagnetic spectrum, the varied forms of surface relief which includes the all-important level land, wildlife, scenery, and possibly the earth's electromagnetic field. Each of these items, and more, have measurable worth when the desires of man are implemented. Because they are interlocked rather than independent systems, implementation requires evaluation and compromise rather than unrestricted exploitation, i.e., conservation.

Very quickly the student of natural resources comes to realize what some community boosters refuse to see, that there are two basic kinds of economically oriented resources that are put to the service of the people; those which are exhaustible and those which we now assume can be maintained indefinitely. Only in terms of geologic time are minerals and fossil fuels created. Therefore, every ounce, pound, ton, or gallon extracted and used is irrevocably gone except as it becomes garbage, junk, and contaminants. It is just as certainly gone as the tipple and the town based on a mineral deposit left without a reason for being when the ore body is exhausted. On the other hand some resources can be maintained, reused, or recycled. These, in the main, are more nearly the products of man's ingenuity than the unadulterated products of nature. Let me illustrate this point with a question. Are the industries which are based on pine plantations down in southern Alabama using a natural or a man-made resource? Are there truly many instances where the climax forest is utilized in continuous harvesting? There are many "gray" areas in this subject and I think that it is right to question whether light sandy soils which are brought into high productivity through clover ley farming, fertilizers, and trace elements are natural or man-made.

By definition resources are things of worth. A deposit of hematite, for example, becomes an iron ore body only when it is proved to have economic worth. We have a stable list of resources which have value

today and, we have every reason to believe, will continue to be valuable into the indefinite future. We must remember, too, that there are potential resources which only await the advancing frontier of technology. The story of the limited use of uranium prior to the atomic age is too well-known to be repeated or enlarged. Not uncommonly these potential ores are the replacement, the more expensive replacement, of an exhausted supply.

Natural resources viewed in esthetic terms are not measurable in dollars per se, but rather concern man's unique ability to profit or benefit psychologically from the inherently beautiful and the unique products of nature. Even the discomfort of hours of solitary toil up a mountain or of standing in an elbow-to-elbow crowd to watch a geyser cannot completely destroy satisfaction and pleasure.

Biological survival requires that natural resources be put to the service of man. Viewed in a situation of polarity we can see extinction of the species on one end of the scale and increasing standards of living on the other. Much of the choice revolves around how to use our resources wisely. The immediate problem is water, and more people must be made to realize that the solution requires much more than the building of a dam or the irrigation of the desert. These artifacts create new systems whose spin-off and side-effects are not always blessings.

Systems of resource ownership and use

Lastly, in the area of definitions, is the question of ownership. Closely linked to ownership is the conservation concept of stewardship. Most of the new countries in the world, and many of the old, have settled this question. Not uncommonly natural resources, in broad definition, are the property of the state. Forest reserves, undeveloped land, water areas, the immediate coastal zone, the continental shelf, the air space, certain types of vegetation, and, most of all, anything beneath the surface are the property and responsibility of the state. The historical details of how the United States got its systems of ownership mixed up are hardly relevant here. The fact that we have a hotchpotch of many systems of ownership is relevant. Only in the truly socialistic states is the concept of state ownership *and* use-development fully implemented. State ownership alone, however, is usual. If this statement should create the impression that the United States system is a mess and other countries, even the socialistic states, are some sort of resource-use utopias, a sample of forced labor mining camps or ill conceived development projects will appreciably alter these impressions.

When the state owns and is responsible for the conservation of its resource base, exploitation is accomplished through a leasing system. The leasing system creates a competitive situation between the state and the prospective developer. A well-designed system can result in benefits to both parties. Poor contract design which leaves insufficient room for negotiation can lead to difficult situations. Grazing leases on marginal land which result in erosion due to over-stocking is an outstanding example. Another example is that of contracts which allow the hoarding of an asset. One of the world's greatest bauxite deposits is being worked today only because the government in question could deliver an ultimatium to the leasee: Start digging or your lease is cancelled. In this system the public and the private agencies maneuver for positions of greatest advantage. The striking difference is that the state can

usually think in terms of a longer time and of secondary advantages instead of the relatively short-term profit motive of the private developer.

The Future: Philosophy of Development and Use of Natural Resources

I would assume that everyone would agree that scrapping of our present systems of ownership, stewardship, and control would be too traumatic, even if we had reason to believe that someone had invented a perfect alternative. On the other hand, we are inviting an equally traumatic experience if we think that the rule books of resource development can remain unamended. Here in Kentucky the use of the "broad form deed" to mineral rights is a possible example. Our demands and our capabilities are far too dynamic for directions and controls to be based on yesterday's often peremptory assumptions.

What we need, first and foremost, is men with ideas and time to build and test new models. The term "research and development" is usually too specific as to subject matter to be used in this context. This is looking at the big picture, some hard-nosed philosophical propositions in developmental economics. Not just one proposition is involved here, but rather a series of alternates from which we could choose that which is most ethical to our culture. Agency umbrellas under which such persons could work already exist. There is an urgent need to get philosophy ahead of development. It is not inconceivable that without new philosophies the commune system of China will be the only alternate.

Technical capacities and accomplishment

Most of us get a vicarious thrill when we read of the lucky strikes of the gold rush days, but that was yesterday. Today, when we have the technical capacities of earth resources satellites and of other data collecting systems, of data processing systems, and of programing capabilities to anticipate if not predict the responsibilities of the future, leaving prospecting up to piece-meal ventures lessens the effectiveness of plans that we might make for the future. Unhappily, resource use in the present appears more nearly as an existential experience, a "happening." We need to know the quantity and quality of our resources, our anticipated demands, the limits imposed by the technical variables, and to have a reasonable grasp of the courses of action which will lead to the efficient use of our resources.

If the preceding statement sounds pessimistic I assure you that it was intentionally so. The gap between technical capacities and accomplishment is appalling. How well mapped is your state? Is there complete and current coverage at a scale of 1:24000 or larger? How complete is the large-scale geologic mapping? To those who are concerned with coal mining, the Midlands of England represent the genesis of deep mining. It came as a real shock, within the year, to learn that a new coal deposit was found in this location which could extend the life of that important field by 70 to 100 years. Was this deposit kept hidden as a tax dodge? Because the British coal industry is nationalized one must assume that the government officials were not sufficiently informed to plan for the future with any degree of accuracy. Possibly, like us, they

have spent a disproportionate effort in regulation and taxation and not enough in acquiring hard data on natural resource inventories.

Resources of esthetic and educational character

It is certainly no assumption to say that the per capita availability of our natural resources is declining. The world population explosion takes care of this. In the United States this fact is nowhere better expressed than in our esthetic and educational natural resources--our state and national forests and parks. The growing number of people, affluence, and mobility, when combined with a great desire to harvest more tourist dollars, is pitted against declining amounts of space and scenery. The time is truly here when a new philosophy regarding these assets needs to be developed. A Marshall McLuhan or John Kenneth Galbraith of esthetic resources might suggest a more efficient system to achieve the desired results. For example, people on vacation tours have a mix of objectives and notions about recreation. Their ideas range from imitations of Disneyland to roughing it in a wilderness. Our present system, instead of tracking these diverse desires in separate directions, commonly creates an accommodating diversity under a well-publicized title such as Yosemite, the Great Smokies, or Yellowstone. If, in a natural resource sense, there are true differences between the ordinary and the unique in our natural landscape, should we not provide for the commonplace desires on commonplace landscapes and stop prostituting and degrading that which is a unique product of natural forces? If thousands of people want to spend their vacations moving from one campsite to another to play, suffer the privation of public toilets, and mix their campfire smoke with the mass, is something unique in nature really necessary? Would not an artificial "old faithful" do just as well?

The year 1964 was a highlight for federal legislation regarding esthetic natural resource preservation and development. The Wilderness Act and the Land and Water Conservation Fund came into full legal statement. The static that was created by the Wilderness Act and the inadequacy of the Conservation Fund would recommend these documents for further reading. It might be worth the effort to examine at the state level the basic concepts associated with these documents. Is it not possible that many states have much idle land which has many of the aspects of wilderness? Why should the federal government be the only agency that is interested in acquiring wilderness? Fifty years from now what is today the most nondescript of idle land, if left untouched, would become a unique landscape of great value. If the upward spiral of land values were matched by a similar rise in taxes it is just possible that a system of very low cost acquisition could be designed.

Natural resources and biological survival

Natural resources that are related to the general subject of biological survival are either so commonplace or so remote from our usual train of thought that they are most difficult to bring into a context established by state lines. Possibly we should divide such resources by indicating those which are subject to deterioration through pollution and those which are slowly being revealed to us under the sea, but on the continental shelf. The subject of air and water pollution is too well known for further comment. The subject of our continental littoral, that transition zone between the ocean world and the land world, still requires much basic research before a true working knowledge

is achieved. The value of beaches as natural resources is unquestioned. If we assume that beaches can be used without an understanding of the basic dynamics of beach formation, destruction, and pollution much effort will be uselessly expended.

The fact is that without increasing efforts in achieving basic understanding of the nature of the world in which we live, not only are we going to waste our effort, we are going to delay or miss the chance to exercise controls which could greatly expand the potentials inherent in the natural world around us.

PEOPLE IN THE RECREATION ENVIRONMENT

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Up to this point this institute has concerned itself rather intensively with matters of administration, organization, allocation of funds, and otherwise understanding problems of programming natural resources using budget techniques. For the next several minutes, I would like to talk with you about the recreation environment of our natural resource realm and some of the implications of future public use of the recreation environment.

The term "recreation environment" might mean different things to different people. Let me preface my remarks by explaining that it should include any area, space, place, or facility, indoors or out, where people expect to find and participate in a recreational experience. As a recreation environment, such a place must ordinarily meet a variety of physical, aesthetic, or other requirements pertinent to recreational activities or interests carried out by the public. Today, I will suggest to you some other more subtle kinds of requirements which I believe our recreation environments of the future must include.

But first, let us discuss the people with whom we shall concern ourselves. By people, I mean generally the broad cross section of our recreating national public. Today we have become an urban nation of some 200 million Americans. We have grown tremendously during recent years and we are growing still at the rate of about four persons every minute. With respect to the dwelling places of our public, we are more than ever an urban nation. Of the 200 million population, approximately 125 million live in cities. Over two-thirds of our nation's population live in some 219 metropolitan districts. Formerly we were a nation of rural culture, rural ideas, and rural values; but now, only about 11 million or 5.5 percent of our nation's population live on farms. In respect of our social values, our public morals, and our changing national attitudes toward use of natural resources, we are also an urban nation. Now, more than ever before, we are a nation of metropolises, of city congestion, of confusion, and of social conflict. Our problems as an urban nation with urban and suburban congestion, with rural economic imbalance, and with racial conflict have become increasingly more complex: and, whether we blame politics, the population explosion, or the tremendous increase in technology coupled with the availability of easy services in the soft life, life is becoming more and more complicated, more confused and chaotic, more mechanistic, and more tense. In many urban environments, we are more than ever before experiencing less identity as individuals and more frustration as small cogs turning an undefinable big wheel.

Some sociologists feel that the American people have been overfed, overmaterialized, and overexposed until their senses have been dulled, so that they simply do not care. They suggest that our economic and social value systems have lost proportion. Some human relations experts suggest that it is a more serious matter than mere public apathy. They believe that the nation is divided into groups which express enmity toward other groups. They think, for example, that there is hostility between Negroes and whites, between cities and suburbs, and between rich and poor; and so there is actually a lack of national will. I question this degree of group division except in specific areas; but, nevertheless, it is a concern of great portent.

However, looking again at the population for a moment, we see other ways of recognizing groups or segments. For example, we are reminded that we are becoming a more and more youthful nation. It is a fact that about 85 million of our 200 million have been born since the end of World War II, and that 40 percent of our population is under the age of 21. We are reminded that our young people now are beginning to have a significantly more important voice in what services and products are in demand because of their tremendous purchasing power and their group needs. These young people are now, more than ever before, expressing their recreational needs in a graphic fashion. It is worthwhile to observe that many of the kinds of recreation we have provided for them in the past are now categorized as family activities or are widely used by older groups. The young people today have rapidly changing and highly fickle tastes. I think it is commendable to private enterprise in the United States that our various individual businesses are quick to recognize the youthful demand for sporty new cars, flashy clothes, coffee houses, and similar other products, services, and activities. However, at the same time I feel that in our public recreation facilities we are more than ever missing the bet in finding the interest level and the recreational requirements of these young people.

With respect to the other end of the age scale, we imagine ourselves to be a socially responsible nation; but, only in the last few years, have we really put forth an effort to meet the needs and requirements of older people in our society. The needs of the aged for recreation, for meeting places, for comfortable park environments, have been provided with their specific requirements in mind to only a minimal degree.

In terms of participation in outdoor recreation, we can look at the kinds of occupation in which the public is engaged as having a considerable influence on the amount of recreation in which they participate. By occupational types, the groups of people who have the highest rate of participation in outdoor recreation are found to be professional and technical workers. Second highest are clerical and sales workers. Third are craftsmen and foremen. Not at all surprisingly, those people who participate least in outdoor recreation are not urban people, but instead are farmers and farm workers.

If we look directly at the urban people who are so desperately in need of recreation attractions, we may find that they can be divided into urban-core dwellers, suburbanites, and the fringe community residents. Research has shown that suburbanites are more active in seeking out non-city recreation areas than are the core-city dwellers; however, these suburbanites turn in numbers to the kind of recreational facilities and activities which are most readily made available to them because they are

accessible, nearby, or because they are of an appealing type. From cities, it is generally found that the distance travelled in the highest percentage of vacation trips ranges from 100 to 250 miles to recreation facilities which are dependent on destination or permanent-type visits. But on one day visits, most trips remain within the 50 mile distance as a general maximum.

But what is it in terms of recreation environment and recreational experience that our American public really wants? I'm not sure many people really understand why they recreate or what they want. Some of them recreate because they recognize the need to escape the city, to escape their regulated hum-drum work-a-day world. Many have an interest in a particular recreational pursuit such as boating, camping, water-skiing, fishing, and so on. Some go to see new sights, to tour, to experience new or different sensations, and thus to gain relief and a change of pace. This change of pace is sometimes refreshing and recreational, but just as often it becomes a trip to the great outdoors which is not at all renewing, refreshing, or recreating, but instead is a trip which ends as a long journey through heavy traffic to a differently congested spot on the map, a spot, recreation area if you must, which ultimately is just as congested as the working world from which they have come.

And what do they look for? Well, to a large extent our people seeking recreation are looking for things which throughout their lives, they have been educated and persuaded to accept. We are products of our environment; indeed, we are encouraged by television, sports magazines, boat shows, movies, books, and radio to like and to compete for glamorous, exciting, and fun-filled activity. Our public is even lured by cigarette commercials, by nature societies, by the he-man picture of the sportsman and sporting family camping in the forest primeval or along a lonely seashore; but in truth when the urban, suburban, or small city dweller is inserted into the forested recreation environment, one may often observe a very insecure, uncomfortable, modern-day person existing in what he regards as a hostile wilderness environment. Demographers tell us that one of the most important characteristics of people who grow up in urban environment in terms of the effect upon the conduct of the individual is the extent to which urbanism reduces the exercise of choice. As they have been conditioned to accept certain levels of recreational activity, certain mass concepts of what constitutes fun and enjoyment, urban residents have reduced capacity for recreational choices among the opportunities nature provides. Even when they enjoy a truly exhilarating experience, such persons find it difficult to recognize the real thing as opposed to the imagery that has been handed them on television's unreachable silver platter.[a]

In the transition from everyday life to the recreation environment lies one real opportunity for change in attitude and understanding and the sharpening of value distinctions. Although such change is possible, we are not meeting the challenge; instead we develop and build for the mass environment, for the average experience, with all the

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[a]In the light of conference with Mr. Worms one may add: The rural population, of course, suffers from similar disability, not as to the recreational opportunities offered by nature, but concerning those made available through such "cultural" developments as produce drama, symphony, or soccer.--Ed.

tensions, congestions, dull, ordinary environmental conditions which the urban escapist needs to avoid. We cheat our American public of full, rich, recreational experiences, and instead we provide the gaudy, the rich, the plush, the bulk, and congested public facility, rather than a simple and varied opportunity in environmental inspiration.

Recreation has many mandates. Among these are: encouraging popular aesthetic appreciation and understandings, enlightened responsiveness to the beautiful in nature, and enthusiasm for satisfying, fulfilling, and naturally re-creating activities. Indeed, we must plan developments along two distinct lines: on the one hand, for the average and, on the other hand, for those who can afford the classy, the expensive service.

I do not take exception to development of parks, lodges, and resorts that must produce a realistic monetary return, nor do I deny that in many instances the recreating public is determined to, and must, use beaches, parks, and playgrounds, in great numbers. Our recreation planners are currently recognizing this problem of serving the masses; but unfortunately, far too often, because of a shortage of funds, because of inadequacies of space, because of a lack of legislative support, as well as because of the continuing problem of limited recreation staffs, we find ourselves designing and planning shortcuts to offering full recreational opportunity to the mass public. In recreation now, as never before, we must have the financial support and the legislative understanding in natural resource programs and recreation planning throughout the nation to meet future requirements for the masses in an enlightened, functional manner.

PREPARING AND CARRYING OUT EFFECTIVE STATE RESOURCE PLANS

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The processes by which state resource plans are formulated are major factors in determining whether such plans ever become operational. The generally favorable status, or at least the improved status, of planning today is due in no small measure to the manner in which plans are made and by which plans become policy. Planning has now abandoned its position on the sidelines and renounced its pose of political neutrality to enter into the mainstream of governmental decision making. In this capacity, as an essential part of the administrative organization, planning as a function of government must be accorded recognition and acceptance, not only by students of government, but by all people engaged in day-to-day administration. In this context attention can be directed, (a) to current status and emphases in the field of resource planning, (b) to the processes by which plans are prepared and kept up-to-date, and (c) to the consideration of the impact of long-range and current program planning on state administration in general and on the resource field in particular.

Role of Planning

In its simplest terms, planning may be said to be preparation for rational action--rational action by state government is not a contradiction of terms. It is necessary that, as the scope and complexity of state functions and services increase, the role of particular departments and agencies be appraised in relation to state goals and to a total state program. Planning assists in this difficult job of assessment and clarification of goals and relationships. In state government planning has traditionally been left to an independent board or commission. More recently it has been accorded staff status and assigned to an agency directly responsible to the governor. This is in accord with a recognition that planning is an executive function and that the governor must accept responsibility for the development of state-wide policies, for the selection from alternatives of the means of carrying out these policies, and for providing leadership and direction of effort of operating departments and agencies in an integrated program for the solution of state-wide problems. In no aspect of state government is this claim of responsibility more clearly called for or more urgently needed than in the field of resource development.

An assignment to assist the chief executive in the discharge of the long-range planning function is made to the planning agency. This is not an exclusive assignment and from its very nature cannot be so--planning assistance is where the governor finds it; and the formal

assignment to the planning agency is accompanied by a recognition that many agencies and many individuals both within and outside the administration, give planning advice. Nevertheless, an official staff source of assistance in the discharge of functions that have always centered in the governor is an important development in state administrative organization. The planning staff is in a position to influence policy, in the governor's office, and indirectly in the legislature and in the general public. This is done by the following methods or procedures: (a) the formulation and identification of the short- and long-range objectives of state government; (b) the assembly of essential information to secure an adequate understanding and definition of various problems; (c) the determination of desirable priorities and desirable programs within a flexible schedule; and (d) the integration of activities for the most effective and economical accomplishment of desired ends.[1]

State planning, thus, is just now taking its rightful place as a staff agency serving and responsible to the chief executive. It is an agency that is in a position to render important services to the legislative body and to its regular and special committees and to work directly with other staffs and departments of state government as authorized and directed to do so by the governor. In working with other agencies on problems of program planning and coordination the "colleague approach" is indicated. Planners are well-advised not to attempt to function as the *alter ego* of the governor--a difficult role that is already played by too many individuals in state government.

A state planning agency may have an advisory board or commission, or it may be established in a staff capacity without benefit of such advisory support. There is little justification in practice or in theory for an independent state planning commission, certainly not if the agency is to perform the functions just listed. The meaningful performance of these functions requires that the director of planning be acceptable to the governor and able to work closely with him and his political subordinates. This does not mean that the director of planning cannot or should not be a career official and that he needs to abandon all objectivity because he works in a political frame of reference. On the contrary, a planning official will be most useful in his advisory capacity because he is objective in viewing the long-term implications of various policies and proposed alternative courses of action.

The Development Plan

The development plan--like the financial policy of the state--is apt to consist of a number of separate statements, directives, understandings, and pronouncements. The development plan may be quite specific in some instances and approach the popular concept of a "plan." In other instances it will consist of guidelines that are inexact and indistinct. It is very unlikely that an unequivocal set of operational goals will or can be stated clearly by the chief executive. Both the

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[1]Adapted from "State Planning: Its Function and Organization: Report of the A.I.P. Committee on State Planning," *Journal of the American Institute of Planners*, XXV (November, 1959), 207-14.

budget process and the planning process call for a realistic screening of objectives in which the staff work with operating departments to achieve a working compromise that the chief executive will accept as in accord with his wishes and desires. This is the operation which calls for the "colleague" approach. The main target of both the planning and budgetary processes is clear and their fields of action complementary to each other--or even overlapping. However, the differences in basic approach allow each to make a distinct contribution to the production of operating programs that fit in with and contribute to short- and long-range goals. For this cooperation to be meaningful and significant it is necessary for planning to recognize the staff nature of its role and for the governor, the other staff agencies of state government, and the operating departments to accept this status for the planning agency.

Evolution of State Planning Agencies

State planning agencies were organized in most states during the 1930's. Many did not survive the post New Deal days, and only recently have planning agencies been reestablished in practically all of the fifty states. State planning, as an assignment to an administrative agency is a recent development. The early commissions were data collecting agencies with planning activities tending to center in public works and capital improvement programming. Technical planning assistance to local governments is also a state planning assignment that predates state planning proper.

Planning and Natural Resources

The past attention the state planning commissions gave to natural resources emphasized the conservation theme. Resource inventories were prepared and in some cases maintained by planning agencies. This and the idea of natural resource regions as a basis for industrial location led many planning agencies to enter, or to be pushed into, industrial promotion activities--activities for which most were ill prepared and which they did very badly. More recently the rise of metropolitan regions with a resulting decline in the emphasis on resource regions has tended to get planning agencies into areas where their services are needed and in which they do have competence. I refer to the current emphasis on state action in the field of water resources and land-use planning. Both fields are primary state responsibilities, with many agencies and all levels of government directly concerned with both. Both fields are of major importance in urban areas, but are beyond the governmental capacity of metropolitan organizations either to plan or administer. Both call for state policies that are comprehensive but flexible and which can serve as a coordinating factor in federal, state, and local program planning. State planning is needed as a basis for handling constructively problems and opportunities of intergovernmental relations. Water has been called the most intergovernmental of all natural resources--land-use considerations enter into most federal, state, and local developmental activities and programs.

The advent of state planning and the resurgence of planning agencies come at a time when the functions of state government are expanding and

new service demands are exerting increasing financial pressures on state governments everywhere. Planning by establishing long-range goals assists in the determination of priorities and in the establishment of more immediate program goals.

Coordinating function of state planning agency

In the field of resource planning water problems and land-use planning are receiving major attention. The principal state development agency in most states is the highway department, followed by the universities and educational institutions, parks and recreation areas, and other public works. The state is called upon to provide coordinating assistance and to make planning decisions in relation to federal programs--the Appalachian regional program, the Highway Act of 1962, the Housing Act of 1965, and the Public Works and Economic Development Act of 1965 affording illustrative examples. Federal programs tend to make state plans, or at least a general state scheme for development, a necessity. A great deal of the attention of state planning agencies is directed toward securing approval of federal grants and programs. Through the years the program of the Tennessee Valley Authority, to cite a more specific example, would have been immeasurably improved if each of the seven states concerned had had a comprehensive state plan. The recent controversy over the establishment of the Tellico project might well have been avoided if the state of Tennessee could have identified its developmental plans for the Tellico area. Sporadic objection by the Tennessee Game and Fish Commission on the basis of conflict should have been merged into general state approval or disapproval on the basis of its long-range developmental plans for the Tellico area.

In addition to providing a frame of reference within which federal proposals could be evaluated, and within which conflicts between federal agencies might at least in theory be resolved, the planner must be able to relate the state development plan to the agencies of state government. The planning process, with its emphasis on the "outputs" rather than the "inputs" of government is peculiarly adapted to the improvement of sound agency operating programs. Planning and budgeting viewed as two coordinated processes contribute to the achievement of long range state plans through sound decisions regarding short term program alternatives and priorities. It is not enough that agency decisions be made in the light of state financial policies and sound administrative practices--they also must square with the objectives of state government discovered and established by the planning process. The dual contribution of planning and budgeting is important at all levels of state government, but the first and most direct result of the coordinated development of the two will be observable in agency administrative decision making as they relate to the overall objectives of state government. Good central staff services, especially planning and budgeting processes within given agencies, is the best way of seeing that specific programs meet state needs and fit in with state financial policies and priorities. Planning and budgeting, closely related but yet distinct processes, fit in well with agency improvement in both decision making and administration--for state administration is made up of a series of decisions relating to content and method of agency programs.

Here the key observation of this paper can be made--or rather reemphasized. The developmental planner at the state level must assist the operational agencies by providing informational bases of decision, rather

than by attempting to exercise direct control or an authoritarian type of coordination. If the approach is right and the administrative climate of the state is progressive and cooperative--the planning agency can expect to participate with other staff agencies and with the operating departments in important aspects of the decision-making process. Perhaps the great unanswered question in most states--and one that may be appropriate to raise here is, Will the other staff agencies of state government--or more specifically, will the budget staff--accept and work with the planning agency on a "colleague" basis? Certainly the effectiveness of planning and the purposeful preparation and carrying out of effective state resource plans on a long-range basis is dependent upon the planning agency deserving and achieving that status in state government.[a] We can offer this possibility as an opportunity and challenge to state government.

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[a]Dr. Durisch's point can be specifically generalized in terms of current state developments--perhaps irrelevantly for the institute concerned with natural resources. In the light of departmental planning in terms of long range objectives, coordinated and unified through the state administration's planning agency, designers of state action programs must confront the spectrum of state service requirements in the light of limited resources. The performance of this budget function requires analysis which compares various programs and program elements for determination of priorities in terms of the estimated *social utility* of each in relation to the estimated *cost*--the prospective *output* as a fraction of projected *input*. Evidence from recent experience suggests that the whole service program of a state--not resource programs alone--may be best defined and redefined through budget staff use of planning people's analytical skills as well as their own, whether at the agency level or at the executive office level.--Ed.

A DEVELOPMENT CONCEPT FOR THE NORTHERN GATEWAY TO LAND BETWEEN THE LAKES[a]

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The purposes of the TVA study were: (a) to convey to the citizens of the region and to private investors a concept of the private development potential of the northern gateway to Land Between the Lakes, a major public outdoor recreation area under TVA management; (b) to suggest a research-based, time-phased development program for the northern gateway aimed at providing visitor accommodations and services *complementary* to the "cafeteria" of public outdoor recreation facilities offered by TVA and other public agencies in the Land Between the Lakes region; and (c) to indicate how a well-planned, *unified* development scheme for the gateway area may create a more substantial economic impact than the scattered and haphazard growth of commercial facilities that lack the essential element of a controlled environment.

What and Where Is Land Between the Lakes and Its Northern Gateway?

Land Between the Lakes, a 170,000-acre peninsula between the lower Tennessee and Cumberland Rivers astride the Western Kentucky-Tennessee state line (see map), is a major public outdoor recreation and conservation-education area acquired (beginning in 1964) and managed by TVA. It is being developed as a demonstration showing ways to meet the mounting needs of our industrializing society for adequate recreation facilities in the out-of-doors. Land Between the Lakes is surrounded (on three sides) by 300 miles of shoreline fronting on two of the largest man-made lakes in the United States.

The northern gateway is the narrow strip of land between Kentucky and Barkley Dams across which all visitors from the Midwest--Missouri, Illinois, Indiana, Ohio, and northern Kentucky--will naturally travel to enter Land Between the Lakes.

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[a]Mr. Stern presented, as a case study in planning and operational relationships among federal-state-local public agencies and private property owners, the procedures involved in recent development of a concept for the northern gateway to Land Between the Lakes. This 170,000-acre recreation area is being developed by TVA between Kentucky and Barkley reservoirs along the lower reaches of the Tennessee and Cumberland rivers. Mr. Stern used slide projections to illustrate his talk.--Ed.

Land Between the Lakes and its gateway have a strategic location in mid-America. It lies just 100 miles south of Centralia, Illinois, which in 1960 was found to be the population center of the continental United States. Within 400 miles, an easy day's drive along the network of interstate highways, live 50 million people, 25 percent of the country's total population. Several of the nation's ranking metropolitan areas are but three to six hours away (10 largest metropolitan areas account for population of 15 million); and competing public recreation attractions, such as the Great Smokies, Lake of the Ozarks, and Minnesota's 10,000-lake region (Quetico-Superior National Forest), are less centrally situated with respect to these cities than Land Between the Lakes.

Access to the northern gateway is available through several routes. (1) Interstate 24, Western Kentucky Parkway (and its extension, Jackson Purchase Parkway), U. S. Routes 62 (E-W) and 641 (N-S) converge upon the gateway, which must be crossed to reach Land Between the Lakes. (2) The gateway (and Land Between the Lakes) is accessible by water on three sides. It is linked to the inland waterway system by way of the Tennessee, Cumberland, and Ohio Rivers. (3) A limited-access parkway, linking I-24 and U. S. 62 with the northern entrance to Land Between the Lakes across the canal, will be completed through the gateway in 1968. (4) A general aviation airstrip in Kentucky Dam State Park is within two miles of the gateway. Another landing field, with adjacent camping facilities, is projected for Land Between the Lakes.

TVA Has a Program for Land Between the Lakes

The Land Between the Lakes offers an ideal setting for the simple types of outdoor recreation activities that more and more families are seeking--camping, picnicking, boating, swimming, fishing, hunting, hiking, riding, and nature study.

The area's 300 miles of shoreline are its most precious asset for outdoor recreation. This shoreline has been created as the result of federal investment of some $260 million of public funds in the Kentucky and Barkley water-control projects. Campgrounds, boat harbors, swimming areas, and other water access facilities will occupy many of the coves. Shallower reaches contribute desirable habitat for waterfowl. The remainder of the shoreline provides a base for water sports and a backdrop for scenic roads and trails.

Because of its elongated shape, no point within Land Between the Lakes is more than 45 minutes' drive from one of the four entrances. Only a minimum of commercial services (perhaps laundries, packaged foods, or sundries) will be provided within the area, so that private capital may have an opportunity to offer visitor accommodations and services at the approaches and in surrounding communities.

TVA has purchased one-half of the acreage within the boundaries of Land Between the Lakes, and the acquisition program is already fully financed. Two family campgrounds, twelve informal-use areas, several back-country drives, and many miles of shoreline were open to recreation seekers in 1966.

By 1975, facilities will be in place to accommodate 11,300 overnight visitors in family campgrounds and group camping areas, 3,000 visitors

in day-use areas, and 325 persons in the conservation education center. The map shows the variety of activities and visitor facilities programmed for the area. Many of these lie within a ten-minute drive of the bridge to the northern gateway which spans the canal connecting Barkley and Kentucky Lakes.

The federal investment in the acquisition and first ten years of development in Land Between the Lakes is scheduled at more than $50 million.

The northern gateway, here defined as the area between U. S. Route 62 on the north and the canal on the south, comprises 1,800 acres of hilly, tree-covered country, with a long, frequently indented shoreline and magnificent vistas across the widest part of both Kentucky and Barkley reservoirs. With water on three sides, there is no point in the gateway more than 2,000 feet from the lakeshore.

The gateway contains two communities, with an estimated combined population of 1,000. It is sparsely settled and includes strategic undeveloped land, notably in its southern part near the canal and along the controlled-access parkway which will link I-24 and U. S. 62 with Land Between the Lakes.

Present land uses, in addition to the residential clusters, include two inland waterway terminals on Kentucky Lake, a marina-resort under construction on Barkley Lake, and a commercial strip development along U. S. 62.

What is the Appropriate Development Concept

The concept, as illustrated by the photographs of a scale model prepared by TVA architects and planners, is based on the following premises: (a) that the northern gateway will be developed according to a master plan, requiring the collaboration of TVA and the Corps of Engineers, the major private property owners (three in number), and the cooperation of local government and small landowners; (b) that the initiative for planning and development will come from the private sector of the economy, and that TVA will provide technical assistance, information, and liaison with other public agencies to the extent that such services are in the public interest.

The concept envisions a visually impressive cluster of visitor accommodations and consumer services in the southern portion of the gateway with a deliberate orientation towards the water. The controlled access north-south parkway bisects the area; parking facilities will be provided at strategic locations near the exits from this parkway.

The major concentration of tourist facilities lies to the west of the parkway and around the head of the deepest inlet on Kentucky Lake. Here, in a compact urban setting resembling perhaps the waterfront of a quaint Italian fishing village, a marina with convenient lodging facilities, surrounded by shops and eating places, caters to the car and waterborne visitor. This area is seen as the first stage in the gateway's development.

A second cluster of accommodations and service facilities is situated on an inlet of Barkley Lake around the site now being developed by the Ken-Bar Corporation.

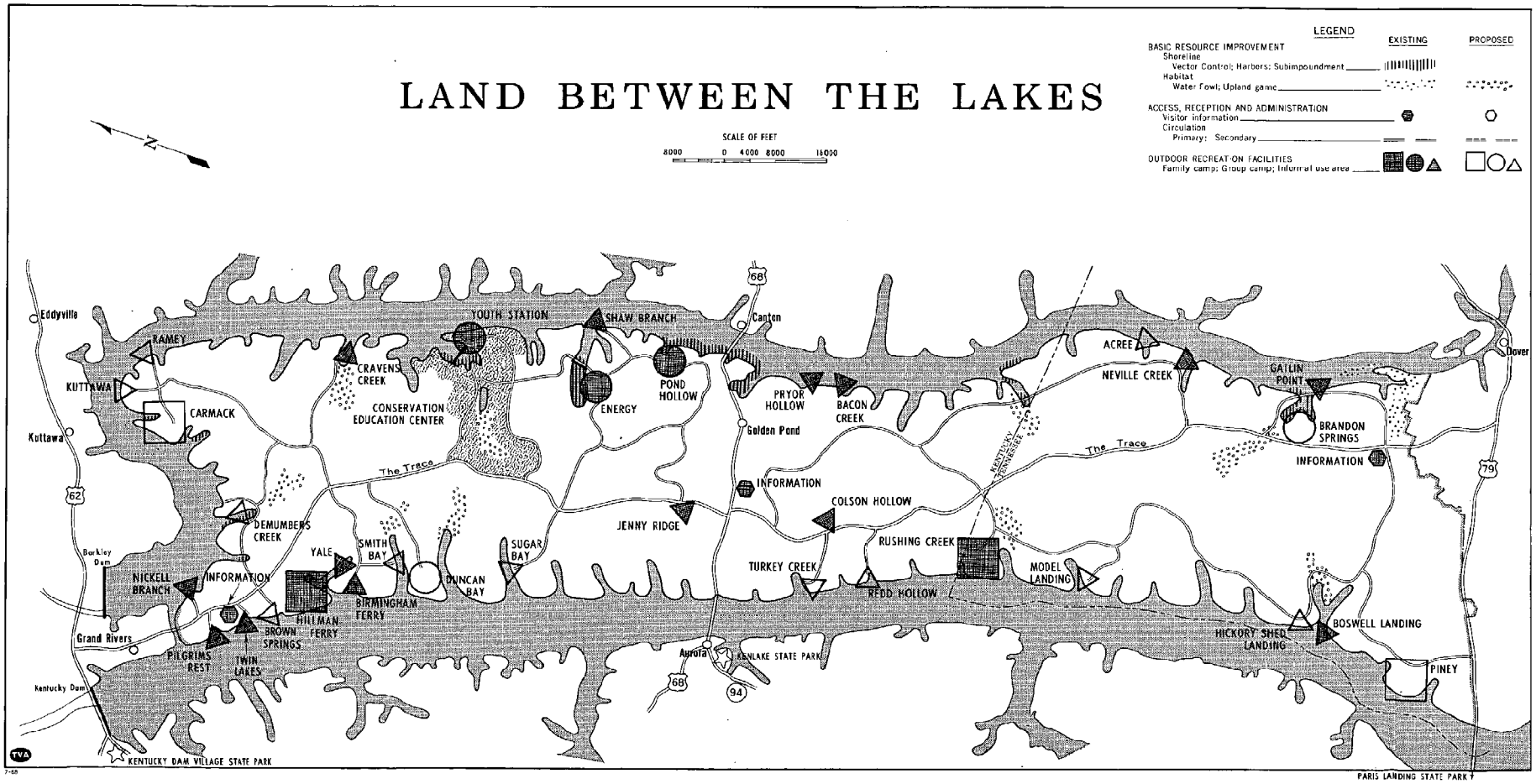
The several headlands between these inlets are set aside for resort hotels and motels and for family cottages to be built in stages as the demand for transient and destination facilities increases over the ten-year development period.

On rolling terrain east of the parkway and south of the present Illinois Central tracks, we visualize a major seasonal amusement area of perhaps 30 acres (plus parking) patterned on the recently-completed Six-Flags-over-Georgia theme park. To the north of the amusement area and across the tracks, adequate acreage is set aside for a championship golf course which would also constitute a buffer between the resort and amusement complex to the south and the town of Grand Rivers to the north. Gardens and pathways around a constant-level lake east of Grand Rivers constitute the last major feature of the proposed development.

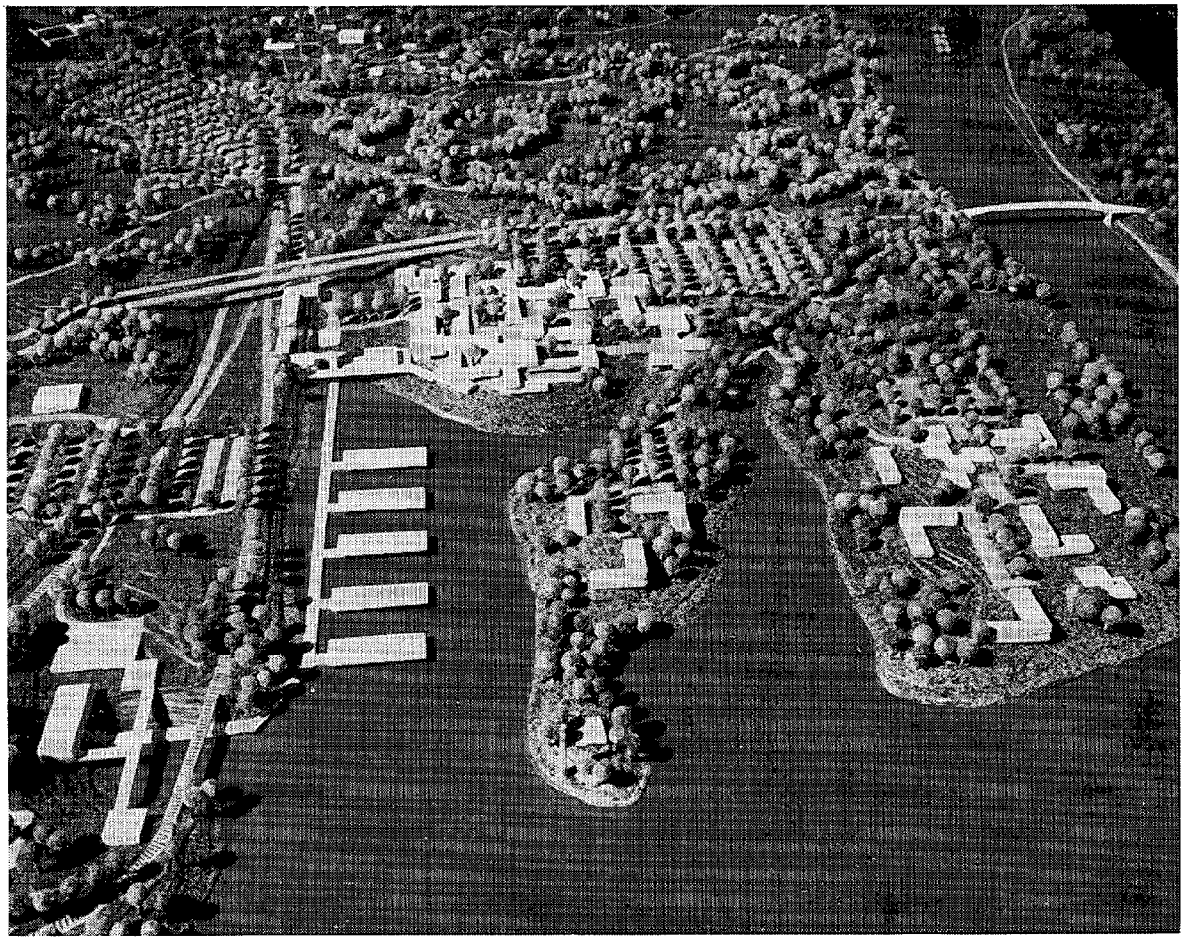
A circulation trail links the several elements of the gateway plan. It accommodates pedestrians, cyclists, and drivers of slow vehicles such as electric autos. Its appearance and function vary from place to place; it may be a boardwalk near the canal, a pathway weaving through the gardens, a mall as it cuts through Grand Rivers, or the consumer service complex at the present inlet to Badgett's coal terminal.

The circulation trail and, perhaps later, a three-quarter scale antique railroad using the Illinois Central's right-of-way provide the internal link between facilities and enable visitors to park their cars in one place while circulating within the area. In addition, we visualize a steamship or ferryboat line to connect the gateway's several inlets and activity clusters with the two dams and the state parks and other public recreation facilities in the Land Between the Lakes region.

The justification for a major private investment in visitor facilities in the northern gateway must be found primarily in the attraction which the public facilities are likely to exert as they approach full development. Since these public facilities will meet only a part of the overall demand for visitor services, private capital has an opportunity to serve a "captive market" and to strengthen the area's drawing power by sharing in the creation of a major regional (and perhaps national) recreation complex.


LAND BETWEEN THE LAKES
LEGEND
EXISTING
PROPOSED
BASIC RESOURCE IMPROVEMENT
Shoreline
Vector Control; Harbors; Subimpoundment
Habitat
Water Fowl; Upland game
ACCESS, RECEPTION AND ADMINISTRATION
Visitor information
Circulation
Primary; Secondary
OUTDOOR RECREATION FACILITIES
Family camp; Group camp; Informal use area
SCALE OF FEET
8000 0 4000 8000 16000
N
Eddyville
KAMEY
KUTTAWA
CARMACK
Kuttawa
62
Barkley Dam
NICKELL BRANCH
INFORMATION
Grand Rivers
PILGRIMS REST
TWIN LAKES
BROWN SPRINGS
HILLMAN FERRY
DEMUMBERS CREEK
YALE
BIRMINGHAM FERRY
SMITH BAY
DUNCAN BAY
SUGAR BAY
Kentucky Dam
KENTUCKY DAM VILLAGE STATE PARK
CRAVENS CREEK
CONSERVATION EDUCATION CENTER
YOUTH STATION
The Trace
SHAW BRANCH
ENERGY
POND HOLLOW
68
Canton
Golden Pond
PRYOR HOLLOW
BACON CREEK
INFORMATION
JENNY RIDGE
COLSON HOLLOW
TURKEY CREEK
RUSHING CREEK
REED HOLLOW
KENTUCKY
TENNESSEE
Aurora
KENLAKE STATE PARK
94
ACREE
NEVILLE CREEK
GAITIN POINT
BRANDON SPRINGS
INFORMATION
The Trace
MODEL LANDING
HICKORY SHED LANDING
BOSWELL LANDING
PINEY
Dover
79
PARIS LANDING STATE PARK
TVA
7-68

DESIGN CONCEPT FOR NORTHERN GATEWAY TO
LAND BETWEEN THE LAKES



APPENDIX

As a basis for workshop discussion three institute registrants were invited to prepare sketches of resource management in their own states. Two have written the memoranda for this record. As these summaries, read together, suggest something of organizational diversity they should be helpful adjuncts to the formal presentations.--Ed.

ORGANIZATION AND MANAGEMENT OF NATURAL RESOURCES IN ARKANSAS[1]

George E. Tannous
Budget Analyst
State of Arkansas

It has been said that the purpose of government is the preservation and protection of an orderly society. Necessarily, any government framework should be geared to protect each member of society from the others and to make available the greatest good to the greatest number. It has always been apparent that in order to preserve and protect the general health, safety, and welfare of the public, the environment within which we live must remain healthy and productive. Thus, we concern ourselves with state management of natural resources.

Natural resources in Arkansas are various and abundant, yet the approaches taken in dealing with different resources are similar, and in some cases the problems are common. However, due to the political framework of Arkansas government the control of natural resources is vested in separate state agencies.

Types of Activities in Management of Natural Resources

In general, Arkansas' activities with respect to its natural resources are divided among three major categories: (a) exploration, (b) conservation, and (c) commercialization. Under Arkansas administrative structure some of the agencies have responsibilities in all three areas, while others are restricted to only one or two types of activities in the management of natural resources.

Exploration

The Geological Commission is primarily concerned with exploration. It studies the quantity and quality of certain natural resources, their presence and their location within the state. With the assistance of the United States Geological Survey, it conducts analysis and supplies the state officials with reports. Periodically, it furnishes topographic maps of the state.

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[1]The author would like to thank Mr. John Gibson, General Counsel, Arkansas Soil and Water Conservation Commission for his contributions in this paper.

The Oil and Gas Commission is engaged in all three categories of managing the natural resources of oil and gas. It encourages and aids in the development of plans for gathering, storing, impounding, or otherwise disposing of salt water produced in the drilling and operation of oil wells, and in preventing the flow of such water into the streams of the state.

Conservation

The following agencies are primarily concerned with conservation:

1. The Soil and Water Conservation Commission represents the state in all matters of: soil and water conservation districts, interstate water compacts, federal water projects, issuance of permits for the construction and operation of dams, allocation of water during periods of shortage, studies of the needs and use of water in the state, recommendation of petitions under the Regional Water Distribution Act, and promotion of the development of a comprehensive state water plan.

2. The Planning Commission studies and adopts official state plans for the general location of waterways, the warding off of floods, the prevention of stream pollution, waterfront development, drainage and sanitary systems, forest reservations, parks, wildlife refuges, conservation projects, land utilization programs for agriculture, mineral, forestry, industrial, and other purposes. It also provides assistance in the acquisition and development of recreational sites for the political subdivisions of the state.

3. The Game and Fish Commission is responsible for the control, management, restoration, conservation, and regulation of birds, fish, game, and other wildlife resources of the state; including hatcheries, sanctuaries, refuges, reservations, and all property now owned or used for such purposes, and their acquisition, and establishment.

4. The Stream Preservation Committee was established recently to study, locate, and designate selected high-quality streams which are in a relatively natural state. Currently, it is making preliminary surveys to ascertain the value of preserving streams in their natural state and to evaluate potentials of designated streams.

5. The Pollution Control Commission administers a statewide program for controlling pollution of streams and of the atmosphere, and for the disposal of solid wastes. District offices provide statewide surveillance of potential pollution sources. The commission controls and abates pollution through inspections, investigations, surveys, public hearings, and issuance of injunctions.

Conservation and commercialization

The Publicity and Parks Commission and the Forestry Commission are engaged in the second and third category of managing natural resources. The Publicity and Parks Commission promotes recreation, tourism, and general activities pertaining to all state parks, areas, lakes, rivers, and mountains. It also provides areas and facilities for outdoor recreation and preserves certain sites of scenic, scientific, geological, and historical significance. The Forestry Commission promotes the development of the forestry industry, protects forests from fire, acquires

and designates lands as state forests to be administered, protected, and developed for the purpose of watershed preservation, erosion and flood control, forestation, reforestation, and the production of forest crops.

Commercialization

In the third category lie the Industrial Research and Extension Center of the University of Arkansas, the Waterways Commission, the Industrial Development Commission, the White River Navigation Commission, and the Public Service Commission.

1. Through the Industrial Research and Extension Center and the Agricultural Extension Service of the University of Arkansas, the state puts its educational wealth to practical use in conducting statistical analysis of all the state's resources, evaluating economic potential and publishing reports which are made available to the various interested groups.

2. The newly created Waterways Commission promotes and coordinates water transportation developments, port developments, and water recreation based on navigable streams; develops in cooperation with federal and state agencies equitable fee systems for water transportation services; and performs other functions for the state with respect to water transportation resources and facilities.

3. The Industrial Development Commission compiles statistics and information in respect to the natural resources of the state, and publishes and distributes such information to promote industrial enterprise within the state.

4. The White River Navigation District Commission encourages the proper development of the White River and its tributaries. It also cooperates with the Corps of Engineers on local matters pertaining to the navigation feasibility of the White River, such as obtaining right of way.

5. Products of natural resources must necessarily fall within the jurisdiction of the Public Service Commission. Firms owning or operating facilities within the state and engaged in the business of distributing oil and gas, water, electric power, etc., must abide by the rules, regulations, and orders of that commission. It is also responsible for regulating navigable water crossings by a public service facility, that is, an electric power line or a pipe line.

Interagency Action

The above agencies dealing with natural resources work independently of each other, even though their work is similar and in many instances involves duplication of effort in research and program planning. In order to remedy many of the common problems and to narrow the communications gap among them, the Governor of Arkansas appointed his advisor on natural resources to serve as a liaison between these departments and himself. There is no specific expression in the law requiring these agencies to meet with each other. Thus, personality in smoothing the relationships among agency heads and the governor plays a big role in this

venture, and the liaison man has been successful in conducting periodical joint meetings with the heads of these agencies to discuss common problems and to develop a certain degree of cooperation. To cite an example of this cooperation: In the southwest Arkansas oil fields, preliminary investigations indicated that salt water infiltrated underlying fresh water aquifers, creating pollution problems. To remedy the problem, Federal Water Pollution Control Administration, Arkansas Soil and Water Conservation Commission, Geological Commission, Pollution Control Commission, and Oil and Gas Commission sent a team to the oil fields to study the situation. After an extensive inquiry it was decided to embark upon a joint water-management program to reclaim an important irrigation source.

Many questions arise as to the effectiveness of a governor-liaison-council framework. Some believe that perhaps a Department of Natural Resources would be more effective, others think that it might limit the freedom of these agency heads to communicate freely with the governor or others. However, in order to accommodate to the political needs and bypass the hampering effects of the present political structure it seems that the current arrangement is working effectively regardless of the internal organizational structure. The governor's liaison agent does not have power to delegate authority. He is simply a moderator and perhaps a negotiator on behalf of the governor. It is hoped that this team will eventually become a permanent board, without infringing on agencies' rights and that its effectiveness may reach beyond the present limits.

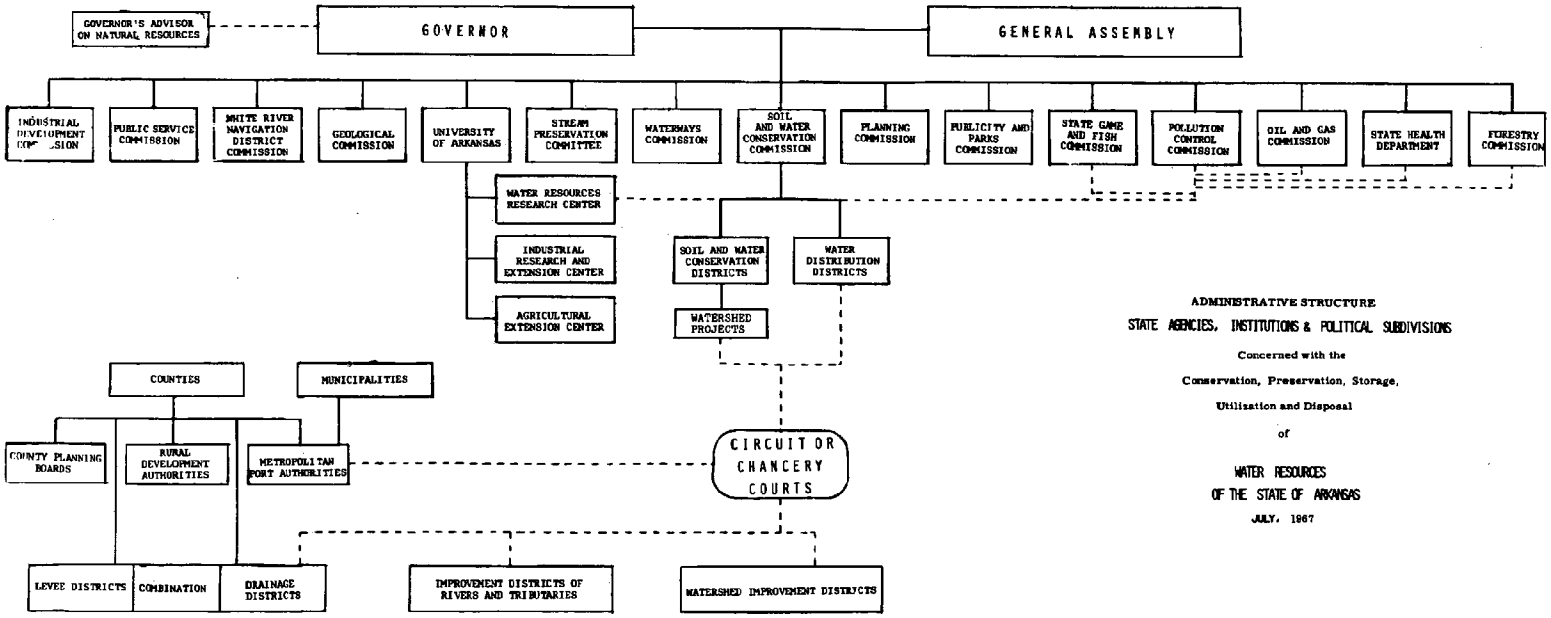
ORGANIZATION AND MANAGEMENT OF NATURAL RESOURCES IN SOUTH DAKOTA

Steve Gomez
Budget Analyst
State of South Dakota

South Dakota, the "land of infinite variety," located in the midwestern part of our great nation has a population of 700,000, and an area of 78,000 square miles. The terrain varies from mountains to prairies, from rich farm land to desert areas.

The pioneers of the 1800's opened South Dakota, with such personalities as General Custer, Wild Bill Hickock, and Calamity Jane playing important roles in the early development of our state. Mount Rushmore is one of our more familiar landmarks. Our pheasants, at times, have numbered up to forty million. We are the largest producers of gold on the North American continent. Agriculture is our single largest industry and the backbone of our economy.

The following is a list of some of South Dakota's resources, some have been developed, some have not: air, land, minerals, wildlife, weather, people, water, and timber. Probably more attention of late has been directed to water and its possibilities than to any other of these resources. The construction of four large dams on the Missouri River, which were built primarily for downstream flood control, has taken ten years to complete, and has brought about unlimited possibilities in the field of irrigation. This industry is in its infancy.



ADMINISTRATIVE STRUCTURE

STATE AGENCIES, INSTITUTIONS & POLITICAL SUBDIVISIONS

Concerned with the

Conservation, Preservation, Storage,

Utilization and Disposal

of

WATER RESOURCES

OF THE STATE OF ARKANSAS

JULY, 1967

The South Dakota natural resources agencies organizational chart provides a diagram of all the agencies of state government which deal with our natural resources. The governor has overall administrative control of these departments. The State Planning Agency and the Office of the Budget are part of the governor's office, while all the other departments are either administered or advised by commissions, boards, or committees, which for the most part are appointed and serve at the pleasure of the governor.

The State Planning Agency is made up of an executive committee and commission members. The executive committee is made up of five members from state government. The commission is made up of 22 members, some from outside of state government, who represent the fields of finance, retail businesses, agriculture, and the professions. Most state agencies are represented in the State Planning Agency, which is chaired by the governor.

The executive committee appoints subcommittees for work on specific problems. The efficiency of this arrangement was best illustrated by a recent study undertaken by Minnesota and South Dakota to deal with pollution problems on Big Stone Lake, which is in both states. After preliminary meetings and the collection of data, the two states have actually begun to correct the problems.

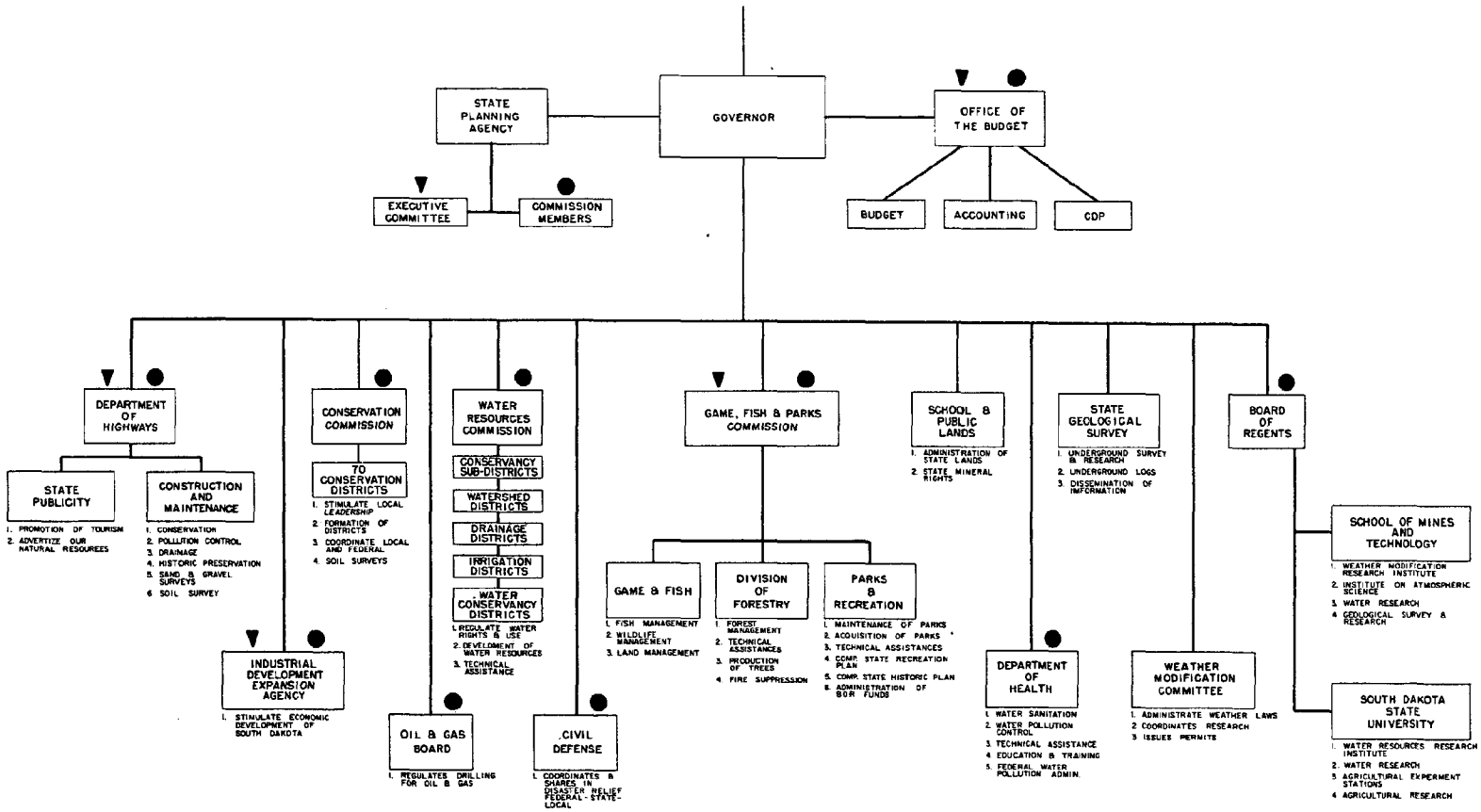
The Office of the Budget supervises all the budget requests presented by these agencies to the governor and then to the legislature. Although each budget analyst is thoroughly familiar with only one agency budget, he is aware of the budget requests of other agencies. All budget analysts sit in on the budget hearings which are held by the governor. This tends to eliminate overlapping of programs or activities by state agencies.

New programs or activities may originate in an agency, the State Planning Agency, Office of the Budget, or a combination. The governor, either through the planning agency or through commissions or boards, will assign the prime responsibility for the administration and coordination of the new program or activity to an individual agency.

All of the agencies shown on our chart have certain responsibilities for the management of natural resources. By tracing only one resource, such as water, you will note that the management of this single resource in some manner could have implications for nearly all the agencies on this chart. This interrelationship demonstrates that coordination is a most important part of good natural resources management. South Dakota, a small state as to population and number of state employees, with all agencies located or represented at the capitol complex in Pierre, is able because of this, to bring about interagency cooperation with fewer problems than a large state, like California, might have.

Cooperation between local government and state agencies operates through technical assistance or information supplied by state agencies to local agencies and through local representation on boards and commissions of both local and state government.

NATURAL RESOURCES



SOUTH DAKOTA

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