WATER RESOURCES

715

28 October 1954

CONTENTS

	Page
INTRODUCTION--Brigadier General Urban Niblo, USA, Deputy Commandant, ICAF	1
SPEAKER--Honorable Clarence A. Davis, Under Secretary of the Department of the Interior	1
GENERAL DISCUSSION	17

NOTICE: This is a copy of material presented to the resident students at the Industrial College of the Armed Forces. It is furnished for official use only in connection with studies now being performed by the user. It is not for general publication. It may not be released to other persons, quoted or extracted for publication or otherwise copied or distributed without specific permission from the author and the Commandant, ICAF, in each case.

Publication No. L55-45

INDUSTRIAL COLLEGE OF THE ARMED FORCES

Washington, D. C.

Honorable Clarence A. Davis, Under Secretary of the Department of the Interior, was born at Beaver City, Nebraska, 21 November 1892. He received his A.B. degree from Nebraska Wesleyan University in 1913 and was graduated from Harvard Law School (LL.B.) in 1916. After practicing law from 1916-17, he was elected Attorney General of Nebraska in 1918 and served until 1923. Mr. Davis' career has included being counsel to Nebraska in interstate water litigation and in preparation of Nebraska-Colorado Interstate Compact regarding South Platte River; member of Commission Compiling Nebraska Statutes; member of Uniform Laws Commission; general practice in Holdrege and Lincoln, Nebraska; member of law firm of Davis, Healey, Davies & Wilson; General Counsel to Consumers Public Power District; counsel to Missouri Valley Development Association; lecturer on administrative law, University of Nebraska and Trustee, Nebraska Wesleyan University. He has been a member and officer of many bar associations and is presently a member of the committee of the American Bar Association on Civil Service and a member of the Federal Bar Association Committee on the same subject. He has been a director of the American Judicature Society since 1951 and is a member of the Institute of Judicial Administration and a member of the American Law Institute. He is a member of the Nebraska Reclamation Association, the National Reclamation Association, the American Public Power Association, and a member of its legislative committee in 1952. Prior to 1 September 1954 he was the Solicitor of the Department of the Interior. This is his first lecture at the Industrial College.

WATER RESOURCES

28 October 1954

GENERAL NIBLO: Admiral Hague, Secretary Davis, Mr. Marr, fellow members of the Industrial College: This morning we will discuss another specific natural resource--water. Next to the air we breathe, water is the most essential single material we use. Unfortunately, it is not as plentiful today per person as it used to be. There is not a state in the Union that does not today have a water problem. Each of us can recall specific times and places in which we have had "water, water everywhere, and not a drop to drink. Water, water everywhere, but all the crops did shrink." With apologies, I believe, to the Ancient Mariner for any changes in that quotation. There is no doubt, gentlemen, but what today water is in critical supply.

We are very fortunate this morning in having with us the Honorable Clarence Davis, Under Secretary of the Department of the Interior. During his distinguished career he has for some time been concerned with the fresh water supply. He is in an excellent position to address us this morning on the subject of "Water Resources."

Mr. Secretary, it is a pleasure to welcome you as a member of the Industrial College faculty of guest speakers, and to present you to this year's class as our authority on water resources.

Ladies and gentlemen, Secretary Davis.

UNDER SECRETARY DAVIS: Admiral Hague, General Niblo, ladies, and gentlemen: My modesty on this subject is really quite a touching thing. I looked over the directive that I received from Commander Thorson, the little summary of the things which he expected me to cover. I guess that is what he meant it to be. After I read that, I really did have to get busy, because here is what it says: "You will discuss the fresh water resources of the United States and their effect on the national economy; the supply, use of, and competitive demands for water from a domestic and industrial point of view; control, including flood, irrigation and drainage; pollution control and recreational uses; and an evaluation of water resources projects." So I want you to know that when I have covered all those in 45 minutes, or whatever it may turn out to be, I will have given you a very comprehensive address indeed.

When you give consideration to that subject and realize that there have been innumerable congressional committees working in the field for years; that President Truman had a committee working on it for two or three years, which came up with three large volumes of reports; when you realize that the first Hoover Commission on the reorganization of the Government came forth with a volume; that the second Hoover Commission is engaged in a similar study now; that the President has recently appointed a Cabinet committee of three, of which the Secretary of the Interior is chairman, to advise him by December 1st of the elements that they consider essential to any governmental water policy, you may have some idea of the fact that what I may say to you here in these few minutes is going to be neither exhaustive nor profound. I am going to deliver a great deal of this off the cuff.

It is apparent that any one of the clauses in that assignment which I read to you is in itself worthy of a long lecture and is provocative of a great deal of discussion. So all I can hope to do is give you just a cursory summation of the field and some of the problems that arise.

We are dealing here with something which is not only a natural resource but an absolute necessity of life. Without air, water, and land, human life would not be possible. Usable water is a compelling need of every man, woman, and child just as much as is the air they breathe. They must have it for drinking and other domestic uses.

Each person in the United States, it has been estimated, uses approximately 1,300 gallons of water a day, including that required for his personal consumption, his domestic uses, and the water that goes into supplying the food, clothing, and other things which he uses. That alone is about 210 billion gallons of water a day for the 162 million people in the United States.

The uses that we are making of water in this modern age just stagger the imagination. For instance, a large paper mill will use 50 million gallons of water a day--enough for the public water supply of a city of a half million people. More than 250 tons of water are used in making one ton of sulphate woodpulp or a ton of steel. A thousand gallons are necessary to produce one pound of rayon and 85,000 gallons to produce a ton of rubber. Agriculture estimates that an acre of alfalfa requires 325,000 gallons of water and an acre of cotton 800,000 gallons of water to mature it.

Now, as a general statement, our water problem in America is relatively new. We haven't been confronted with this water problem until recently. But the water problem is as old as civilization itself. The early civilizations in the Near East are supposed to have disappeared quite largely because they failed to control and manage this problem of water and the consequences of the lack of control of water.

Here in the United States, with a continent of virgin soil, we lived more than 200 years, nearly 300, before the water problem became acute. It was the development of the industrial age and the raising of our standards of living that have now highlighted the problem, so that numerous Government agencies, at all levels, as well as cities and other local governmental units from coast to coast, have lately begun to evince grave concern over the water problem.

The ability to maintain and increase the output of our goods and services will depend on our foresight in the development and effective use of our limited water and closely related resources. Societies and nations which expect to expand and to prosper must develop a workable system for the management of water. The American people know this. They know that many great cultures have failed because of inadequate or poorly managed water supply. As I have said, every level of Government is beginning to evince an interest in this problem.

The basic elements of a sound national water policy are relatively simple. Expressed in general terms, it requires programs that will provide an adequate water supply; that will prevent the waste of water; that will take care of the pollution of water or reduce it to the lowest possible point; that will provide methods for the useful and equitable distribution of the available water supply, and provide steps to check the destructive force of waters--which threaten life and other basic resources--growing out of floods.

These simple primary objectives are not always easy to carry out. There are wide differences of opinion on the best method for attack upon national water problems. It is a healthy sign that these differences are being so freely discussed and so freely argued from coast to coast as they are at the present time. They are a constant reminder that water is an active question which requires the best that all of us have in order to arrive at some intelligent solution.

The first great problem is that of adequacy of supply. In recent years we have had some vivid and startling examples of the way in which

modern civilization almost folds up when it encounters for any reason an inadequate supply of water. The problem is nationwide. You will remember, those of you from the New York area, when that great metropolitan area encountered its water shortage and you were trying to shave on a pint of water a day. At this moment the city of Denver is holding its breath through some critical situations; and, with its recent expansion to well over a half million people, will find its water supply a limiting factor on its growth unless somehow it can divert water from the west slope of the Rockies into the area of the city of Denver.

In the Supreme Court of the United States is pending a lawsuit between the states of Arizona and California over the disposition of the waters of the Colorado River. While the issues are legal, stripped of all the legal things which have to do with it, it really comes down to this: There is not enough water in the Colorado River for the development of the agricultural areas in Arizona that they wish to develop and at the same time to get an adequate water supply for that tremendously growing area around Los Angeles in southern California. So the controversy rages.

We are all familiar with the recent drought in Oklahoma and Texas and the devastation it has wrought on the cattle ranges, in the wells, and in the municipal supply.

One of our primary difficulties, especially in the West, is the absence of long-range data with which to accurately gage what the future will bring forth. Our records in most of that area go back a scant 75 years, which in the study of a matter of this kind is not a long enough period to enable us to forecast averages with any degree of certainty.

Another great field, about which even our geologists, as I gather it, are never quite certain, lies in the field of untapped underground waters. We have discovered many strange things, among others that, as population increases and water demands grow, underground water supplies, heretofore thought inexhaustible, have proven that they have definite limitations. Conversely, we have discovered in some areas, particularly in the Middle West, and perhaps as much as anywhere in my home state--Nebraska, tremendous supplies of underground water, almost amounting to gigantic rivers, which, so far as we have been able to ascertain, can be only temporarily depleted no matter how drastic the drawdowns are.

We need, therefore, constantly more data, more exploration, more study of the water potentialities of the country. The Federal Government, through the Geological Survey; the states, through their water resource departments; and the universities, through their research staffs, are continuously making contributions to the sum of our knowledge about the adequacy of our ultimate maximum water supplies.

Our next primary field of discussion should be that of the subject of the control of water--what we have done about it and who has done it.

For the first 200 years of civilization upon this continent, the problem of domestic water supply hardly arose. The waters were useful largely as a means of transportation and commerce. Governmental attention was largely directed to the improvement of waterways and the construction of canals as means of transportation.

In that connection the first problem that arose was that of floods and an attempt to control them.

It was logical that from the very earliest time the Federal Government has undertaken to improve navigable waters and to control floods. Out of that historic policy through the years has grown the Army Corps of Engineers, which was established in 1802. To it has historically been delegated the task of the improvement of our rivers and harbors, the construction of dikes and dams, and, with limitations, the prevention of silt deposit and erosion, all largely bottomed on the theory of navigation.

Next in the field of the control of water came the Bureau of Reclamation of the Department of the Interior, which was started in 1902 and received tremendous impetus in its early years out of the experiences of Theodore Roosevelt in the West. That Bureau was instituted, as the statute still says, for the reclamation of arid lands in the West and their conversion to productive capacity. The Bureau of Reclamation therefore has built dozens of dams for the storage of water throughout the 17 western reclamation states, has built irrigation systems, and has made millions of highly productive acres out of what was originally sagebrush or barren prairie. These dams, constructed primarily for the storage of water and its application to agricultural purposes, have contributed to flood control and, incidentally, to the production of hydroelectric energy.

Meantime, it has been constantly recognized that the Department of Agriculture has a tremendous stake in the adequacy and control of water. I am sure that during the last few years we have all become familiar with the basic fact that, as we have turned America from a land of timbered woods and grassed prairies into a land of plowed fields with accelerated drainage, we have created a condition under which it is possible to foresee through the years the loss of our life-giving top-soil through having it eroded and washed away, leaving us barren and unproductive areas.

It has also become apparent that the mere confining of floods by channels and dikes, and the mere facilitation of runoffs, is not only no answer to the problem of soil erosion, but that the soil itself can be a great storekeeper, a natural storekeeper, for the preservation of tremendous amounts of reserve water supplies. Therefore the Soil conservation Service of Agriculture, aided almost entirely by voluntary cooperation of farmers, has done a tremendous job, through soil treatment, through the terracing of land, and through the construction of small storage ponds and similar devices, to protect the land and assist in the conservation of our water supplies.

This all came to a head at the last session of Congress in the passage of the Hope-Aiken bills, which authorize the Department of Agriculture to expand tremendously its activities; to lend aid and financial assistance to watershed conservation movements, including small reservoirs, in the firm belief that, since all water comes from the clouds and falls upon the land, the land is the natural storage place for water, and that we may improve its fertility and improve our ultimate supply of water and tremendously aid the erosion problem by the conservation of water upon the land.

May we next move over to the broad question of the pollution of water supplies, a thing which is of still more recent public concern, and which bids fair in the future to take its place along with flood control, irrigation, navigation, and these other things which have been heretofore considered as the primary problems.

With the growth of population, with the public health movement for the construction of modern sewage systems, with the tremendously expanded industrial uses of water--much of which is contaminated in the industrial process, we have reached the point on many of our major rivers where the problem of pollution has become acute.

The Department of Health, Education and Welfare is primarily interested in this problem. So far it has not been vested with quite such broad powers over stream pollution as has the Corps of Engineers or the Bureau of Reclamation with reference to the water controls which they exercise. But we must remember that tremendous cities in the United States and large areas are primarily dependent for their water supply upon the rivers. The day is past when these cities and congested areas can rid themselves of their responsibilities by merely wasting polluted water into a nearby river, in utter disregard of the vital water supplies of other cities and areas down stream.

The sum of hundreds of millions of dollars that in my judgment will be called for in the next 25 years in the construction of sewage treatment plants, and in the undertaking of the prevention or correction of industrial pollution, is, I suspect, beyond the comprehension of all except those persons who have actually been absorbed with the problem in recent months.

On the other side of the picture, and working toward the production of more adequate supplies of water, is the extremely interesting program for the conversion of saline water, which is being carried on by the Department of the Interior. For the support of that program, the Congress has been for three years now annually appropriating 400,000 dollars; and that money in turn has been used as grants to research organizations to experiment with various methods of desalting water. The money has largely gone to the research departments of numerous universities and some limited number of industrial firms. Much progress has been made, sufficient at least to give Congress the justification for continuing the program. The problem is primarily one of cost, for several methods of achieving the objective are available. Progress is being made; and, while we are yet a long way from any mass production process which could provide desalted water to industry or for the irrigation of land, it is to my mind not inconceivable that domestic supplies of coastal cities might be materially augmented by this method within the next few years.

Other interesting steps are being tried for the reuse of water after treatment for pollution removal.

One of our problems grows out of the fact that we have always regarded water as free or substantially so; and our whole economy has never been geared to the payment of really substantial amounts for necessary water supplies.

The other perfectly fascinating field in which exploration is being continued under the direction of Congress is that of weather control, where the incantations of the medicine man and the prayers of the drought stricken are being supplanted by more scientific research in that field. One of my most interesting assignments is the privilege of sitting from time to time with a group of scientists engaged in this study. Progress is being made, but it is still in a very embryonic stage; nevertheless, it is a most interesting thing.

If we could devise means to desalt sea water, for instance, at any reasonable cost, if we could exercise limited control over rainmaking even a little, I suspect that we would then have in our power something which would do as much to revolutionize the world as will atomic energy itself. When you consider the millions and millions of people with submarginal standards of food, and the millions of acres of parched and barren land where the application of just a little water will completely revise the living standards and the whole economy of the area about which we are talking, you can see that those are two very interesting fields of exploration.

Now we move over from these more or less factual generalities to the question of the problems with which we are confronted.

In my judgment the first great problem may be expressed in two words: Whose water?

Here lies one of the most complicated and controversial legal questions of our time. Does water belong to the man on whose land it falls? Does it belong to the state in which it originates? Does the man along the stream have some right to the stream? Can the Federal Government assert any controlling rights over inland waters in opposition to the rights of the owners of the land or of the states themselves? Within what governmental province do these problems of water control properly fall?

To pursue that further, does the landowner own down to the center of the earth? Has he the right therefore to go into subterranean water supplies and pull them out in unlimited quantities, to the detriment of his neighbors, or does he not?

Now, from the beginning of our common law system it has been recognized that he who owns land adjacent to a flowing stream has

certain riparian rights in the stream--to have it flow by his land in something like a normal state, the right to have the flow to provide him with a domestic water supply, and so on.

As the West developed, there came with it the theory of appropriation of water. That is, by applying to the state and diverting the water from streams and applying it to irrigation or hydroelectric power or other purposes, it might become appropriated to the user, whether or not he was immediately adjacent to the stream. Millions of acres of the West have been developed upon that theory of the appropriation of water. Without that water, and the right to take it and apply it, the land is valueless, improvements are wasted, and it is uninhabitable.

The same is more or less true under the riparian theory previously mentioned. Under all these theories in America the right to the use of water with relation to land has been considered an inherent part of the land entitled to the use of the water, the water right passing with the title to the land.

But in recent years there has been more and more tendency to assert the Federal ownership, or at least the Federal right to control the disposition, of the waters of inland streams. And, since this amounts to the control of land values, you may well imagine the bitter opposition in the West to any assertion of any paramount rights of the Federal Government to the ownership and control of local waters. The whole system of real property rights in many areas of the West is bottomed upon individual ownership, or at least individual right to use water. Therefore, at stake in this legal controversy might be the question of the practical confiscation of values, or at least confiscation of the control of values, of enormous areas of the country.

The question of "Whose water?" will become more acutely apparent as I discuss some other facets of water development.

The next problem that arises is that of priority of use, as the urban and industrial uses increase, as contrasted with the rather fixed demands of agriculture.

Under the laws of most of the Western States, where water shortages have been a problem much longer than they have in the East, there is generally a well-defined priority of uses. That is, domestic uses, including livestock watering, have the first priority. Irrigation uses

have the second priority, in most cases industrial uses the next priority, and hydroelectric power the last priority.

Now, let us assume a river with a rather fixed quantity of water year in and year out. Let us assume that throughout the years adjacent landowners have made appropriations of water passing down the river, until they are using, by the time we get to the mouth of the river, practically all of the water in the river. Meantime, a city upstream has continued to grow and has only one logical source of water supply, that is, the river. Shall the domestic and industrial users of that city be entitled to use the water of this stream? If not, the growth of the city has definite economic limitations. If so, they are in practical effect denuding the land below by depriving it of water, thus damaging the land. Should they be compelled to recompense the lower landowners for the value of the farmland which they have destroyed or at least diminished?

Under the laws of most of the states, they would be compelled to make that reimbursement, since the taking of the water is tantamount to a confiscation of the land. Under the doctrine of Federal ownership and control of water, the agriculturist would be regarded as only having been using it at sufference, having acquired no rights, and being without a right to recompense.

Under the reclamation laws the Bureau of Reclamation is directed to make applications for the right to use water under the laws of the states and to be bound by the laws of the states. So the problem with respect to projects of reclamation should not exist.

But what are the rights between the various states? For many years the constitution of the State of Colorado, for instance, declared that all of the waters originating in the State of Colorado--they originate, of course, from the melting of the snows on the Rockies--are the property of that state which it can do with as it pleases, even to the extent of drying up the stream below the state boundary. That is the provision in the Colorado constitution.

That doctrine has now been largely exploded by the Supreme Court of the United States, which has held in several cases during the last 25 years that the water of interstate streams must be equitably apportioned among the various states in the basin.

Now let me turn to the very complicated and sometimes touchy question involving the interrelationship of various Federal bureaus.

When is a dam primarily a flood-control structure, falling logically within the domain of the Corps of Engineers? When is it a storage dam, falling within the province of the Bureau of Reclamation? When it has both functions, in whose province is it? How big a dam may Agriculture build, on the theory of water conservation on the land? And will that encroach upon the functions of the other two agencies? Is it more economical to produce agricultural land by drainage or irrigation?

What provisions must be kept in mind for the protection of the unused water rights of the Indian tribes? Incidentally, they have tremendous water rights in the West, which should be developed. What provisions should be made for the preservation of the fish and wildlife habitat as civilization expands and these developments take place?

When should hydroelectric facilities be installed in these structures; and, if so, who shall install them?

Now, are these projects worth while? Does the flood-control dam prevent enough flood damage to justify its cost? Does the reclamation project which proposes to irrigate still more thousands of acres of desert land justify its construction, at a time when farm surpluses are a major national problem?

How much of the cost of these structures should be paid back by the people who are the beneficiaries? How much can they pay back, and how far is the Government justified in investing taxpayers' money?

What obligations does the Federal Government have toward preservation of fish and wildlife? How much is that sort of thing a state function, as contrasted with a Federal?

If part of the costs for these projects are to be reimbursed by the beneficiaries, who is to determine the amount reimbursable? What method is to be used in determining it?

Is the backwater from our control structures inundating and destroying as much productive capacity of land as we are gaining from the prospective newly irrigated land?

If we have hydroelectric power facilities, should that energy be sold on the basis of its bare cost or should it be sold at a price comparable to the going market, and those additional proceeds be applied to the liquidation of the cost of the project?

What provisions should be made, if any, to reimburse local units of the Government, first, for the value of local property which is rendered valueless and untaxable by inundation from the project; and, second, by reason of the enhanced community value of the construction of the project?

These are just a few of the knotty problems with which not only the executive departments but the Congress are faced in the adoption of some uniform national water policy. Heretofore the pattern has been anything but uniform. Structures constructed by the Corps of Engineers such as flood-control dams have been largely paid for by Federal taxpayers on the theory that they were an aid toward the prevention of damage to property and the improvement of navigation, both of which were considered in the national welfare. So far as I know, there has been little, if any, attempt to assess back against the beneficiaries any portion of the costs of these various structures; and this despite the fact that, through a system of river control, including dikes, the Corps of Engineers has made tens of thousands of acres of land valuable that theretofore were largely valueless because of recurrent flood damage.

The Bureau of Reclamation, on the other hand, constructs a dam and undertakes to secure major reimbursement for the structure. It does this by compelling the landowners who are benefited by the irrigation works to enter into contracts by which they pay all that they are able to pay; that is, in theory all of the enhanced crop value of their land, toward the liquidation of the debt; and the proceeds of such hydroelectric power as may be produced are likewise applied to debt liquidation.

Going still further, the small watershed developments of the Department of Agriculture will substantially all be paid by the local landowners who are benefited. It is a little difficult to explain to farmers in the West why they need to pay the maximum possible amount for water which is made available to benefit their land while farmers in other valleys have secured the benefit of drainage and the prevention of floods, a quite comparable benefit, without any cost.

Likewise, until the last few months there have been fundamental differences of opinion between these various agencies as to the equitable manner of the distribution of many of these costs. Let us assume a project which performs a multiple function. In the first place, by greatly retarding and impounding the waters of a stream,

it obviously tends to diminish floods. By retaining the water and distributing it over large land areas, it obviously benefits the irrigator. By passing the water through turbines, it generates substantial amounts of electric power. By creating an artificial lake, frequently of great magnitude, it inevitably very greatly enhances the fishing and other wildlife resources of the region. By providing a lake and outdoor attractions, it makes a natural recreational area of substantial proportions.

The question then becomes: How much of the cost of this structure should be absorbed by the Federal Government as a national benefit? How much should be charged to the irrigator and how much to the cost of the hydroelectric energy? How much of the investment in the structure should be attributed to the preservation or increase of the fish and wildlife resources? And, lastly, how much, if any, should be charged to recreational facilities; and, if any is charged to recreation, should that be paid by the Nation as a whole or be paid by the people of the area, who obviously are the primary beneficiaries of recreational areas?

During the last year the Administration has made a sincere effort to solve some of the more perplexing of these problems. The first one which received attention was the question of real estate acquisition; that is, how much land around these various projects should be taken over by the Federal Government? And was it possible for the various Federal agencies to agree on a uniform policy, so that the Army would not take an area of 20 or 30 miles, Reclamation take 8 or 10 miles, and perhaps other agencies take nothing, or vice versa?

At any rate, here arises a close question of the balance of equities between various groups of people. If no land is taken except to the waterline, then, obviously, the land largely being under private ownership, it is greatly enhanced in value for shoreline cottages and limited recreational purposes. On the other hand the taking of large bodies of land several miles in area in connection with these projects, while it results in unlimited public access and fine outdoor and recreational facilities, likewise takes off the tax rolls and seriously handicaps local government and leaves, as it has in many cases, large amounts of farmland owned by the Government, completely out of private hands, resulting in land tenancy from the Government, a thing which this country has always disapproved.

There is no denying the fact that, if large amounts of public money are invested in these structures, the public is entitled to reasonable

access to them and reasonable opportunity to use them for the fish and wildlife aspect and the recreational aspect.

As a result of conferences between the Army and the Department of the Interior, a uniform policy has been adopted this year. It has been agreed that a shoreline would be taken 300 feet back from the high-water level and retained in Government ownership, thereby retaining the shoreline, giving public access to the body of water, and preventing unsightly and unseemly structures on the water; but, at the same time still maintaining an opportunity for local people to acquire individual property within reasonably usable distance of the body of water.

Right or wrong, the policy is now at least uniform, and we have rid ourselves of one uncomfortable aspect of the situation; that is, of people wishing one agency or the other to build the structure, depending on the more or less liberal land policies that might be pursued by that particular agency.

The problem of allocation of costs to the various functions has been one of the most troublesome, and to my mind, as a newcomer, well-nigh disgraceful.

My pet example is in the western area of the United States, where during the years the Army has built dams for flood-control purposes, with hydroelectric installations, in the States of Oklahoma, Texas, and Arkansas; and some others are proposed. Each of these offers some, although very limited, hydroelectric potentials.

To illustrate how fantastic some of these things have worked out in the past--at the time these dams of the Southwestern Power Administration, which is an Interior agency, were authorized by the Congress and being built by the Corps of Engineers, the Corps allocated to the hydroelectric facilities 400 million dollars of the cost, which was to be retrieved by the sale of hydroelectric energy. But Interior is the marketing agent of hydroelectric power produced by the Government, and as such marketing agency, Interior asserted its right to determine for itself what was the fair cost of the facilities which it used. Consequently, after its reappraisement of the situation, Interior decided that a fair allocation to hydroelectric power was a little less than 200 million dollars, almost exactly half of the Army estimate.

Hence a system of electric rates was devised which, it was supposed, would liquidate the 200 million dollars. The other 200 million dollars obviously comes out of the pocket of the Federal taxpayer.

I have felt long before coming to Washington that there was no excuse for that sort of financial maneuvering. Either these projects are sound or they are not sound. If we are to expect reimbursement, we ought to use the same set of figures with relation to securing reimbursement that we used with relation to securing appropriations. There are other cases in the United States involving even larger amounts of money in which the cost of the facilities as originally made and originally participated in by the Government and the allocation to reimbursement bear very little relation to what is actually happening in the operation of the project.

This is another field in which the Army and Interior during this year have been able to work out a very substantial agreement in cooperation with the Federal Power Commission (FPC), which, after all, has final jurisdiction of the rates for these projects.

This is not the occasion to discuss the details of this uniform policy. In the first place, I am not competent to discuss it anyway. However, I can say that the Army-Interior agreement in general adopts the theory of the separable costs remaining benefits, with certain specified modifications.

Further harmony has been achieved between the Fish and Wildlife people and the other agencies of Interior and the Corps of Engineers with reference to the treatment of fish and wildlife. An agreement has been entered upon for the Fish and Wildlife Service to make a report in connection with these projects with reference to these various fish and wildlife aspects. The Bureau of Reclamation has agreed to take these recommendations into consideration and to put in its report to Congress the amounts so specified, which shall therefore become an inherent part of the cost of the various projects.

That represents progress, for the reason that many of these projects have resulted in agencies being at loggerheads with each other because a particular agency didn't feel that it was getting from the provisions devised its share of the money which was needed, or that its particular interests were being neglected.

All of the foregoing represent steps toward achieving uniformity in the appraisal of the economic feasibility of these projects; but there are still other features not completely resolved, and there are still fundamental conflicts of viewpoint between large segments of our people.

We have the flood-control-minded people who would release as rapidly as possible after a flood most of the water in flood-control dams to save the space for future flood protection. We have the irrigation-minded, who believe that no water should be released, even for hydroelectric power, except in the irrigating season or unless the supply is surplus for the foreseeable future. We have the power-minded, a particularly zealous group, who believe that Government hydroelectric plants should be operated at all cost and in any event, regardless of the effect upon other water users of the stream or its irrigation potentials or real conservation of water. We have the fish and wildlife people, the Isaac Walton League and similar organizations, and the national park advocates and the nature lovers, who are instinctively opposed to any river development or to any tampering with nature in areas where recreational facilities, fishing, boating, or scenic beauty will be disturbed.

The Department of the Interior lives in the middle of this controversy. The wide controversy over the construction of Echo Park Reservoir as a part of the development of the upper Colorado River illustrates perfectly the situation.

Despite the fact that the storage of water at that location is badly needed by the irrigators of the Colorado Basin, and the production of power makes a tremendous contribution toward the economy of the area, hundreds of people believe that the scenic beauty should be preserved and nature left undisturbed and undefiled. It is a perfect example of the necessity of balancing the economic needs of an area against sentiment.

Incidentally, the most interesting thing to me is that in the year prior to the time when the proposal to construct Echo Park was made to Congress, there were less than 500 people who visited that park, which is in a very inaccessible portion of the Rockies. Yet, despite that fact, there were hundreds and hundreds of letters of violent protest against the destruction of the scenic beauty of this area which the writers had never seen.

I am not too critical of these people. They perfectly well believe in what they have seen or read in the papers or magazines--that this is one of the great scenic spots of the world. Of course there are thousands of canyons in that western area that are substantially identical with this one. Nevertheless those people's voices constitute a real factor in the determination of what may be done toward valley development in a lot of regions of the United States.

As we go forward, there is going to be repeated controversy about a great many of these proposals. That is one of the reasons why the more widely we can disseminate information about these problems, the better off in the long run we will be and the more intelligent will be our answers.

We are, unfortunately, confronted with many instances where we have again a choice between the economic aspects of some of these things and the scenic beauty and recreational facilities, which all of us would like to preserve. So the question is, Are we willing to preserve them for these purposes at the expense of the economy?

You will note that I have avoided any discussion of atomic energy in this paper. In the first place, it doesn't have too much to do with our water resources. But it is a thing which naturally has relevancy to certain aspects of the use of water.

Considering the rapid developments which have followed scientific discoveries in the past, I think it is not inappropriate to keep in mind that we are establishing some water resource facilities on the theory that their cost will be reimbursed to the Government over a period of some 50 or 60 years in the future. Integration of hydroelectric and atomic energy may be a real problem for future resolution.

In summary, let me say that the United States is facing many serious problems relating to water. Our supply is not without its limitation. Its wise use is the goal which we all strive to achieve. We must balance the needs in many instances between adequate domestic and individual supplies for our cities and the demands of agriculture on the one hand and the operation of hydroelectric facilities on the other. We must protect, so far as consistent with other uses, our fish and wildlife resources. We must provide large recreational areas that will provide a wholesome outdoors for our growing population.

The problems are nationwide; they are complicated. There is glory and responsibility enough for all. Frankly stated, I personally feel that the problem is too vast, and it has too many ramifications, to be solely a Federal problem. That is especially true in view of the state of the budget at the moment.

I believe that we cannot carry the tremendous defense expenditures of the moment and also all of the projects for water control and use which we all admit might be desirable. It is for that reason that the President has declared himself repeatedly in favor of a partnership policy between the Federal Government, the states, and the local communities in the construction of these facilities and in their wise use and operation.

As just one example of the tremendous potentialities of local government units to handle their own problems economically and financially, let me tell you that since it has been indicated that the Federal Government would welcome local participation in the Columbia Basin, in the Pacific Northwest, there is now more than the sum of 2 billion dollars of local money from states, municipalities, irrigation districts, private interests, and so forth, which has stepped forward ready to enter upon the construction of the water-control facilities and the hydroelectric-power facilities in just that one basin alone, which to my mind gives complete evidence of the acute local interest, of local capital, and of a local desire to participate in these problems and their solution.

I have been saying in Washington, ever since coming down here, that not all wisdom reposes in the District of Columbia. Therefore I welcome the use of the knowledge, experience, and interest of the local people as the most desirable thing which can be brought to bear on the solution of these problems.

There are a lot of other problems which I haven't even had time to talk about. I have talked too long as it is. I have tried to give you just a broad framework within which we hope to establish a definite water policy that will do the most and the best for the largest number of people in the United States.

Thank you very much, gentlemen, for your attention.

COMMANDER THORSON: Gentlemen, Secretary Davis is now ready for your questions.

QUESTION: Secretary Davis, in your discussion you mentioned land reclamation as being the primary mission of the Bureau of Reclamation. Would you care to comment regarding its stand on the controversial Hells Canyon Dam in Idaho and Oregon, where they have been made out in the newspapers to be quite an instigator of public power?

SECRETARY DAVIS: They have been made out in the newspapers to be quite a murderer of public power.

Well, to discuss Hells Canyon for just a minute--there is obviously more misconception and misrepresentation about Hells Canyon than there has been about any other dam for a long time. To begin with, from the legal standpoint, you realize that this Hells Canyon controversy has twice been presented to Congress and twice turned down as a Department of the Interior program. Both of those times were under the previous Democratic administration.

Of course, the Bureau today has no legal right, and no legal obligation, just as you would assume, to proceed with the construction of Hells Canyon Dam. With two negative votes by Congress, denying the Bureau the authority to build it, and with what we know now, and what we knew before, about the size of the budget of Interior, we simply stood no reasonable chance of getting authorization for about 800 million dollars necessary to build the Hells Canyon project. Consequently, all you really would do by intervening in that project would be to tie up that whole river situation for nobody knows how long in the future without your being able to proceed with it at all. That is one phase of it.

The other phase of it is that the figures that have been used, and they are very approximate, take into account not only the Hells Canyon Dam, but they take into account the increase in capacity of Coulee, Bonneville, McNary and what-have-you all the way down the river. That sort of computation, which includes the additional hydroelectric energy which is produced as a result of building Hells Canyon Dam, is in a sense justified. On the other hand, unfortunately, and I think, most unfairly, the other figures which have been used in contrast to that figure take into account only such actual capacity as the proposed plants of the Idaho Power Company can produce. Naturally, that produces bad-looking and out-of-proportion sort of figures for the private company.

But actually there is very little difference between the two sets of figures. At the end of 10 or maybe 15 years, both the proposed Hells Canyon Dam and the dam of the Idaho Power Company, because of other changes in the river and other demands for water upstream, and all that sort of thing, will settle down to approximately an identical figure of about 600,000 kilowatts. So they will both end up just about the same thing. The fundamental issue involved there is, number one, whether you are opposed to the Government developing the hydroelectric energy

on these rivers on money that they get from the taxpayers if other means are available; number two, whether you are opposed to all construction by private enterprise on the rivers of the United States. That is about where you actually end up with the issue.

QUESTION: Mr. Secretary, from time to time over the years I have seen reference to the feasibility of developing a Missouri Valley Authority, similar to TVA. Is there anything alive on that, and would you give us an idea of what is being considered?

SECRETARY DAVIS: When you say "anything alive" I suppose you are referring to the dog in the manager attitude of Federal power development. There isn't anything very alive in it, for the reason that most of the states in the basin have wrestled with this concept of a valley authority; and I think, more than that, have explored some of the difficulties that one runs into.

The difficulty with the Missouri Valley Authority--some have used this argument both ways--you have terribly divergent points of view between Montana on the west, the city of St. Louis on the east, and all kinds of conditions in between. But I think everybody is a little afraid to put such vast authority, the supreme authority of life and death over economies of such large areas in the hands of any Missouri Valley Authority. I think that by and large you will find that the whole authority idea has never taken hold in either the Middle West or the Northwest.

QUESTION: Mr. Secretary, you mentioned a dog in a manager implication being attached to Federal development of power. You also mentioned the way in which many conflicts are involved in the thing as a whole. At the same time you have said that 2 billion dollars of private capital have been offered to cooperate with the Federal development of the Columbia River Basin. I assume that to be the sum total of the various contributions, and I would assume that each of these contributors saw some local problem to be solved or some local need or self-interest to be served. How would you know on the face of it that the administration of that 2 billion dollars so as to get something sensible out of that private property would be less scrambled than what would be involved in the Federal people taking the initiative in the first place and making orderly plans?

SECRETARY DAVIS: The answer to that one is that all those proposals have to go to the FPC The FPC was created in 1920 and has

been developed in relatively recent years into a full-fledged agency. The FPC is given a lot of definite standards in the Federal statute with reference to allowance of rights of construction of dams upon these streams. It has a set of criteria. Among others is that the dam must fit into a comprehensive development of the valley resources as a whole. The detriments must not outweigh the benefits. It must not be a thing which will prevent further and future development of other sites. Consequently that commission has fairly adequate power to compel complete coordination of all those individual projects throughout the entire length of that river. That represents the theory of the Federal regulation of local private enterprise, as contrasted on the other side with the theory of Federal ownership and operation, which goes to the very heart of what you believe the Government should do.

QUESTION: Power and transportation seem to be the two greatest shortages in Alaska. I believe both are the responsibility of your Department. Would you care to comment on further plans for power development in Alaska?

SECRETARY DAVIS: I have Mr. Marr here with me, and I think he would be more competent to speak on that than I am. But I will at least tell you this:

There seems to be little doubt that there are tremendous hydroelectric potentialities in Alaska. Some of the larger outfits have plans under way, especially the western companies, in connection with the development of their own power organizations in Canada and Alaska. So that, as far as the needs of the moment are concerned, I think those needs are reasonably well under control. I question whether we have too much of an electric shortage in Alaska at the moment. If we do, I am not familiar with it. At any rate, in those areas you get into a lot of problems that you don't get in a more moderate climate when you talk about transportation and the use of water. Would you care to say something on that, Mr. Marr?

MR. JOHN MARR, head of the Technical Review Staff, Office of the Under Secretary of the Interior: I might comment that the Bureau of Reclamation is building the Eklutna project. It also has carried on, and is carrying on, other river investigations as to the potentialities of future power development.

In the field of transportation in Alaska, we do operate the Alaskan Railroad. We do also have the Alaskan Road Commission, which is concerned very much with trying to get these things on a sound basis and also to expand them in the hope of encouraging further economic development in Alaska.

SECRETARY DAVIS: I would take it that Eklutna is reasonably well along. That will no doubt go on through.

I was also looking at a very preliminary report on another river, with an unpronounceable name so far as I am concerned. That is a river with just tremendous hydroelectric potentialities on it. I was looking at some of the estimated figures of what might be done there. Well, according to the estimates that the engineers were making, it looked to me as if a single dam will have approximately 10 times the present demand of the electric load over which we have any control in the area of Alaska.

That brings up the chicken and egg question. Should we build dams and trust industry to come into Alaska and use the energy, having no guarantee as to reimbursement? Or should we wait until somebody makes some kind of offer for energy before we start?

QUESTION: A number of years ago I saw an article which developed the thesis that it is much cheaper to rehabilitate land, say, in the South than it is to create more reclamation and irrigation projects. In other words the statement was made that we are pouring a great deal of money into reclamation that you could use much more efficiently elsewhere for rehabilitating land. Would you care to comment on that?

SECRETARY DAVIS: I can comment on some of the figures that you saw.

Of course it would be apparent to me that there might be many cases where that would be true. There is no denying the fact that in some reclamation projects that have been proposed in recent years the proponents have admitted that the projects would cost 1,000, 1,200, or 1,500 dollars an acre. When you get all through, that land will never settle down to be worth more than a third of that, if that much. It is a serious question as to what possible advisability there would be in such a project until we have a more desperate need for agricultural products than we have now.

Well, taking these figures alone, I would suppose from what little I know that there might very well be areas where that money would rehabilitate land on a much less expensive basis than in some of the reclamation proposals being made. I wouldn't doubt it. But it is the type of thing which would require a very comprehensive study at the

national level. Whether anything like that has been done or not, I don't know.

QUESTION: Secretary Davis, you mentioned rainmaking. I know that is quite a problem to deal with. But would you care to comment on the Department's attitude during the various rainmaking projects? Is it necessary, or will it in the future be necessary, for you to take some legal action or adopt some policy on the part of the Department in reference to that kind of undertaking?

SECRETARY DAVIS: That is something on which I can let my imagination run riot.

Of course, number one, we start with the fact that our scientists who really have studied that are still not at all sure of what we have done, or whether we have done anything, or whether the laws of chance have not worked in favor of the commercial companies once in a while. There are a lot of other things that enter into it. So we start without any very firm foundation.

We move on then to the next question, of what should be done. As you know, a committee authorized by the Congress is pursuing an investigation of this in the field and in the laboratory.

When you get over into the legal end of it, there are no end of complications, to which no human being has the answer; I assure you of that. The question has already popped up of what you would do when a wheat field might need water at the same time that an orchard of cherry trees wouldn't want it; and all that sort of thing.

We are in a field of tremendous speculation, even if you assume that we have at times precipitated clouds a little more rapidly than usual. Still we have no indication, at least none that is directly provable, as to where the rain that we make will fall, or how quickly it will fall. We certainly have no real control over rainmaking in the proper sense of the word. We have to consider the rights of the landowners who are not benefited, who don't want rain.

All those things have been kicked around in the newspapers and elsewhere. There is no answer to them so far as I know. As of now this committee is entirely engrossed in trying to get some accurate data as to whether we are pursuing a myth or not. Once we decide,

if we do, that we are not pursuing a myth, then, of course, it will be time to study some of the consequences that follow.

QUESTION: Mr. Secretary, you mentioned that the problem was perhaps too big and too complex for the Federal Government. Yet it seems to me that you are going to complicate it even more by inviting two more voices in--the voice of the State Government and the voice of private industry. Will you explain how that will be less complex than by bringing the Federal Government into the partnership?

SECRETARY DAVIS: I didn't mean to imply that we would make it less complex that way than by bringing the Federal Government in. It is an interagency problem. I would suppose that a strictly Federalized problem, assuming that you have harmony between the agencies, would be the simpler of the two. But you do make it more complex the more people you get participating in it.

My philosophy about it is that if you pursue permanent Federal construction, control, operation, and management of our natural resources, you ultimately Federalize, number one, electric power; number two, water; and number three, land. I think that is the pattern which you get. I don't think you can have a fundamental resource under complete Government control, with no private interest in it, and avoid the socialistic implications that go along with it.

Ownership of land implies the right to control the crops, housing, hours of labor, and various other things. The same thing is true with every one of the other fundamental resources. That is why some of us, at least, have been a little disturbed in recent years about what we thought was an extreme tendency toward the vesting of control over all these resources in the Washington bureaus, to the exclusion of the local governments, which we have always felt are more responsive to, and more responsible for, the local communities than any Federal Government bureaus could possibly be. That is a piece of Government philosophy that I still like.

QUESTION: Isn't it also true that this is just the point that the proponents of the public control believe in--that when the states have control of many of these resources, they cater to the local demand? Can private money, which has to be spent in such a way as to get a return for the investors, a thing which is necessary when there is any commercial and short-term interest involved, do the same thing for the

natural resources of our country that the Government can do, with its long-term concern for the national welfare?

SECRETARY DAVIS: It can, unless you are willing to kid yourself in the belief, which so many people have, that Government money doesn't cost you anything. If you tax me by taking money from my paycheck every second Thursday and put that money into a project out there, shouldn't we take into account the fact that there is capital sunk in that project which ought to make a return? If so, that money has to make a return just the same as if Mr. Marr had borrowed money to build the project.

But that is still not the answer I really want to give to your question. Most of those applications for construction by public bodies are tax exempt. Therefore the bonds issued by those public agencies--for instance, public utilities in a county or a city, like the city of Dallas--are tax exempt. Those agencies will get the money for that project in the market, because their bonds are tax exempt, at a lower rate than the Treasury can supply it. Certainly they won't have to pay a bit more.

Those revenue bonds on projects of that nature, assuming they are sound projects, have today an interest rate of around 2.3 percent, or some such figure. If you let me localize a little on you, the State of Nebraska, which is an entirely public power state, has bought out all the power companies and turned them into state power agencies; it has borrowed over 200 million dollars in New York at an average interest rate of only 2.14 percent, because it has the right to tax exemption.

Your Federal Government naturally doesn't tax itself. Your state agency doesn't tax itself. Your interest rates are about the same. So far as governmental agencies are concerned, I don't think there is any great financial difference in which way you set it up.

You go over to private construction and both the bonds and the property are taxable. That will necessitate a higher rate. But if you added to that Government operation or state operation an equivalent tax, such as you pay on that private operation, I am not at all sure that you would have any difference in the interest rate or the net return to taxpayers. One way the Government gets property tax exemption and tax-free money. The other way you get your money back in the form of taxes.

COMMANDER THORSON: Mr. Secretary, I thank you on behalf of the Commandant, student body, and faculty for your most informative and interesting lecture and for your frankness in answering questions. I also thank Mr. Marr for his assistance.

(11 Jan 1955--750)S/en