

SAN JUAN-CHAMA RECLAMATION PROJECT AND  
NAVAJO INDIAN IRRIGATION PROJECT

TUESDAY, APRIL 25, 1961

HOUSE OF REPRESENTATIVES,  
SUBCOMMITTEE ON IRRIGATION AND RECLAMATION,  
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,  
*Washington, D.C.*

The subcommittee met, pursuant to adjournment, at 9:50 a.m., in the committee room, New House Office Building, Hon. Walter Rogers (chairman of the subcommittee) presiding.

Mr. ROGERS. The Subcommittee on Irrigation and Reclamation will come to order for the further consideration of pending business.

Does the gentleman from Colorado have a question?

Mr. ASPINALL. Mr. Chairman, I would ask unanimous consent that the Department be permitted to put on its full statement this morning either by one or more individuals that they may have present and that they be questioned by the committee en bloc.

If we do not finish with them this morning, they will be asked to come back. And then the further unanimous consent request that this afternoon we take the remaining witnesses from out of town and we listen to their statements and we finish with them by not later than 4 o'clock and then they be excused from further testimony.

Mr. ROGERS. Is there objection to the request of the gentleman from Colorado? The Chair hearing none, it is so ordered.

Let the Chair make this observation at this time. He has been furnished this morning with a supplemental report of the Interior Department over the signature of the Secretary, Hon. Stewart L. Udall, with reference to section 8(a) of the bills in their present form. Without objection, this supplemental report will be included in the record immediately following the previous report filed yesterday.

Mr. MORRIS. Reserving the right to object.

Mr. HOSMER. Reserving the right to object, what is the nature of this supplemental report?

Mr. ROGERS. Do you have a copy of it? Copies were distributed.

Mr. HOSMER. Yes; now.

Mr. MORRIS. I withdraw my reservation, Mr. Chairman.

Mr. HOSMER. I withdraw my reservation.

Mr. ROGERS. Without objection, it is so ordered and the supplemental report is included. (See p. 13.)

Mr. ASPINALL. Mr. Chairman.

Mr. ROGERS. Mr. Aspinall.

Mr. ASPINALL. Yesterday I referred to a letter which I had received from the Director of the Budget and read an excerpt from that letter.

Today I am in receipt of a letter from the Deputy Director of the Bureau of the Budget under date of April 24, 1961, in answer to the question which I raised yesterday in answer to the letter which I had forwarded down to the Bureau of the Budget after receiving the first letter.

I would ask unanimous consent that this letter be placed in the record at this point.

Mr. ROGERS. Is there objection? The Chair hears none and the request of the gentleman from Colorado is granted and the letter will be included in the record.

(The letter referred to follows:)

EXECUTIVE OFFICE OF THE PRESIDENT,  
BUREAU OF THE BUDGET,  
Washington, D.C., April 24, 1961.

HON. WAYNE N. ASPINALL,  
Chairman, Committee on Interior and Insular Affairs,  
House of Representatives, Washington, D.C.

MY DEAR MR. CHAIRMAN: This is in reply to your letter of April 12, 1961, asking for clarification of the views contained in our letter of March 24, 1961, concerning the San Juan-Chama project.

In our earlier letter, we expressed our conclusion that the anticipated beneficial effects from the San Juan-Chama project in sustaining the economies of certain declining agricultural communities would appear to justify an exception to current evaluation standards. This conclusion was based on information furnished by the Department of the Interior with respect to the Cerro, Taos, Llano, and Pojoaque tributary irrigation units of the project which indicated, in our judgment, that these units should be considered as a special case. We are enclosing an excerpt from the project report which describes the unusual nature of the problems facing these communities in some detail.

We fully agree with your observation that the time has come for an overall review of evaluation standards. We are currently engaged in such a review pursuant to the President's instructions in his natural resources message, and we are hopeful that it will result in a significant improvement over present procedures.

We hope the above discussion of our views on the San Juan-Chama project will be helpful to you. Please let us know if we can be of any further assistance in this regard.

Sincerely yours,

ELMER B. STAATS, *Deputy Director.*

Mr. ROGERS. The gentleman from New Mexico, Mr. Morris.

Mr. MORRIS. Mr. Chairman, I ask unanimous consent that the telegram from the Aztec, N. Mex., Chamber of Commerce be inserted in the record.

Mr. ROGERS. Do you care to see that, Mr. Hosmer?

Mr. HOSMER. No.

Mr. ROGERS. Without objection, it is so ordered.

(The telegram referred to follows:)

AZTEC, N. MEX., April 24, 1961.

C. E. CALVERT,  
Stafford Hotel, Washington, D.C.:

We the directors of Aztec Chamber of Commerce are opposed to the San Juan-Chama diversion but we are in favor of the Navajo irrigation project.

EMORY MINIMUM,  
J. B. COLLARD,  
BUSTER DIAL,  
AL WILLIAMS.

Mr. MORRIS. I find a statement by the and that the report Gallup be made a p

Mr. ROGERS. Is so ordered.

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Mr. Chairman and represented here to William Patranovich community.

Our purpose in before this committee of S. 107 and H.R.

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Secondly and certa to the north of Gall our support in their intelligent, and capal opportunities, he is of our United States of which is desolate to water from the S use. The Navajo ha he can make tremen help he needs to su program that could strongly urge its pa

Our third reason town of Gallup has le of Indians in the ar the opening of a fine of the entire region pace in the growth

To enable Gallup to continue at all, it water be developed utilized.

Since the appeara we have not been id instead, caused exte ising underground at the results of these sultant's report stat source of municipal economically infeas the Gordon Herkenb April 1961, attached

Mr. MORRIS. I further ask unanimous consent, Mr. Chairman, that a statement by the mayor of the city of Gallup be inserted in the record and that the report of the engineering consultant for the city of Gallup be made a part of the file.

Mr. ROGERS. Is there objection? The Chair hears none and it is so ordered.

(The statement referred to follows and the report referred to was entered in the subcommittee file.)

## STATEMENT OF TOWN OF GALLUP, N. MEX.

Mr. Chairman and members of this committee, the town of Gallup, N. Mex., is represented here today by its mayor, Mr. Edward Munoz, its manager, Mr. William Patranovich, and its attorney, Mr. Albert O. Lebeck, Jr., all of that community.

Our purpose in traveling some 2,000 miles to Washington, D.C., to appear before this committee is to urge a favorable committee report and final passage of S. 107 and H.R. 2506, 2552.

Our reasons for favoring this legislation are threefold:

First of all, the San Juan Chama-Navajo irrigation project is vitally needed in our arid New Mexico country; this is the last known source of water available to New Mexico, and if not utilized the State will slowly wither and die. New Mexico is not a wealthy State and yet if it could avail itself of its water flowing in the San Juan River and stored in the Navajo Dam, it has vast potential of being capable of providing a decent standard of living for its inhabitants. Each year Congress authorizes and appropriates many millions of dollars to the underdeveloped and underprivileged areas of the world; charity beginning at home, we urge Congress to grant the necessary authorization and appropriation to develop New Mexico's water resource in the San Juan River and enable this State to develop properly its underdeveloped areas and adequately aid its underprivileged.

Secondly and certainly as additional support of our first reason, our neighbors to the north of Gallup, the Navajo Tribe, have sought and earnestly receive our support in their Navajo Indian irrigation project. The Navajo is a proud, intelligent, and capable individual. If given equal educational and occupational opportunities, he is fully capable of and desires to be self-supporting. By act of our United States, the Navajo finds himself on a huge reservation, the most of which is desolate and arid due to the lack of water. By law, he is entitled to water from the San Juan Basin; by economics, he is unable to facilitate its use. The Navajo has made tremendous strides the last few years in education; he can make tremendous strides toward becoming self-sufficient if provided the help he needs to supply his water to his lands. We can think of no foreign program that could surpass the need presented by the Navajo project. We strongly urge its passage.

Our third reason for supporting this legislation is for municipal water. The town of Gallup has long been a vital trade center in the economy of the thousands of Indians in the area. Its importance has more recently been increased with the opening of a fine new Public Health Service Indian Hospital. The economy of the entire region rests to great extent upon the ability of the town to keep pace in the growth of demand upon this trade center.

To enable Gallup to continue its growth or more accurately to enable Gallup to continue at all, it is absolutely necessary that new and additional sources of water be developed in addition to those present sources of water now being utilized.

Since the appearance of Gallup's delegation before this committee last year, we have not been idle in seeking a solution to our water problem. We have, instead, caused extensive and exhaustive studies and tests of the most promising underground area within feasible distance from the town. Unfortunately, the results of these studies and tests have been most disheartening. The consultant's report states, "It is recommended that the \* \* \* supply as a possible source of municipal water be abandoned \* \* \* the source is both technically and economically infeasible. For a detailed study of the results of these tests see the Gordon Herkenhoff & Associates, Inc., Prewitt Water Supply Investigation, April 1961, attached to the original of this report and made a part thereof.

Except for the future promise of water from the Navajo irrigation project the town can now rely for its growth only upon its presently developed water sources which have long ago proved to be exhaustible. Recent examinations show that at present growth rates these sources will be exhausted within the next 7 to 10 years. (See the report on water supply for the town of Gallup submitted by J. T. Banner & Associates, consulting engineers, Laramie, Wyo., contained in the report of Gallup made to the Senate Committee on July 9-10, 1958.) Gallup's only hope is an immediate authorization and construction of the Navajo project. It is our purpose and hope that the amount of water sought by Gallup in an amount of not less than 15,000 acre feet, should be established and provided for the benefit of our community.

At the time the delegation from Gallup appeared last before this committee the prepared statement contained the words, "The Navajo project and San Juan-Chama diversion represent perhaps the last hope of this vast region to obtain the water we must have if the many natural and human resources of the region are to make their fullest contribution to the society and economy of this Nation." The recent efforts of the town have, most unfortunately, confirmed that the statement is absolutely correct.

This is not the first time Gallup has appeared before Congress on behalf of these projects. It appeared before the Senate committee in July 1958 and this committee in May 1960. We have not wished to burden the record with the reports made to Congress at these hearings containing consultant reports, facts and figures relating to these problems. We do urge this committee to consider again the information contained in these reports. We, here present, are available for and urge any questions the committee might have of us.

Gallup asks, again, for your favorable consideration of the measure to authorize the San Juan-Chama and Navajo irrigation projects urgently needed to meet the water needs of the region and of Gallup, N. Mex.

Respectfully submitted.

EDWARD MUNOZ,

*Mayor.*

G. WILLIAM PETRANOVICH,

*Manager.*

ALBERT O. LEBECK, Jr.,

*Attorney.*

Mr. HOSMER. Mr. Chairman?

Mr. ROGERS. Mr. Hosmer.

Mr. HOSMER. At a later time this morning when the data gets here, I will have a unanimous consent request to make of a similar nature.

Mr. ROGERS. The Chair has a telegram addressed to the Honorable Wayne Aspinall from the agriculture and conservation committee of the Kiwanis Club of Taos, N. Mex. Without objection, that telegram will be included in the record.

(The telegram referred to follows:)

Congressman WAYNE ASPINALL,  
*Chairman, House Subcommittee on Irrigation and Reclamation,*  
*Washington, D.C.:*

Respectfully urge favorable recommendation for passage of San Juan-Chama diversion project bill. Taos County, north central New Mexico, declared low-income area, will benefit from project. The 40,000 acres presently under cultivation are now getting balanced and adequate supply of irrigation water during growing season. Retention of some spring runoff, presently adjudicated to lower Rio Grande, would prove balanced supply permitting more crop diversification which would result in higher farm incomes and diminish migration of our youth.

AGRICULTURE AND CONSERVATION COMMITTEE,  
*Kiwanis Club of Taos, N. Mex.*

Mr. ROGERS. This morning we have with us, and we are highly honored by his presence again, the Secretary of Interior, the Honorable Stewart L. Udall, who is accompanied by Mr. Floyd E. Dominy, Commissioner of the Bureau of Reclamation. These gentlemen will appear first as witnesses.

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last before this committee the Navajo project and San Juan of this vast region to obtain human resources of the society and economy of this State unfortunately, confirmed

before Congress on behalf of committee in July 1958 and this record with the relevant consultant reports, facts before this committee to consider. We, here present, are might have of us. Adoption of the measure to authorize projects urgently needed to New Mex.

EDWARD MUNOZ,

*Mayor.*

WILLIAM PETRANOVICH,

*Manager.*

ALBERT O. LEBECK, Jr.,

*Attorney.*

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addressed to the Honorable Conservation committee without objection, that tele-

*Reclamation,*

passage of San Juan-Chama New Mexico, declared low-water acres presently under cultivation of irrigation water during drought, presently adjudicated to permit more crop diversification and diminish migration of

RESERVATION COMMITTEE,

*Taos Club of Taos, N. Mex.*

us, and we are highly of Interior, the Honorable Mr. Floyd E. Dominy, and Mr. Stewart L. Udall. These gentlemen will

Mr. Udall, do you desire Mr. Dominy to be with you at the witness table?

Secretary UDALL. Yes; I would.

Mr. ROGERS. Without objection, you may proceed and if you have any staff members, Mr. Secretary, you desire to be with you, they will be recognized, too.

STATEMENT OF HON. STEWART L. UDALL, SECRETARY OF THE INTERIOR, ACCOMPANIED BY FLOYD E. DOMINY, COMMISSIONER, BUREAU OF RECLAMATION, INTERIOR DEPARTMENT

Secretary UDALL. Mr. Chairman, my statement is brief and I think I will read it since it is brief.

I am delighted to appear before this committee in support of H.R. 2506, H.R. 2552, and S. 107 to authorize the Navajo Indian irrigation project and the initial stage of the San Juan-Chama project as participating projects of the Colorado River storage project.

It is particularly fitting that these projects should receive attention at this time, so shortly after President Kennedy's noteworthy special message on natural resources to the Congress. Both fit the pattern for the wise and beneficial development of natural resources that the President laid out to guide his administration. Both provide opportunity for a resource program investment today that will return dividends manifold tomorrow.

Resting before you is the Department of the Interior's report on the Navajo Indian irrigation project and the San Juan-Chama project. It is a coordinated report combining reports prepared by the Commissioner of Indian Affairs and the Commissioner of Reclamation, transmitted to the Congress on June 16, 1960, and printed as House Document 424, 86th Congress. It contains the results of many years of detailed investigations that have led to the recommendation that these projects be authorized and constructed. Within that report are to be found the figures and facts that establish the physical and financial feasibility of these projects and their economic justification.

The primary justification for the development of the Navajo project stems from the urgent need for expanded economic opportunity for the people living within and immediately adjacent to the project area. The Federal Government for many years has been faced with the problem of providing a solution for the betterment of the economic conditions of a rapidly increasing Navajo population, now numbering about 85,000. The continued drought condition, with the attendant reduction in returns from livestock operations in the area, and the lack of employment opportunities, have resulted in steadily declining economic conditions for the Navajo population.

The Navajo Indian irrigation project by providing for irrigation of 110,000 acres of land within and adjacent to the Navajo Indian Reservation would give a powerful economic shot in the arm to this area. It would create 1,120 new farms for Navajo families. The development of the project lands would also bring into the area the associated and allied industries of agriculture such as canning factories, cold storage package plants, creameries, and so forth, which

would provide a livelihood for an additional 2,240 Navajo families. It is nearly one-fourth of the tribe, Mr. Chairman.

Altogether, it is estimated that the Navajo project would provide the economic livelihood for some 18,000 to 20,000 Navajo people. Although this, in itself, will not solve the entire Navajo situation, it will be a long stride in that direction.

The initial stage of the San Juan-Chama project will spread its benefits on the eastern slope of the Rockies in the Rio Grande Basin in New Mexico. It will accomplish several objectives. Principal among them would be (1) providing urgently needed additional water for lands tributary to the Rio Grande that have been centers of economic distress, (2) supplementing the water supply of the highly important middle Rio Grande project, and (3) providing additional water for the rapidly growing requirements of Albuquerque and defense establishments of the Rio Grande Basin. Similar to the Navajo Indian irrigation project, it will be a strong economic stimulant to the Rio Grande Basin of New Mexico.

The economic effects of constructing both of these projects are by no means limited to the immediate areas they benefit. Both during their construction and during their life they create new markets for goods and products flowing from every part of the Nation.

My report to this committee on H.R. 2506 and 2552 urges favorable consideration of either measure. I again urge the enactment of authorizing legislation.

Mr. Chairman, Mr. Dominy has a statement. I am willing to be questioned on the general aspects of my statement or you can hear him and we will both submit to questions, whichever you prefer.

Mr. ROGERS. Thank you, Mr. Secretary.

Let me ask you this: What is your schedule? Are you in a hurry? Secretary UDALL. I can remain with the committee for a half hour or so.

Mr. ROGERS. How long is your statement, Mr. Dominy?

Mr. DOMINY. Probably about 10 or 15 minutes.

Mr. HALEY. Mr. Chairman, I would suggest—I do not believe there are going to be many questions of the Secretary. I know he is a busy man. I would suggest we proceed with the questioning and then go to Mr. Dominy. Of course, the Chair has the right to rule any way he wants to. I just make this as a suggestion.

Mr. ROGERS. The Chair would be interested in expediting the matter so far as possible and if the committee members desire to question the Secretary at this time, we will follow that procedure and the Chair recognizes the gentleman from Colorado, Mr. Aspinall.

Mr. ASPINALL. I have no questions of the Secretary. I think he stated the general nature of the matter very clearly.

Mr. ROGERS. Are there any questions?

Mr. HALEY. Mr. Chairman?

Mr. ROGERS. Mr. Haley.

Mr. HALEY. Mr. Secretary, I want to ask you this direct question: In the construction and operation of this project, is the Navajo Tribe of Indians going to be deprived of any water rights that they now have or will this project in any way interfere with the development of lands belonging to the Navajo Tribe?

Secretary UDALL. The answer is it will not, Mr. Chairman. Indeed, this will allow them to use and establish a water right, and it will

enable them to not be able to of course, that probably the really be a ma Indian tribe in

Mr. HALEY. I know of you If that is your it considerable

Mr. ROGERS. Mr. HOSMER. by the taxpayer, at a cost of 180,000 taxpayer Nevada. On taxes paid by the State of Al

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enable them to develop a whole agricultural resource that they would not be able to develop in any other way, because water is so scarce, of course, that getting the water to the land through this project is probably the one single thing that the Congress could do that will really be a major attack on the economic problems of this largest Indian tribe in the country.

Mr. HALEY. I am glad to hear you say that, Mr. Secretary, because I know of your long and continued interest in the Indian problem. If that is your considered opinion, and I am sure that you have given it considerable study, that is all the questions I have. Thank you.

Mr. ROGERS. Mr. Hosmer.

Mr. HOSMER. Mr. Secretary, the average amount of income tax paid by the taxpayers of the United States is \$750. Now the Navajo project, at a cost of \$135 million, would consume all of the taxes paid by 180,000 taxpayers, approximately the population of the State of Nevada. On the same basis, the San Juan-Chama would consume the taxes paid by 90,000 taxpayers, just about the entire population of the State of Alaska.

With that background, I would like to ask two questions. First, through your Indian Bureau would it be possible to benefit the Navajo Tribe in some other manner to a greater extent by the expenditure of this amount of money than by this irrigation project?

Secretary UDALL. Of course, my former colleague may direct his attention, it seems to me, to the idea of reclamation itself. I do not think anything is going to be consumed. I regard this as an investment in the first place. In the second place, 60 percent of the money, approximately, that we are expending presently under reclamation programs comes out of the reclamation fund; it does not come out of regular taxation revenues and resources of the country.

I can only answer the gentleman's question in a general way, that it is my opinion that the reclamation story and the history of the reclamation projects in my State, in yours, as well as in New Mexico and the other reclamation States, that these investments are wise investments and I think this is in the national interest. That is about the only answer I can give, really.

Mr. HOSMER. I want the record to show that the Secretary did not answer the specific question with respect to the expenditure of \$135 million—

Mr. MORRIS. Will the gentleman yield?

Mr. HOSMER (continuing). For the benefit of the Navajo Tribe.

Mr. MORRIS. Will the gentleman yield?

Mr. HOSMER. In a moment. I have one other question.

The second question is that the sum of some \$82 million, or some such figure, is allocated for the San Juan-Chama. Yesterday, the Governor of New Mexico testified that practically all of that water was going to be used for domestic and industrial purposes. Is there another means by which the domestic and industrial water requirements of the State of New Mexico can be met at lesser cost?

Secretary UDALL. I do not think so. This is an area of water scarcity, and water is getting more dear all the time. I would point out that to the extent to which the water that is diverted into the Rio Grande is used for municipal and industrial purposes by the city of Albuquerque and otherwise, it will be repaid with interest, and if

all of it is used for that purpose, the full amount is repaid with interest. So I think here again we have an expenditure that is justifiable on all counts.

There is going to be full repayment and it is going to fill a real need. Albuquerque and some of the other areas in the arid Southwest have been growing rapidly; the needs of the defense installations in that area are growing; and this is the last water hole in this whole watershed and this transmountain diversion is going to provide a supplement that will permit the continued growth of this area.

I think as such it is really the lifeblood of New Mexico we talk about when we talk about a diversion project of this kind.

Mr. HOSMER. Then can you state that there are specific studies made by the Department of Interior with respect to all alternate sources and that these studies conclude there are none?

Secretary UDALL. I would suggest you go into this with Mr. Dominy. I am sure he can give you a full answer. I would say that the only other alternate sources that I know of from my personal familiarity with the area are the underground and the underground is being pumped out in most of these areas and supplies are limited and, therefore, we have to look to a project of this kind to assure a stable water supply for the large industrial centers and the largest population center in the State.

Mr. HOSMER. Is it the intention of the Interior Department to supply municipal water investment on a noninterest bearing basis?

Secretary UDALL. The general policy with regard to projects that provide water for municipal uses is the amounts so expended are repaid with interest.

Mr. HOSMER. With interest?

Secretary UDALL. Yes.

Mr. ASPINALL. Now will my colleague yield?

Mr. HOSMER. In just a moment. The allocation on this San Juan-Chama to irrigation is \$50,832,000. The allocation to municipal water is \$27,877,000. Now obviously, if this project is built, it is going to have an increasingly greater proportion of its use for municipal purposes. But under this allocation, the municipal uses will in effect be receiving a tax-free irrigation investment unless there is some means to constantly adjust the proportion allocated. Is that right?

Secretary UDALL. I do not follow your reasoning on that. Of course, this is the initial stage of the project. What we are going to do is build diversion dams, a transmountain tunnel, and put the water into the Rio Grande. The decisions which we have projected with regard to how these waters will be put to use, of course, are subject to future decisions. For example, if the needs of Albuquerque and these defense installations grow, it is very plain that municipal and industrial uses take precedence over irrigation and if Albuquerque is going to require a greater proportion of this water, certainly they can pay for it; they would have to condemn it in any event.

Mr. HOSMER. Under it—

Secretary UDALL. I do not see that there is any benefit, any unintended or bonus benefit to Albuquerque out of the total project the way we planned it.

Mr. HOSMER. Let us put it this way: If two-thirds of the project cost are allocated to irrigation, there is only one-third repaid with

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Secretary UDALL. I can answer you categorically on that, and that  
 is whatever amount ultimately goes for municipal-industrial use,  
 whatever that amount is, not the amount we have projected at the  
 present time, will be repaid with interest. So your point, in my view,  
 is not well taken.

Mr. HOSMER. In section 1 of Mr. Montoya's bill, it refers to the  
 report of the Acting Commissioner on Indian Affairs and so forth,  
 and the other reports on this project in which these allocations are  
 made. Do you have machinery down there to readjust these alloca-  
 tions? Is that a constant process?

Secretary UDALL. We always are in a process of making readjust-  
 ments depending on where we are going to put the water and where  
 we are going to use it. As I say, whatever quantity ultimately goes  
 to municipal and industrial use, that will be repaid in full with  
 interest.

Mr. HOSMER. Would you have any objection to that being specified  
 in this bill?

Secretary UDALL. It has been our common practice. I certainly  
 think the committee in its report could anticipate we are going to  
 follow the practice we always have followed.

Mr. HOSMER. There is nothing that legally requires to do it, is  
 there?

Secretary UDALL. This has always been the standard practice of the  
 Bureau of Reclamation and we have always followed it and we think  
 it is sound and we intend to continue it.

Mr. HOSMER. The answer to my question is that there is nothing  
 in the law that requires you to do it?

Secretary UDALL. Well—

Mr. HOSMER. There is nothing in the law that establishes that prac-  
 tice nor requires you to continue it?

Secretary UDALL. The Commissioner informs me it is his opinion—  
 we will look at it quickly—that the basic Upper Colorado Storage  
 Project Authorizing Act does so require and this is one of the par-  
 ticipating projects under that general authorization.

Mr. HOSMER. I ask unanimous consent that the Secretary may fur-  
 nish a supplemental statement with respect to that point.

Secretary UDALL. We will be glad to answer that question.

Mr. ROGERS. Without objection, it is so ordered.

(The information requested follows:)

#### SUPPLEMENTAL STATEMENT OF SECRETARY UDALL

The Colorado River Storage Project Act, Public Law 485, 84th Congress,  
 requires that revenues from the basin fund be paid annually to the general fund  
 of the Treasury to return the allocated cost of each municipal water supply  
 feature as well as interest on the unamortized balance of the investment, in-  
 cluding interest during construction. The rate of interest is to be that deter-  
 mined by the Secretary of the Treasury as provided in section 9, Public Law  
 529, 86th Congress, which amended the Colorado River Storage Project Act.

The legislation under consideration provides that water from these projects  
 for any purpose may not be delivered except under contract satisfactory to the  
 Secretary of the Interior. I can assure you that repayment of the costs allo-

cated to municipal and industrial purposes, together with interest as contemplated under Public Law 485, will be required under any such contracts for municipal and industrial water. Furthermore, in the event water initially allocated to irrigation, or some other non-interest-bearing purpose, is converted to municipal and industrial use, a reallocation of the costs would be made and repayment contracts with the new users would provide for the return of the allocated amount, plus interest, in accordance with the intent of the authorizing legislation and the long-established practice of the Bureau of Reclamation.

Mr. HOSMER. I yield to the gentleman from Colorado, Mr. Aspinall.

Mr. ASPINALL. I do not wish to take any time on this. My colleague from California knows there are two projects which do the very thing he has been suggesting and those projects were authorized before either he or I came to Congress. If we do not have the provision in this bill, most certainly I shall be glad to cooperate with him to see to it that the report carries it.

The only one of the two projects I remember at the present time is the Cachuma project in California, of course. But there is one other that violates this principle. But we will see to it that if the legislation does not conform, the report will.

Mr. HOSMER. Does the gentleman from New Mexico wish me to yield?

Mr. MORRIS. Mr. Chairman, I was going to point out to my colleague from California while he was away from his desk I believe the Secretary answered that question covering the project when he said "I think this is the greatest step or the best thing that the Congress could do for the Navajo Tribe, to authorize this project." I believe my colleague from California was not at his desk when the Secretary made the statement.

Mr. HOSMER. Maybe the reason he did not answer it when I asked is that he objects to being asked the same question twice.

Mr. MORRIS. I am suggesting that he just made that statement and whether he did not want to repeat, I cannot read his mind.

Mr. HOSMER. I think probably the question was phrased in a little more specific terms when I asked him than it was before.

Mr. ROGERS. Mr. Rutherford?

Mr. RUTHERFORD. I have no questions at this time.

Mr. ROGERS. Mr. Westland?

Mr. WESTLAND. No questions.

Mr. ROGERS. Mr. Morris?

Mr. MORRIS. I just want to thank the Secretary, Mr. Chairman, for being here this morning. I think he made a very fine statement and we in the Western States are very proud of the job he is doing as Secretary of the Interior.

Mr. UDALL. Thank you.

Mr. ROGERS. Mr. King?

Mr. KING. I have just one question, Mr. Chairman. My asking this question is not to be construed in any way as hostility to this project. On the contrary, I have already stated for the record that I look with great sympathy and interest on this project and my present inclination would be to support it although I am going to hear the testimony out.

My question is this: This Navajo reclamation feature involves \$135 million nonreimbursable which is consistent with the general pattern that has been laid down many years ago. But I raise this question:

If 20,000 benefit of Federal States—comes to but I think claim this and claim

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date son a mortg an acre?

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with interest as contemplated in any such contracts for the event water initially being purpose, is converted costs would be made and for the return of the intent of the authorizing Bureau of Reclamation.

Colorado, Mr. Aspinall. me on this. My collects which do the very ere authorized before ave the provision in ate with him to see to

at the present time is But ere is one other it that if the legisla-

Mexico wish me to

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wer it when I asked n twice. that statement and his mind. s phrased in a little before.

ne.

Mr. Chairman, for fine statement and he is doing as Sec-

man My asking stit to this proj- e record that I look t and my present going to hear the

ature involves \$135 he general pattern raise this question:

If 20,000 Navajo Indians are now told that they are receiving the benefit of \$135 million—really, this is a gratuity or largess from the Federal Government—will all of the other Indians in the United States—and I do not know the Indian population; the figure 600,000 comes to my mind, that may be off a couple of hundred thousand, but I think that is approximately right; will all of the other Indians claim this as a precedent to allow them to come to the Government and claim similar gratuities?

And if so, that, of course, would get into many billions of dollars. Secretary UDALL. I would say to my colleague, there is nothing at all irregular about this. In fact, this is not a gratuity of any kind. This money under the Leavitt Act is repayable just as any other irrigation project is. The only thing that the Leavitt Act provides is that the beginning of payment is deferred until such time as the Indian trust is terminated on these particular lands. So it is merely a defendant and so far as repayment is concerned, the project stands on the same footing as all other reclamation projects.

The answer to your question is that many Indian tribes in the country have already had projects built under these same conditions and many anticipate future projects, and when they come in, we will consider them on the same level and the same footing as the consideration being given to this tribe today.

Mr. KING. Does the Leavitt Act require that there be a transfer of the project out of Indian hands before repayment begins?

Secretary UDALL. I believe it is keyed to the Indian trust title being transferred to the Indians as a tribe or as individuals. In other words, the termination of Federal responsibility; when that occurs on these lands, at that point a repayment contract presumably would be negotiated, entered into, and the repayment period would begin at that time. So that the only gratuity is the deferral which Congress long ago, when it wrote the Leavitt Act, felt would be in the public interest and that we are making an investment in helping our Indian people and we are giving them the benefit of not requiring repayment until they are on their own. I think this is in the national interest.

Mr. KING. Thank you. I am glad to get that in the record.

Mr. WESTLAND. Will the gentleman yield?

Mr. KING. I yield.

Mr. WESTLAND. Is it the Secretary's position that at some future date someone might buy this property, some non-Indian would carry a mortgage of somewhere between six, seven, or eight thousand dollars an acre?

Secretary UDALL. No. My anticipation is that in the long run, whenever it occurs, that the Indians themselves will get title. Whether they as individuals or as a tribe want to sell off portions of their land would be a decision for them to make at that time.

Mr. WESTLAND. Well, the Secretary indicated that this is repayable. Is it not true it would only be repayable if title were to pass from Indians to non-Indians?

Secretary UDALL. No. The Federal trust title that I am talking about, at such time as this tribe were terminated, if the title is transferred to the tribe or it is allotted and transferred to individuals, then at that point a repayment contract would be in order.

Mr. WESTLAND. If it became in fee.

Secretary UDALL. That is right.

Mr. WESTLAND. Is it the Secretary's position that anyone might ever pay off a mortgage such as that on land valued at approximately a thousand dollars an acre that might carry a mortgage of six, seven, or eight thousand dollars?

Secretary UDALL. I think this is clearly what is anticipated. It might be in an instance of this kind that we would have a longer payout period than the normal one. This might be negotiated. But we are certainly not contemplating anything other than the regular procedure under the Leavitt Act in proposing this legislation.

Mr. HALEY. Will the gentleman yield?

Mr. KING. Yes.

Mr. HALEY. Mr. Chairman—

Secretary UDALL. Pardon me. If I may clarify one other point and then you can question Mr. Dominy about this if you like. He informs me that the cost is twelve or thirteen hundred dollars an acre the way he does his mathematics on it and not six, seven, or eight thousand and as such it is very manageable and in line with other projects of a similar character.

Mr. WESTLAND. Will the gentleman yield?

Mr. KING. I yield to the gentleman from Florida.

Mr. HALEY. I might say to my distinguished friend from Washington, with the continued devaluation of the purchasing power of the dollar, if we keep that up another 25 years, \$7,000 will not buy an acre of ground anywhere.

Mr. ROGERS. Mr. King, do you have further questions.

Mr. KING. No more questions, thank you.

Mr. ROGERS. Mr. Johnson.

Mr. JOHNSON. No questions.

Mr. ROGERS. Thank you, Mr. Secretary.

Secretary UDALL. Thank you. I will now throw my Commissioner to the wolves.

Mr. ROGERS. He takes care of himself very well. The Chair now recognizes Mr. Dominy.

**STATEMENT OF FLOYD DOMINY, COMMISSIONER OF RECLAMATION, ACCOMPANIED BY WILLIAM I. PALMER, ASSISTANT COMMISSIONER; D. R. BURNETT, CHIEF, PROJECT DEVELOPMENT DIVISION, WASHINGTON; J. R. RITER, CHIEF DEVELOPMENT ENGINEER, DENVER, COLO.; AND RALPH CHARLES, CHIEF OF PROJECT DEVELOPMENT DIVISION, ALBUQUERQUE, N. MEX.**

Mr. DOMINY. If it pleases the Chair and the committee, I would like to introduce and ask to join me at the witness table, so we can put on complete testimony, Mr. William I. Palmer, the Assistant Commissioner; Mr. D. R. Burnett, Chief of our Project Development Division here in Washington; Mr. J. R. Riter, Chief Development Engineer, Denver, Colo.; and Mr. Ralph Charles, Chief of Project Development Division, Albuquerque, N. Mex.

(Off-the-record discussion.)

Mr. ROGERS. Mr. Dominy, you may proceed.

Mr. DOMINY. Information on the project in Colorado is one of the projects to completion of the Colorado River.

The bills H. R. 424 and H. R. 425 provide for your committee's construction of the project as a development project.

The Bureau of Indian Affairs is in charge of the project. Our committee 424, 86th Congress, is for development of Mexico. The coordinated work as required by

Our coordinated development project is diverting an upper tributary of the Grande and the project irrigates the area and as a result of the project. Recreation and wildlife will be developed. On the basis of the study still applicable to the project, the study indicates that the project will be a ratio of about

The plan for the project as contemplated from the San Juan in New Mexico irrigation works, the Llano, and the Basin in New Mexico, 16,500 acres irrigated project supplemental work

Mr. DOMINY. We appreciate the opportunity of presenting information on the plan of development for the proposed San Juan-Chama project in Colorado and New Mexico. The San Juan-Chama project is one of the potential participating projects which are given priority to completion of planning reports as provided by section 2 of the Colorado River Storage Project Act of April 11, 1956 (70 Stat. 105).

The bills H.R. 2506 and H.R. 2552 and S. 107 being considered by your committee would, among other things, approve and authorize construction of the initial stage of this proposed water resource development as a participating project of the Colorado River storage project.

The Bureau of Reclamation's plan of development for the San Juan-Chama project was coordinated with the plan of the Bureau of Indian Affairs for development of the Navajo Indian irrigation project. Our coordinated planning reports, published as House Document 424, 86th Congress, were based on criteria and recommendations for development of the projects as submitted by the State of New Mexico. The Department's proposed report on the two projects was coordinated with the affected States and interested Federal agencies as required by law and interagency agreement.

#### COMPREHENSIVE PLAN OF DEVELOPMENT

Our coordinated planning report covers a comprehensive plan of development for the potential San Juan-Chama project. Such a development could be accomplished under the comprehensive plan by diverting an average of 235,000 acre-feet of water annually from the upper tributaries of the San Juan River to the water-deficient Rio Grande and Canadian Basins. The water would be used to supplement irrigation of about 224,000 acres of arable land in the project area and as an additional supply for municipal and industrial purposes. Recreation and the preservation and propagation of fish and wildlife would also be purposes of the project.

On the basis of January 1958 prices, which, I am glad to say, are still applicable today, the estimated construction cost for project facilities studied in the ultimate plan of development, comprising principally regulating and storage reservoirs, collection, diversion, and conveyance systems and associated works, is about \$149 million. The evaluated total annual benefits exceed the estimated annual costs in a ratio of about 1.7 to 1.

#### INITIAL STAGE OF DEVELOPMENT

The plan for initial stage development of the San Juan-Chama project as proposed for authorization in the pending legislation contemplates an average annual diversion of about 110,000 acre-feet from the San Juan River for utilization in the Rio Grande Basin in New Mexico. The imported waters would be used to provide an irrigation water supply to 39,300 acres of land in the Cerro, Taos, Llano, and Pojoaque tributary irrigation units in the Rio Grande Basin in New Mexico, of which 22,800 acres are now irrigated and 16,500 acres are presently unirrigated lands interspersed among the irrigated portions. The imported waters also would provide a supplemental water supply for irrigation of 81,600 acres of irrigable land

in the existing Middle Rio Grande Conservancy District, and provide for badly needed additional municipal and industrial water supply for the city of Albuquerque. Recreation and the preservation and propagation of fish and wildlife would also be purposes of the initial stage.

The estimated construction cost of the project features of the initial stage, on the basis of January 1958 prices that also reflect current prices, is \$86 million, which includes \$400,000 for minimum basic recreation facilities. Project operations, maintenance, and replacement costs are estimated at \$324,000 annually excluding recreation facilities.

Of the project construction costs, reimbursable allocations of about \$53,400,000 are made tentatively to irrigation, \$29,200,000 to municipal and industrial water supply, and \$3 million to future uses. The recreation costs would be nonreimbursable.

The initial stage development has engineering feasibility and is found to be economically justified in that under currently applied procedure, the evaluated total benefits exceed the estimated annual costs in a ratio of 1.26 to 1 for a 100-year period of analysis. If direct benefits only are considered in a 50-year period of analysis, that ratio would be about 0.81 to 1.

Irrigation water users would repay about \$8 million of the allocation to irrigation. Repayment contracts would be made with organizations of the type provided in section 4 of the Colorado River Storage Project Act of April 11, 1956 (70 Stat. 107) for contracting on the participating projects authorized by section 1 of that act. The costs allocated to irrigation in excess of the irrigators' ability to repay would be paid from New Mexico's apportionment of the Upper Colorado River Basin fund revenues as provided in the act.

Costs allocated to municipal and industrial water supply, including interest during construction, would be repaid over a 50-year period with interest on the unamortized balance. Using an interest rate of 2.632 percent, which is the current rate under the Colorado River Storage Act of April 11, 1956, as amended by the act of June 27, 1960, the total to be repaid by the municipal water users would be about \$55,622,000. The cost of raw municipal water would be about 7.3 cents per 1,000 gallons, or about \$24 per acre-foot.

Costs allocated to future uses, which involve the provision of excess capacity in the initial stage to permit later project expansion, would be also an obligation against New Mexico's apportioned share of the basin fund revenues, to be paid from that apportionment if not otherwise collected as a result of subsequent allocations to the water users. A financial and power rate analysis of the Colorado River storage project and participating projects was prepared in September 1960. That analysis shows that by fiscal year 2049, there would accrue to the credit of New Mexico about \$151 million in apportioned surplus power revenues, of which only a little more than \$2.7 million would be needed for presently authorized participating projects in that State. The irrigation repayment assistance required by the proposed initial stage development of the San Juan-Chama participating project as presently evaluated amounts to about \$45.4 million. The analysis also shows that sufficient apportioned surplus revenues required for repayment of this assistance would accumulate by fiscal year 2022.

#### *Diversion facilities*

The diversion facilities consist of dams on Rio Blanco and Rio Chama canals from the headwaters and the main conduits.

#### *Regulation facilities*

The regulation facilities consist of a 4 dam and reservoir on Rio Chama, and the El Vado Dam. The El Vado Dam and reservoir section 2 of the act provides for a 400,000 acre-foot apportionment of the El Vado Reservoir releases through El Vado Dam in compliance with the requirements of the act.

#### *Water use facilities*

Water allocated to municipal and industrial users and to municipal and industrial users from Heron No. 4 Reservoir on the tributary irrigation units for regulation of tributary flows of those units.

#### *Operation plan*

Available flows of water from the tributaries, all of which are diverted by the diversion facilities to the Central Divide for reclamation of the Rio Grande Basin.

The imported water from the No. 4 reservoir and the El Vado Reservoir fill the allocations for irrigation. The regulation facilities on Rio Chama and its local tributaries, authorized by the act of April 11, 1956. The El Vado Reservoir, permit passage of water in turn, permit passage of water to be released from Heron No. 4 Reservoir for the diversion of Rio Grande for irrigation. An important factor in the operation is increased water supply for delivery.

A water measurement program is being instituted to account for the diversion of River flows to assure that the tributary units to the El Vado Reservoir are receiving their share of waters to meet any demands.

The plan of development provides for the diversion of waters to meet any demands.

## PLAN OF DEVELOPMENT

*Diversion facilities*

The diversion facilities would consist of three concrete diversion dams on Rio Blanco and Little Navajo and Navajo Rivers; feeder canals from the headworks of the diversion dams to the main canal; and the main conduit.

*Regulation facilities*

The regulation facilities would comprise the proposed Heron No. 4 dam and reservoir, located on Willow Creek near its confluence with Rio Chama, and the enlargement of the outlet works of the existing El Vado Dam. Heron No. 4 reservoir, which is the "single offstream dam and reservoir on a tributary of the Chama River" referred to in section 2 of the act of April 11, 1956, would have a capacity of about 400,000 acre-feet at normal water surface elevation. The enlargement of the El Vado outlet would permit passing of Heron No. 4 releases through El Vado Reservoir unimpeded in order to insure compliance with the Rio Grande compact.

*Water use facilities*

Water allocated to the Middle Rio Grande Conservancy District and to municipal and industrial supply would be released directly to those users from Heron No. 4 reservoir with no specific facilities provided for the delivery of these waters. Releases would also be made from Heron No. 4 to replace in the Rio Grande new water consumed on the tributary irrigation units. Four reservoirs would be required for regulation of tributary flows to furnish water directly to the lands of those units.

*Operation plan*

Available flows of the Rio Blanco, Little Navajo, and Navajo Rivers, all of which are tributaries of the San Juan River, would be diverted by the diversion works and feeder canals through the Continental Divide for release into the Willow Creek watershed of the Rio Grande Basin.

The imported waters would be captured and regulated in the Heron No. 4 reservoir and then released directly into the Rio Chama to fulfill the allocations for the several project purposes. Such reservoir regulation would also preclude interference with flows of the Rio Chama and its location would preclude storing any of the flows of the Chama which is the intent of the proviso of section 2 of the act of April 11, 1956. The enlarged outlet works at El Vado Dam would, in turn, permit passing imported water immediately through El Vado Reservoir for the several project purposes. Imported water also would be released from Heron No. 4 reservoir to replace the increased depletion of Rio Grande flows resulting from the tributary irrigation units. An important factor in the rehabilitation of the tributary units is the increased water supply made available through regulation or improved delivery.

A water measurement program is contemplated for project operation to account for both Rio Grande flows and imported San Juan River flows to assure complete replacement of depletions on the tributary units to the Rio Grande.

The plan of development does not contemplate use of the imported waters to meet any deficiencies that now or in the future accrue under

the Rio Grande compact. Also, it is not intended that the flow of the Rio Grande at the New Mexico-Texas line be increased.

#### *Tributary units*

*Cerro unit.*—The plan provides for furnishing an irrigation supply to 11,800 acres of land, of which 7,900 acres would be new land. It is planned that about 2,000 acres of class 6 land now being irrigated would be retired from cultivation and the water used on an equal acreage of the new lands.

Construction of the Cerro unit features is estimated to cost about \$6,400,000. This unit's proportionate share of the joint construction costs of the initial stage amounts to about \$5,100,000, making the total construction costs about \$11,500,000. The irrigation water users probably would repay about \$1,300,000 over the 50-year repayment period. As is the case in all of the tributary units, the remainder of the construction cost would be repaid from the Upper Colorado River Basin fund. The benefit-cost ratio of this unit is about 1.2 to 1.

*Taos unit.*—The facilities planned for the Taos unit would provide an adequate water supply for a total of about 20,500 acres of arable land of which about 6,700 would be new land 13,800 acres would be lands now with an inadequate water supply. Both Indian and non-Indian land would be served. Construction costs of the unit are estimated to be about \$14 million. This unit's proportionate share of joint construction costs of the initial stage is \$2,700,000, making the total cost about \$16,700,000. The irrigation water users would probably repay a total of about \$3 million over 50 years.

The benefit-cost ratio of this unit is estimated to be about 1 to 1.

*Llano unit.*—A full supply of irrigation water would be furnished to 1,900 acres of new lands, primarily Indian owned, and a supplemental supply would be furnished to 2,600 acres of Santa Cruz Irrigation District lands.

Cost of constructing all features within this unit is estimated to be about \$1,600,000. Joint construction costs to be shared by the unit are about \$4,400,000, making a total construction cost of \$6 million. About \$600,000 over the 50-year repayment period would be returned by the water users. The benefit-cost ratio for this unit is 1.2 to 1.

*Pojoaque unit.*—The unit plan provides for furnishing a supplemental irrigation water supply for more than 2,400 acres of land now irrigated. Both Indian and non-Indian lands would be included.

Construction costs of the unit are estimated to be about \$1,900,000. The Pojoaque unit's share of joint construction costs amounts to about \$600,000. Water users could probably repay about \$700,000 over the 50-year repayment period. The benefit-cost ratio is 1.2 to 1.

#### *Middle Rio Grande Conservancy District unit*

The initial stage plan provides for furnishing supplemental irrigation water to the irrigable lands of the Middle Rio Grande Conservancy District now being rehabilitated by the Bureau of Reclamation. These lands comprise about 81,600 acres which were found by classification to be arable and to have repayment capacity. No new irrigation works are provided in this plan. The water would be released from Heron No. 4 reservoir as needed and diverted to the district lands through the existing irrigation system.

The estimated cost comprises the allocated project works. To repay a total of a remainder would be benefit-cost ratio 1

#### *Municipal and industrial*

The plan provides for municipal and leases would be to meet the city's demand by recharge of the provided by the city over ground water established regulations and ground water

The estimated cost supply for the city ratio of this unit. tion, would be paid period.

Mr. Chairman, project.

MR. ASPINALL, two-headed project with his other state

MR. ROGERS, You

MR. DOMINY, I report of H.R. 2500 Indian irrigation project, which I Colorado River state

Except for one considered by the committee Interior and we re

Hearings were proposed San Juan-Chama plan for construction as a participant is the same as proposed concerning the New closely with the Indians, with the recording, I will

Briefly, the initial diversion of River for utilization imported waters to 39,300 acres of tributary irrigation unit 22,800 acres are n



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an irrigation supply would be new land. It now being irrigated or used on an equal

estimated to cost about the joint construction 100,000, making the irrigation water users the 50-year repayment units, the remainder of Upper Colorado River is about 1.2 to 1.

unit would provide 20,500 acres of arable 13,800 acres would be both Indian and non-Indian of the unit are estimated proportionate share of 2,700,000, making the water users would prob-

be about 1 to 1. would be furnished owned, and a supplement of Santa Cruz

unit is estimated to be shared by the construction cost of \$6 payment period would be ratio for this unit

furnishing a supplement 400 acres of land now would be included. to be about \$1,900,000. ion costs amounts to about \$700,000 ratio is 1.2 to 1.

ing supplemental irrigation Rio Grande Con- Bureau of Reclamation which were found payment capacity. No n. The water would be diverted to on system.

The estimated cost of this unit would be about \$17 million which comprises the allocated share of the construction costs of the joint project works. The water users in the conservancy district would repay a total of about \$2 million of these allocated costs. The remainder would be repaid from the basin fund. We estimate the benefit-cost ratio for this unit to be 1.2 to 1.

*Municipal and industrial water supply for Albuquerque*

The plan provides for supplying 50,000 acre-feet of water annually for municipal and industrial uses by the city of Albuquerque. Releases would be made from Heron No. 4 reservoir as required to meet the city's demands and would be delivered in the river channel by recharge of the groundwater aquifer or at diversions to be provided by the city. The State engineer has assumed jurisdiction over ground water withdrawals in the Rio Grande Basin and has established regulations that recognize the interrelationship of surface and ground waters in the basin.

The estimated construction cost of municipal and industrial water supply for the city of Albuquerque is \$29,200,000. The benefit-cost ratio of this unit is estimated to be about 1.4 to 1. The initial obligation of about \$31 million, which includes interest during construction, would be paid, with interest, by the water users over a 50-year period.

Mr. Chairman, that concludes my prepared statement on this project.

Mr. ASPINALL. Mr. Chairman, we are considering this project as a two-headed project, and I would suggest that Mr. Dominy proceed with his other statement.

Mr. ROGERS. You may proceed.

Mr. DOMINY. I am happy to appear before this committee in support of H.R. 2506, H.R. 2552, and S. 107, to authorize the Navajo Indian irrigation project and the initial stage of the San Juan-Chama project, which I have just covered, as participating projects of the Colorado River storage project.

Except for one minor amendment, the bills which are being considered by the committee are satisfactory to the Department of the Interior and we recommend enactment of the legislation.

Hearings were held on May 20, 1960, by this committee on the proposed San Juan-Chama and Navajo Indian irrigation projects. The plan for constructing the initial stage of the San Juan-Chama project as a participating project of the Colorado River storage project is the same as presented at that time. Although others will testify concerning the Navajo Indian irrigation project, we have worked closely with the Bureau of Indian Affairs throughout the investigations, with the result that the two projects are full coordinated. Accordingly, I will discuss only the San Juan-Chama project.

Briefly, the initial stage of the project provides for an average annual diversion of about 110,000 acre-feet of water from the San Juan River for utilization in the Rio Grande Basin in New Mexico. The imported waters would be used to provide an irrigation water supply to 39,300 acres of land in the Cerro, Taos, Llano, and Pojoaque tributary irrigation units in the Rio Grande Basin in New Mexico, of which 22,800 acres are now irrigated and 16,500 acres are presently unirri-

gated lands interspersed among the irrigated portions; to provide a supplemental water supply for irrigation of 81,600 acres of irrigable land in the existing Middle Rio Grande Conservancy District; and to provide for an additional municipal and industrial water supply for the city of Albuquerque. Recreation and the preservation and propagation of fish and wildlife would also be purposes of the initial stage.

The agricultural economy of the project area is and has been basically alfalfa and grain. In addition, in the tributary units, landholdings are very small. Eighty percent of the farms contain less than 20 acres. Few of the commodities produced on these lands ever reach the commercial markets. Only a limited number of livestock are produced on the generally very small irrigated farms. These are kept primarily for home consumption and for the local markets. A large part of the feed produced on these farms, however, is fed to livestock either on the farm or on nearby ranches. New Mexico has limited irrigated land to provide a feed base for extensive range areas which are both publically and privately owned.

Grains produced include barley, corn, wheat, and other small grains. The furnishing of a supplemental water supply to these areas will not tend to drastically change the traditional farming characteristics. The growing of grain and forage crops to provide a feed supply for local livestock will continue to be the main agricultural enterprises.

The firming up of the water supply may tend to increase the size of farms, but this will be a gradual and long-term shift. The continued production of feed grains will not contribute to crops in surplus because they will be consumed locally and in adjacent areas and marketed in the form of livestock and livestock products. In addition, it is possible that with the expanded agricultural economy resulting from the provision of project water in shipments of grain and other surplus crops from other areas could be expected, thereby tending to mitigate in some small degree the problem of surplus crops. In passing it is worthy to note that the only irrigated crop now produced in the proposed San Juan-Chama service area which is now under price support is a very limited acreage of marginal cotton. All irrigated grains now produced in the service area are not under price support.

The estimated construction cost of the project features of the initial stage, on the basis of January 1958 prices that also reflect current prices, is \$86 million, which includes \$400,000 for minimum basic recreation facilities. Project operation, maintenance, and replacement costs are estimated at \$324,000 annually excluding recreation facilities.

Of the project construction costs, reimbursable allocations of about \$53,400,000 are made tentatively to irrigation, \$29,200,000 to municipal and industrial water supply, and \$3 million to future uses. The recreation costs would be nonreimbursable.

The initial stage development has engineering feasibility and is found to be economically justified in that the evaluated total benefits exceed the estimated annual costs in a ratio of 1.26 to 1 for a 100-year period of analysis. If direct benefits only are considered in a 50-year period of analysis, that ratio would be about 0.81 to 1.

Irrigation water users would repay about \$8 million of the allocation to irrigation. Repayment contracts would be made with organizations of the type provided in section 4 of the act of April 11, 1956

(70 Stat. 107) for co-

ized by section 1 of the

The costs allocated to repay would be paid by the Upper Colorado River. As outlined above, the hydrology, before this committee was enacted which, in computing the interest on the River storage project water payout required, used 27/8 percent interest. Previous testimony before the committee was 2.632 percent. The cost to Albuquerque would be \$55 per 1,000 gallons as a

A financial and political project and participation. That analysis shows a credit of New Mexico revenues, of which is needed for presently. The irrigation repayment stage development of presently evaluated also shows that sufficient repayment of this as-

In the hearings by Sparks stated that, of the Colorado Water Conservancy the water users in Colorado. He also stated that the operation of the Colorado and New Mexico

The Secretary of the Department of the Interior, submitted to you, Mr. Rogers, signed by Elmer F. Smith.

This concludes my report. We will be glad to answer Mr. ROGERS. Thank you, Mr. ASPINALL. Mr. ROGERS, the Commissioner of the Department of the Interior, then question the Department of the Interior, Mr. ROGERS. With respect to Mr. Crow, your statement is that Mr. Crow. That is correct, Mr. ROGERS. Supplying the water at that time and then we will be glad to answer Mr. Crow. I will be glad to answer Mr. ROGERS. You

portions; to provide a 600 acres of irrigable land in the Pecos Valley District; and to provide a reliable water supply for the preservation and propagation of the initial stage. This is and has been basic to the tributary units, land on the farms contain less than 100 acres and are used on these lands ever since the number of livestock on the farms. These are the local markets. A large part, however, is fed to the people. New Mexico has extensive range areas

and other small grains. The soil in these areas will produce the remaining characteristics. The project will provide a feed supply for the agricultural enterprises.

and to increase the size of the term shift. The contribution to crops in surplus in adjacent areas and products. In addition, the local economy resulting from the production of grain and other crops, thereby tending to increase surplus crops. In the past, the crop now produced in the area is now under price support. All irrigated land is under price support.

The project features of the project also reflect current conditions for minimum maintenance, and usually excluding recrea-

tion allocations of about \$29,200,000 to municipalities for future uses. The

project feasibility and is evaluated total benefits of 2.6 to 1 for a 100-year period considered in a 50-year period to 1.

million of the allocation made with organic matter of April 11, 1956

(70 Stat. 107) for contracting on the participating projects authorized by section 1 of that act.

The costs allocated to irrigation in excess of the irrigators' ability to repay would be paid from the New Mexico apportionment of the Upper Colorado River Basin fund revenues as provided in the act.

As outlined above, there has been no change in the physical features, the hydrology, or the costs of the project since we last testified before this committee in May 1960. There has been a small change in the financial and repayment aspects. Last year Public Law 86-529 was enacted which, among other things, established a new formula for computing the interest rate required for payout on the Colorado River storage project. This affected the municipal and industrial water payout requirements by the city of Albuquerque. We had used 27/8 percent interest in computing payout requirements in our previous testimony but under the formula as of today the rate would be 2.632 percent. Using the new rate, the cost of water to Albuquerque would be \$55,622,000 over a 50-year period, or about 7.3 cents per 1,000 gallons as against 7.7 cents under the old interest rate.

A financial and power rate analysis of the Colorado River storage project and participating projects was prepared in September 1960. That analysis shows that by fiscal year 2049, there would accrue to the credit of New Mexico about \$151 million in apportioned surplus power revenues, of which only a little more than \$2.7 million would be needed for presently authorized participating projects in that State. The irrigation repayment assistance required by the proposed initial stage development of the San Juan-Chama participating project as presently evaluated amounts to about \$45.4 million. The analysis also shows that sufficient apportioned surplus revenues required for repayment of this assistance would accumulate by fiscal year 2022.

In the hearings held before this committee last year, Mr. Felix Sparks stated that, on the basis of intensive studies made by the Colorado Water Conservation Board, no possible injury could accrue to the water users in Colorado as a result of the projects being considered. He also stated, however, that the approval of the State of Colorado is predicated upon a finding by the Secretary of the Interior that the operation of the New Mexico projects will not adversely affect the water supply of the proposed Animas-La Plata project in Colorado and New Mexico.

The Secretary of the Interior made such a finding, which was transmitted to you, Mr. Chairman, by letter dated November 16, 1960, signed by Elmer F. Bennett, then Acting Secretary of the Interior.

This concludes my statement.

We will be glad to answer any questions the committee may have.

Mr. ROGERS. Thank you, Mr. Dominy.

Mr. ASPINALL. Mr. Chairman, I would suggest that we now hear the Commissioner of Indian Affairs and his staff who are here and then question the Department witnesses en bloc.

Mr. ROGERS. Without objection, we will follow that procedure.

Mr. Crow, your statement is relatively short?

Mr. Crow. That is right.

Mr. ROGERS. Suppose we let you read your statement at the present time and then we will have the record complete.

Mr. Crow. I will be happy to do that.

Mr. ROGERS. You may proceed.

STATEMENTS OF ACTING COMMISSIONER JOHN O. CROW, BUREAU OF INDIAN AFFAIRS, DEPARTMENT OF THE INTERIOR, AND G. B. KEESSEE, SUPERVISORY GENERAL ENGINEER, BRANCH OF LAND OPERATIONS, BUREAU OF INDIAN AFFAIRS

Mr. Crow. Mr. Chairman, in order to save the time of the committee, my comments will be limited. Testimony in support of this project has heretofore been made in detail on several occasions and is a part of records. Supporting information was given during the hearing before this committee on May 20, 1960. I request that these be made a part of the present record.

Mr. ROGERS. They are already a part of the record, I believe.

Mr. Crow. The building of the Navajo Indian irrigation project is a part of a broad program to develop the water and land resources of the Navajo Indian people. There is a lack of balance between the rapidly increasing Navajo population and the resources upon which these people depend for support. The construction of this project would be of great benefit in any sound approach to a basic solution of the total Navajo problem. The irrigation development would bring many primary and secondary benefits to the Navajo people. In addition to the benefits to the Navajos who would be settled on the irrigated land, benefits would accrue to many others who must depend on an over-used range to eke a bare living from small bands of sheep and herds of cattle they own. This development would permit the stabilization of the livestock operations reservationwide, resulting in a larger income from the land.

I would like to point out the effect of this irrigation development by comparing present earning capacity of the land with that which can be expected in the future. The lands proposed for development, now used by individual Navajo Indians under assignment from the tribe, support 5,116 sheep units year long. The same lands under irrigation would support about 436,000 sheep units year long, which is more sheep units than can be supported on the entire Navajo Reservation at this time.

In anticipation of early authorization and construction of the Navajo Indian irrigation project, the Navajo Tribal Council established a training farm near Shiprock. This training farm is administered by tribal officials and financed in its entirety with tribal funds. The fundamental purpose of this training activity is to train interested Navajos in irrigation farming and provide settlers for lands to be developed in this project. The program has been in progress for about 5 years and the results obtained have been extremely gratifying. There is no doubt that if the Navajo is given the opportunity and the training, he can be a successful irrigation farmer.

The decision for the authorization of this project is that of the Congress, and I hope that it will receive your most thoughtful consideration. The Bureau of Indian Affairs strongly supports the construction of the project.

I thank you for this opportunity to appear before you.

Mr. G. B. Keessee of the branch of land operations has a statement, Mr. Chairman.

Mr. ROGERS. You may proceed.

Mr. KEESSEE. Mr. C in northwestern New of the San Juan Riv for irrigation are loca taining a net irrigabl Wash and extending miles and southward miles. The other tra is located west of the of Newcomb, approx rock and is approxi tion and 14 miles in an

The total net proje 26,620 acres less than report. This reductio

(1) A policy decisio tion of lands to be dev

(2) An agreement Affairs, and the State tion project would be

Indians and would a

110,630 acres of land, more than 598,000 acre

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JOHN O. CROW, BUREAU  
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ations has a statement,

Mr. KEESSE. Mr. Chairman, the Navajo Indian irrigation project in northwestern New Mexico is situated on an elevated plain south of the San Juan River in San Juan County. The lands proposed for irrigation are located primarily in two large areas. One tract containing a net irrigable area of 48,289 acres is located east of the Chaco Wash and extending eastward for a distance of approximately 36 miles and southward from the San Juan River for approximately 18 miles. The other tract containing a net irrigable area of 62,341 acres is located west of the Chaco Wash and centered around the village of Newcomb, approximately 40 miles south of the village of Shiprock and is approximately 30 miles in length in a north-south direction and 14 miles in an east-west direction.

The total net project area as now proposed is 110,630 acres, and is 26,620 acres less than the net area proposed in the 1955 feasibility report. This reduction is due to several factors:

(1) A policy decision by the State of New Mexico as to the location of lands to be developed for non-Indian farmers.

(2) An agreement between the Navajo Tribe, Bureau of Indian Affairs, and the State of New Mexico that the Navajo Indian irrigation project would be built solely for settlement and use by the Navajo Indians and would contain a net irrigable area of not less than 110,630 acres of land, requiring annually at the point of diversion not more than 508,000 acre-feet of water.

(3) That the Federal and State lands located eastward from the east boundary of the Navajo Reservation and within the limits of the project boundary, subject to irrigation from the main gravity canal, be included as part of the Navajo Indian irrigation project.

(4) Because of the State's policy in respect to the development of other lands for non-Indian use, it permitted the exclusion from the originally proposed project of all of those lands situated in long narrow valleys requiring long costly lateral canals to provide them with water and resulting in a more compact body of land west of the Chaco Wash which would reduce the construction costs and make for more economical operation and maintenance of the project.

The project lands located on the Navajo Reservation are presently used by individual Navajo Indians under assignment from the tribe for grazing purposes, and those project lands located outside the boundary of the reservation are used by Navajo Indian allottees and private ranchers for the same purpose.

The productive capacity of the proposed project, under present use of the lands proposed for irrigation, supports 5,116 sheep units year long. The same lands, under irrigation would support under average managerial efficiency, about 436,000 sheep units year long.

The construction of the Navajo Indian irrigation project would provide a means of self-support for 1,120 families on farm units and would create employment for an additional 2,240 families. Thus, the Navajo Indian irrigation project would provide a substantial living for about 17,000 people of the present Navajo population.

The project lands range in elevations from 5,580 to 5,950 feet and lie from 200 to 500 feet above the entrenched river. The project area has a temperate and semiarid climate. The summers are characterized by warm days and cool nights. The mean average annual

temperature is about 51° F. varying from a minimum of -21° F. to a maximum of 110° F. The frost-free period is about 160 days.

The average annual precipitation varies from 8.99 inches at the Bloomfield station to 7.5 inches at the Shiprock station. About half of the rainfall occurs during the growing season making irrigation necessary for successful crop production. Winds are common in the spring and fall, but seldom of violent magnitude.

Only those lands in the class I and II categories will be developed for irrigation. There are a total of 31,921 acres of class I land and 30,420 acres of class II land to be developed for irrigation farming in the area west of the Chaco Wash and 8,038 acres of class I land and 40,251 acres of class II land in the area east of the Chaco Wash.

Drainage investigations do not indicate that unfavorable drainage problems will develop during the operation of the project. With irrigation, the project lands are well suited for the raising of the types of crops normally grown on irrigated lands in the San Juan River Basin. The soils contain a low content of salt which will not interfere with plant growth.

Water for the irrigation of the project lands will be supplied out of New Mexico's share of the Colorado River water. The water will be stored in the Navajo Reservoir, presently under construction, one of the storage reservoirs of the Colorado River storage project authorized by Public Law 485 (84th Cong., 2d sess., approved April 11, 1956).

The project's water requirements will be derived from the Navajo Reservoir near Navajo Dam. Reservoir operation studies of the Navajo Reservoir indicate that sufficient water will be available for a full project supply with reasonable annual shortages. Details of the water supply aspects for this project and the initial stage of the San Juan-Chama project will be covered by Bureau of Reclamation.

The agreement as discussed in the second paragraph of this statement involving the project size and use of the project lands resulted in a revision of the project works west of Kutz Canyon pumping plant proposed in the January 1955 report. The location of the main gravity canal from Navajo Dam to the inlet of the Kutz Canyon pumping plant remains approximately in the same position as originally proposed. The maximum capacity of the canal was reduced from 2,630 cubic feet per second to 2,405 cubic feet per second. The water for the project will be diverted from the Navajo Reservoir at elevation 5,990 feet as originally proposed.

The Kutz Canyon pumping plant is eliminated in the present plan and replaced with a siphon crossing Kutz Canyon, and the main gravity canal continues across the project area 170 feet higher in elevation than the original Shiprock main gravity canal. At a distance of 75.6 miles from the main gravity canal heading, the water required for serving project lands west of Chaco Wash will be dropped through the Gallegos powerplant. The remaining 77 miles of the main gravity canal is located as originally proposed in the 1955 report.

A maximum of 15,000 kilowatts of power will be generated at the Gallegos powerplant only during the irrigation season and will be used solely to operate the Gallegos, Newcomb, and Bennett Peak pumping plants, supplying water to three subareas above the gravity main canal on the Navajo Reservation.

The turbines will operate to generate the power at a maximum of 1,150 cubic feet per second at the maximum power rate.

The Gallegos pumping plant canal at the east reservoir has a net area of 9,273 square feet, approximately 4 miles from the main canal, U.S. Highway 666.

The Bennett Peak pumping plant is located north of the village of Shiprock to a net area of 9,273 square feet.

The total length of the main gravity canal, total length of canal, total length of canal, total length of canal, the initial capacity of the canal.

Canal section	
Dam to Kutz Canyon.....	
Kutz Canyon to Gallegos powerplant.....	
Gallegos powerplant to end.....	
Total.....	

The static head and pumping plants are shown in the following table:

	Feet
Gallegos.....	
Newcomb.....	
Bennett Peak.....	

The estimated total cost of the Indian irrigation project is \$25 million or 15.7 percent of the total cost of the project report. The total estimated investigation costs, not including the Navajo Reservoir included.

A period of 14 years will be used to develop the project, of which 5 years will be used to develop the project and the remaining 9 years will be used to develop the project. The delivery of water will be completed within 5 years.

The project is adapted to the needs of the users as well as its present needs.

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The turbines will operate under 172.5 feet of head and be designed to generate the power required during the irrigating season. A maximum of 1,150 cubic feet per second water is available to generate the maximum power requirements.

The Gallegos pumping plant will be located on the main gravity canal at the east reservation boundary line and will supply water to a net area of 9,273 acres. The Newcomb pumping plant located approximately 4 miles south of the village of Newcomb will supply water from the main canal to a net area of 6,688 acres located west of U.S. Highway 666.

The Bennett Peak pumping plant, located approximately 7 miles north of the village of Newcomb, will supply water from the main canal to a net area of 12,940 acres located west of U.S. Highway 666.

The total length of each section of the main gravity canal, the total length of canal, total length of tunnels, total length of siphons, and the initial capacity of each section are shown in table I.

TABLE I

Canal section	Total length (miles)	Open canal (miles)	Tunnels (miles)	Siphons (miles)	Initial capacity (cubic feet per second)
Dam to Kutz Canyon.....	29.3	13.6	10.1	5.6	2,405
Kutz Canyon to Gallegos powerplant.....	46.3	38.4	2.7	5.2	1,973
Gallegos powerplant to end.....	77.0	67.2	-----	9.8	1,150
Total.....	152.6	119.2	12.8	20.6	-----

The static head and quantity of water to be pumped for each of the pumping plants are shown in table II.

TABLE II

Pumping plant	Static head (feet)	Quantity (cubic feet per second)
Gallegos.....	214	156
Newcomb.....	170	130
Bennett Peak.....	170	252

The estimated total cost of building the works to serve the Navajo Indian irrigation project based on present prices is \$134,359,000 and is \$25 million or 15.7 percent less than the plan proposed in the 1955 report. The total estimated cost does not include \$974,000 of prior investigation costs, nor are any of the costs of the Navajo Dam and Reservoir included.

A period of 14 years is required to complete the Navajo Indian irrigation project, of which the first 2 years after authorization would be used to develop the definite plan and other preconstruction activities and the remaining 12 years for the building of the project works. The delivery of water to the first of the project lands could be accomplished within 5 years.

The project is adaptable to serve municipal and industrial water users as well as its primary purpose of irrigation. The preceding

costs are for works to serve irrigation requirements only. The following analysis considers those benefits associated with construction of the irrigation works.

The project would produce four types of measurable benefits. Three of these are: Direct benefits—the increased net farm income resulting from irrigation; indirect—the benefits derived from secondary use of the project products; and public—the benefits resulting from increased or improved settlement, employment and investment opportunities, community and service facilities, and the stabilization of local and regional economy.

The fourth type of benefit is peculiar to only a project concerned with the Indian people. This benefit measures the reduction in cost to the U.S. Government in fulfilling its obligation to provide schools for Navajo children.

Direct, indirect, and public benefits were computed by standard procedures adopted by the Department of the Interior. They are based on the price index of 250 for prices received, 265 for prices paid, and the period 1910-14 equals 100. Education reduction cost benefits were determined through an analysis of past schooling costs and a prediction of conditions with the Navajo project in operation. The benefits are summarized below:

Type of benefit:	Annual amount
Direct.....	\$3,365,400
Indirect.....	3,019,900
Public.....	1,194,000
Subtotal, irrigation.....	7,579,300
Benefits: Education cost reduction.....	957,600
Total.....	8,536,900

Benefit-cost ratios were computed for both a 50-year and 100-year period of analysis. In these computations, interest during construction was computed at 2½ percent per annum during the 12-year construction period and total Federal costs were amortized over the 50- and 100-year periods at the rate of 2½ percent interest. These procedures are consistent with current practices in the analysis of reclamation projects.

The benefit ratios for the project would be:

100-year period of analysis:	
Direct irrigation benefits.....	0.64 to 1.0
Total irrigation benefits.....	1.44 to 1.0
Total irrigation and school benefits.....	1.62 to 1.0
50-year period analysis:	
Direct irrigation benefits.....	.52 to 1.0
Total irrigation benefits.....	1.17 to 1.0
Total irrigation and school benefits.....	1.3 to 1.0

A more complete derivation of the benefit-cost ratio is given as attachment A.

A total of 1,120 new farms would come into existence as a result of project construction. Farm budget analysis for typical 90-acre farms on class I lands and 105-acre farms on class II lands determined the per acre repayment ability to be \$9.25 for class I lands and \$7.50 for class II lands.

Deduction of  
\$4.35 per acre  
\$3.15 per acre  
This computation

Annual payment capacity  
Annual operation, maintenance  
Annual amortization  
Maximum annual repayment  
Maximum repayment

Project farm  
and replacement  
the capability  
50-year period  
amounts to about  
Under Public  
1956) costs will  
act of July 1,  
long as the land  
repayment ability  
(Table IV)

TABLE IV.—

Net irrigated area  
Principal crops  
small grains, sorghum  
Irrigation water  
Average annual  
Average annual  
Project works:  
Main canal  
Main canal  
12.8 miles  
Bennett 1  
als; dist  
required for  
Estimated construction  
Repayment ability  
Costs in excess of  
Annual operation  
Benefit-cost ratio  
100-year period  
Direct irrigation  
Total irrigation  
Total irrigation  
50-year period  
Direct irrigation  
Total irrigation  
Total irrigation



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## Annual amount

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----- 1,194,000  
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----- 8,536,900  
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----- 0.64 to 1.0  
----- 1.44 to 1.0  
----- 1.62 to 1.0

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----- 1.17 to 1.0  
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s II lands determined  
ass I lands and \$7.50

Deduction of operation, maintenance, and replacement charges of \$4.35 per acre per year results in amortization capacities of \$4.90 and \$3.15 per acre per year for class I and class II lands respectively. This computation is presented in table III.

TABLE III.—*Repayment capacity of project lands*

Item	Class I land	Class II land
Annual payment capacity per acre.....		
Annual operation, maintenance, and replacement charges per acre.....	\$0.25	\$7.50
Annual amortization capacity per acre.....	4.35	4.35
Maximum annual repayment.....	4.90	3.15
Maximum repayment, 50 years.....	\$418,400	
	20,920,000	

Project farm operators would pay annual operation, maintenance, and replacement assessments. In addition, the operators would have the capability of repaying \$418,400 annually or \$20,920,000 during a 50-year period toward the construction costs of the projects. This amounts to about 16 percent of the construction costs.

Under Public Law 485 (84th Cong., 2d sess., approved April 1, 1956) costs within the capability of the land to repay is subject to the act of July 1, 1932 (47 Stat. 564) and is not subject to collection as long as the land remains in Indian ownership. Costs in excess of repayment ability would be nonreimbursable.

(Table IV and attachments follow:)

TABLE IV.—*Summary of data, Navajo irrigation project, New Mexico*

Net irrigated acreage.....	acres.....	110,630
Principal anticipated agricultural production: Alfalfa, pasture, small grains, sheep, and dairy cows		
Irrigation water supply:		
Average annual diversion.....	acre-feet.....	508,000
Average annual stream depletion.....	do.....	281,000
Project works:		
Main canal, initial capacity 2,405 cubic feet per second.		
Main canal 152.6 miles long, including 119.2 miles open canal, 12.8 miles tunnel, and 20.6 siphon; Gallegos, Newcomb, and Bennett Peak pumping plants; Gallegos powerplant; laterals; distribution; and drains. About 14 years would be required for construction of the project.		
Estimated construction cost.....		\$134,359,100
Repayment ability of water users, 50 years.....		20,920,000
Costs in excess of water users repayment ability.....		113,439,100
Annual operation, maintenance, and replacement costs.....		481,200
Benefit-cost ratios:		
100-year period of analysis:		
Direct benefits.....		0.64 to 1.0
Total irrigation benefits.....		1.44 to 1.0
Total irrigation and education benefits.....		1.62 to 1.0
50-year period of analysis:		
Direct benefits.....		.52 to 1.0
Total irrigation benefits.....		1.17 to 1.0
Total irrigation and education benefits.....		1.31 to 1.0

TABLE IV.—Summary of data, Navajo irrigation project, New Mexico—Con.

[Attachment A]

*Benefit-cost ratio (100-year analysis)*

Total costs: <sup>1</sup>	
Total field costs.....	\$111, 082, 000
Plus 12 percent for contingencies.....	124, 415, 600
Plus 8 percent for engineering and overhead <sup>2</sup> .....	134, 359, 100
Total cost plus 2½ percent interest during construction.....	<u>154, 513, 000</u>
Annual equivalent costs:	
2½ percent over 100 years (0.02731).....	4, 220, 000
Operation, maintenance, and replacement at \$4.35 per acre.....	481, 200
Colorado River depletion charge at \$2 per acre-foot.....	563, 600
Total.....	<u>5, 264, 800</u>
Benefits:	
Direct irrigation at 30.42.....	<u>3, 365, 400</u>
Total irrigation at 68.51.....	7, 579, 300
Educational cost reduction.....	957, 600
Total irrigation and educational cost reduction.....	<u>8, 536, 900</u>
Benefit-cost ratio:	
Direct irrigation benefits.....	0.64 to 1.0
Total irrigation benefits.....	1.44 to 1.0
Total irrigation and school benefits.....	1.62 to 1.0

*Benefit-cost ratio (50-year analysis)*

Total costs: <sup>1</sup>	
Total field costs.....	111, 082, 000
Plus 12 percent for contingencies.....	124, 415, 600
Plus 8 percent for engineering and overhead <sup>2</sup> .....	134, 359, 100
Total cost plus 2½ percent interest during construction.....	<u>154, 513, 000</u>
Annual equivalent costs:	
2½ percent over 50 years (0.02731).....	5, 448, 100
Operation, maintenance, and replacement at \$4.35 per acre.....	481, 200
Colorado River depletion charge at \$2 per acre-foot.....	563, 600
Total.....	<u>6, 492, 900</u>
Benefits:	
Direct irrigation at 30.42.....	<u>3, 365, 400</u>
Total irrigation at 68.51.....	7, 579, 300
Educational cost reduction.....	957, 600
Total irrigation and educational cost reduction.....	<u>8, 536, 900</u>
Benefit-cost ratio:	
Direct irrigation benefits.....	0.52 to 1.0
Total irrigation benefits.....	1.17 to 1.0
Total irrigation and school benefits.....	1.31 to 1.0

<sup>1</sup> Does not include cost of dam and reservoir.<sup>2</sup> Does not include prior investigation costs of \$947,000.

Mr. ROGERS. The Chair  
Mr. Aspinall.

Mr. ASPINALL. I have  
As far as the statement  
these various tributary  
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Mr. DOMINY. I would li

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Mr. ROGERS. The Chair recognizes the gentleman from Colorado, Mr. Aspinall.

Mr. ASPINALL. I have one question at this time, Mr. Chairman. As far as the statement that Mr. Dominy gave—as he referred to these various tributary projects, he gave the benefit-cost ratio for each project. What formula did you use?

Mr. DOMINY. I would like Mr. Burnett to answer that.

Mr. BURNETT. Those benefit-cost ratios were based on total benefits over a hundred-year period.

Mr. ASPINALL. The benefit-cost ratio, Mr. Burnett, that is in the report that came up from down below is based upon direct benefits for a 50-year period, is that right?

Mr. BURNETT. We have that benefit-cost ratio too, which is included in our report. Yes, sir.

Mr. ASPINALL. Now, many members of the committee, Mr. Dominy, have many questions about this proposed project. The question which I have and which appears to be uppermost in the minds of those of us at least from the West is the question of the availability of water. As I understand it, you base your conclusion that sufficient water is available upon what is known as "Summary Navajo Reservation Operation Study No. 8," is that right?

Mr. DOMINY. I have Mr. J. R. Riter here who will be glad to go into the details of how the Bureau projects the hydrology of the basin river system as detailed as the committee would like to undertake.

Mr. ASPINALL. Have you brought this down any later than the date of 1954?

Mr. DOMINY. Mr. Riter?

Mr. RITER. That is a State study No. 8 which reflects future conditions—those beyond the immediate project. We have extended that through 1957, if you are referring to study No. 8; yes, sir.

Mr. ASPINALL. What do you label your study, Mr. Riter?

Mr. RITER. I just call that study an extension of the State study.

Mr. ASPINALL. And do you have a copy of that statement so that we may place it in the record at this place?

Mr. RITER. Yes, sir; I will supply it, unless Mr. Reynolds chooses to supply the study.

Mr. ASPINALL. You see, we have at least three, and maybe four, studies as to the availability of water. Perhaps the gentleman from California might offer a fifth one. And it is because of the variance that we have in these studies that causes some of us some questions. I do not want to question you at length about the details. I would like to question you though on the general statement as to how the results which you contend are supportable were arrived at.

Mr. RITER. Mr. Aspinall, may I say this: This State study No. 8 is the future condition which will probably not take place for a good many years. That was in the nature of an exploratory study.

Under the terms of the bill under consideration, the Secretary of the Interior will have the responsibility of determining how much water will be sold for future municipal and industrial purposes. We in the Bureau are just starting on a study of that type now. The diversion demands for the Navajo Indian project are 508,000 acre-feet. The estimated demand for the Hammond project and incidental areas is 23,000 acre-feet and the average annual longtime diversion for the

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San Juan-Chama project is 110,000 acre-feet. However, because of the short years in this particular study period, they would only average in the neighborhood of 105,000 acre-feet.

The flow of the San Juan River at Blanco gaging station, which is below some existing uses in New Mexico, for the 30-year study period from 1928 to 1957, after allowing for full use of the Pine River project in Colorado and for the authorized, but as yet unconstructed Weini-nuche diversion project in Colorado, will average out 905,000 acre-feet. Now the study before you, if it is State study No. 8, also has the further estimated demand of 224,000 acre-feet. I do not know for sure whether that demand will ever materialize. That is something that we are now studying.

In my studies, I have made an operation study without the expanded 224,000 acre-feet future municipal and industrial demand. The Navajo Reservoir will have a total capacity of about 1,700,000 acre-feet of which nearly a million acre-feet will be active capacity. I think we use in these calculations an active capacity of about 960,000 acre-feet. Our operation studies show with the initial demand there would be no shortage.

By extending the State study with the large municipal-industrial demand we found that there would be some heavy shortages.

It is a matter for future decision to determine the amount of water for municipal and industrial purposes. There are a lot of questions to be resolved before we are prepared to contract for the full amount of 224,000 acre-feet which the State of New Mexico has suggested is the possible future diversion supply. I am not prepared to say today that we will ever go that far. That is something that will have to be reserved for future study and we are initiating such studies.

Mr. ASPINALL. Let me ask you the question this way: Does the Bureau have any study of the supply of water in this area based upon studies before 1928?

Mr. RITER. We have made some estimates, Mr. Aspinall, of the available streamflow; yes, sir. The available streamflow before 1928 is generally much higher. I have a longtime record of historic flows, which are partly estimated, and they go back to the year 1906, the historic flows at the Blanco gaging station. They show for the period 1906 through 1957—

Mr. ASPINALL. Mr. Riter, I do not care to go into details on it, but I would like to have a copy of that document, whatever you have there, to show the historic flows from the first date that you have down to the present time. I would like to have it put in the record at this place, because it is on that, as I understand, Mr. Dominy, you base the availability of this water; is that right?

Mr. DOMINY. We base it partly on that, that is true. Now, Mr. Riter, a very capable and eminent hydrologist, has studied this matter thoroughly from all data available and has concluded that the project that is before this committee now for authorization is feasible from the standpoint of water supply.

Mr. ASPINALL. Are those studies to which you made reference, Mr. Riter, the basis on which you have made your studies?

Mr. RITER. Yes, sir.

Mr. ASPINALL. Then, Mr. Chairman, I would ask unanimous consent that this study be placed in the record at this point.

Mr. ROGERS. Without objection, it is so ordered.

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(The material referred to follows:)

*Historic flows, San Julian River near Blanco, N. Mex.*

[1,000 acre-feet]

Year ending Sept. 30—		Year ending Sept. 30—Continued	
1906	1, 870 E	1935	1, 504 R
1907	2, 397 E	1936	934 R
1908	1, 190 R	1937	1, 408 R
1909	2, 002 R	1938	1, 435 R
1910	1, 123 E	1939	729 R
1911	1, 830 E	1940	509 R
1912	1, 665 E	1941	2, 351 R
1913	940 E	1942	1, 652 R
1914	1, 440 E	1943	737 R
1915	1, 705 E	1944	1, 235 R
1916	1, 890 E	1945	868 R
1917	1, 990 E	1946	393 R
1918	785 E	1947	667 R
1919	1, 240 E	1948	1, 267 R
1920	2, 275 E	1949	1, 389 R
1921	1, 525 E	1950	535 R
1922	1, 380 E	1951	331 R
1923	1, 205 E	1952	1, 490 R
1924	1, 200 E	1953	510 R
1925	855 E	1954	514 R
1926	1, 045 E	1955	488 A
1927	1, 710 E	1956	492 A
1928	860 R	1957	1, 432 A
1929	1, 514 R	1958	1, 389 A
1930	866 R	1959	308 A
1931	550 R	1960	1, 024 A
1932	1, 856 R		
1933	696 R	Average for 55 years	1, 192
1934	365 R		

Note:

R indicates record.

E indicates estimated flows.

A indicates record at Archuleta. Flows at Blanco estimated by subtracting diversions by Citizens Ditch (diversions estimated after June 1958.)

Operation study, Navajo Reservoir

[Units 1,000 acre-feet]

Year ending Oct. 31—	Depleted flow at Blanco <sup>1</sup>	Demands on depleted flow and reservoir				Reservoir evaporation losses	Reservoir content end of year <sup>6</sup>	Spills	Shortages
		San Juan-Chama <sup>2</sup>	Hammond project <sup>3</sup>	Navajo Indian project <sup>4</sup>	River regulation <sup>5</sup>				
1928	744	81	23	508	20	632	361		
1929	1,310	178	23	508	20	729	257		
1930	1,776	82	23	508	20	807	311		
1931	598	56	23	508	20	607	38		
1932	1,640	194	23	508	20	745	652		
1933	646	69	23	508	20	620	40		
1934	324	21	23	508	20	572	37		
1935	1,335	182	23	508	20	733	41		
1936	1,294	124	23	508	20	670	41		
1937	1,295	158	23	508	20	700	42		
1938	1,298	149	23	508	20	699	43		
1939	677	78	23	508	20	629	39		
1940	406	68	23	508	20	619	35		
1941	2,461	214	23	508	20	765	41		
1942	1,356	163	23	508	20	714	42		
1943	677	86	23	508	20	637	40		
1944	1,085	117	23	508	20	685	42		
1945	832	124	23	508	20	675	40		
1946	47	47	23	508	20	598	36		
1947	376	88	23	508	20	639	38		
1948	620	112	23	508	20	663	38		
1949	1,095	130	23	508	20	681	43		
1950	1,291	62	23	508	20	706	29		
1951	592	45	23	508	20	596	159		
1952	319	45	23	508	20	497	0		
1953	1,359	155	23	508	20	751	0		
1954	482	64	23	508	20	604	0		
1955	504	53	23	508	20	604	0		
1956	418	49	23	508	20	618	0		
1957	440	67	23	508	20	712	0		
1958	1,350	161	23	508	20	678	531		
1959	1,269	127	23	508	20	678	0		
1960	1,320	140	23	508	20	591	0		
1960 <sup>1</sup>	950	110	23	508	20	661	0		
Total	29,689	3,454	759	16,754	660	21,637	7,088		
Average	899.7	104.7	23.0	508.0	20.0	655.7	214.8		

<sup>1</sup> Unregulated depleted flow after allowing for future upstream depletions by full development (69,000 acres) of Pine River project in Colorado, authorized (unconstructed) Weminuche Pass diversion in Colorado, and bypasses at damsite to meet present uses along San Juan River between Navajo Dam site and Farmington.

<sup>2</sup> Diversions from Rio Blanco, Navajo, and Little Navajo Rivers, upstream from Navajo Reservoir for initial stage San Juan-Chama project. In absence of records for year 1960, diversion assumed to be equal to long time average of 110,000 acre-feet.

<sup>3</sup> Diversion requirement for Hammond project and miscellaneous areas between

<sup>4</sup> Diversion requirements at Navajo Dam for Navajo Indian irrigation project.  
<sup>5</sup> Estimate of regulatory losses and average annual bypass to meet natural flow uses below Farmington, N. Mex., not supplied by return flows from upstream diversions and tributary inflow entering San Juan River below damsite.  
<sup>6</sup> Operation studies based on storage capacity remaining after 100 years of sediment deposition. Original capacity (1,700,000 acre-feet) assumed depleted by sediment deposition of 330,000 acre-feet. Streamflow records prior to 1925 assure reservoir being full on Oct. 31, 1927, and 1960 adjusted to original study.

Mr. ASPINALL. I believe this is another project where the water areas of the San Juan Animas-La Plata project. Completion of the project there will be water available for La Plata project?

Mr. RITER. Yes, sir. In the process of completing the project.

Mr. ASPINALL. All right. I am glad that there will be water available.

Mr. RITER. Yes, sir. The Hammond all depends on the river.

Mr. ASPINALL. This river is a tributary of the Navajo Reservoir?

Mr. RITER. Yes, sir. It ends and starts in my area.

Mr. ASPINALL. I am glad that it is available or whether it is taken out of the Navajo Reservoir.

Mr. RITER. Yes, sir. It will be available and the users below the dam will be available.

Mr. ASPINALL. I am glad that the relationships of the San Juan.

Mr. RITER. Yes, sir. I like to have Mr. RITER. About the situation is simple.

Mr. ASPINALL. The situation is simple. The confluence of the Animas and the San Juan.

Mr. RITER. In our case, we would have been supplied with surplus water. However, I worked very closely with the problem—we found a problem of approximately 100 years of sediment.

Mr. ASPINALL. That is correct. If I understand Mr. RITER, the demand on Navajo Reservoir would not have been in order to meet the demand.

Mr. RITER. I think that is correct. I went to the project and as I understand it, but







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Mr. HOSMER. Mr. Chairman, I am wondering if the witness can supply the deficiency studies that were referred to a moment ago plus any other chronological deficiency studies that are available with respect to the material that you intend to furnish for the record.

Mr. ROGERS. Are you speaking of the witness Mr. Riter?

Mr. HOSMER. I am speaking of Bureau witnesses that are going to bring this stuff up here; whichever one is going to bring it up for the record.

Mr. ROGERS. The Chair does not understand what the gentleman is driving at.

Mr. HOSMER. The chairman asked unanimous consent that certain statistics with respect to water supply be furnished for the record. I ask that in addition these statistics that are furnished contain a column showing chronologically the deficiencies in relation to the project before the committee.

That is my request as to the request of the gentleman from Colorado and if he will accept it.

Mr. ASPINALL. I have no objection to them furnishing all the information they have whether it happens to be supporting or nonsupporting. I think the committee is entitled to it.

Mr. HOSMER. All right.

Mr. ROGERS. Without objection, the request of the gentleman from Colorado, Mr. Aspinall, and the request of the gentleman from California, Mr. Hosmer, concerning that request, is granted.

(The information referred to follows:)

The November 1954 Status Report for the Animas-La Plata project, Colorado and New Mexico, shows estimated shortages in diversions as follows:

Year:	Shortage in percent of diversion requirements <sup>1</sup>	Year—Continued	Shortage in percent of diversion requirements <sup>1</sup>
1928-----	0	1942-----	0
1929-----	0	1943-----	0
1930-----	0	1944-----	0
1931-----	11.1	1945-----	0
1932-----	0	1946-----	3.8
1933-----	0	1947-----	0
1934-----	49.7	1948-----	0
1935-----	0	1949-----	0
1936-----	0	1950-----	11.4
1937-----	5.1	1951-----	25.3
1938-----	0	1952-----	0
1939-----	16.1		
1940-----	17.7	Average for 25 years-----	5.6
1941-----	0		

<sup>1</sup> Figures are tentative, subject to change upon completion of detailed studies now being made.

Mr. ROGERS. Now the Chair recognizes the gentleman from Washington, Mr. Westland.

Mr. WESTLAND. Mr. Chairman, there has been some testimony here that there would be a very substantial increase in the values of these lands that are involved in the project. I would ask, I guess Mr. Dominy, has there been any unusual land speculation in this area as a result of these bills?

Mr. DOMINY. I would like to refer that to Ralph Charles who is a resident of Albuquerque and who has been intimately acquainted

with these participating units and has kept current on the matters of that sort. I would like to have Mr. Charles answer that question, Mr. Westland.

Mr. CHARLES. There has been no speculation in any of the tributary units, and insofar as I know, no speculation in the Middle Rio Grande lands which would be served supplemental water by this project. There has been speculation in lands in general outside of the Middle Rio Grande Conservancy District. It has been nationwide, in fact. They are advertising them in Time magazine. But these are not the irrigated lands within the district. These lands are not being purchased and offered as speculative properties because of potential benefits from the project.

Mr. WESTLAND. We have had testimony yesterday that on some of these Navajo lands, the values might increase from \$7, \$8, or \$9 an acre to as much as \$1,000 an acre as a result of this irrigation and water getting on it.

Mr. CHARLES. These lands are already irrigated and prices have gone up, it is true, as they have gone up every place, but not specifically as a result of any speculation we could determine.

Mr. DOMINY. I think, Mr. Westland, it is a generally true statement, that any time you bring a full water supply under irrigation to a desert area you certainly do increase the value of that land. I am sure you could not buy any land in Salt River Valley today at less than \$1,000 an acre and without water, it would be relatively worthless except for homesites and, of course, it would not even have much home-site value without the municipal water supply the project has brought in there.

Mr. WESTLAND. We see these projects coming in like this and you always speak of the ability of the irrigator to repay. It averages out somewhere, I suppose, around 10 percent of the case with somebody else paying the bill. In the Colorado River Basin, the Colorado River Basin Fund actually pays the bill for these things. And this tremendous increase in value of the land—it frequently seems to me there should be some way of recapturing that increased value when, as, and if those lands are sold, and that an individual should not profit, and profit substantially, as the result of these projects. I do not know how you are going to do it. It never has been done. I have asked this question repeatedly and have always gotten the same answer, that nobody ever feels they ought to pay part of it back into the Treasury.

Mr. DOMINY. Of course the excess land provision has been one of the vehicles that Congress has put into reclamation law to hold this advantage within reasonable limits. So actually when a man owns more than 160 acres, it is appraised at its original dryland value and he is required to dispose of it without the increment of value due to the project under reclamation law.

Mr. WESTLAND. If the fellow owns 160 acres and its value goes from \$10 an acre to \$1,000 an acre, he is doing pretty good.

Mr. DOMINY. That is right. Of course, that is not all profit. He has had to level the land, put in his structures, fertilize it, and subjugate it and he has probably from \$300 to \$400 actual investment an acre that he has had to make in order to create that thousand dollar value.

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Mr. ROGERS.

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Mr. Crow. One other point I would like to make there, Mr. West-land.

These lands we are talking about are primarily tribally owned lands of the Navajos. There is no authority to sell those lands. Congress has not given authority to sell those lands. So for the moment at least there can be no speculation as such.

Mr. WESTLAND. That is all, Mr. Chairman.

Mr. ROGERS. Mr. O'Brien.

Mr. O'BRIEN. Mr. Chairman, the gentleman from Florida, Mr. Haley, went to attend a meeting elsewhere and requested me to ask Mr. Dominy in connection with the Pojoaque unit. You referred to the fact that both Indian and non-Indian lands would be included and he was anxious to know what percentage of these lands would be Indian lands.

Mr. DOMINY. Mr. Charles has the breakdown of ownership between Indians and non-Indians on all of these units and I think you should put that in the record at this point.

Mr. CHARLES. In that particular one, sir, there is 550 acres of Indian land, the remainder is non-Indian. We will supply that.

*Acres of Indian and non-Indian land, San Juan-Chama project*

Unit	Indian land (acres)	Non-Indian land (acres)	Total (acres)
Cerro.....	None	11,820	11,820
Taos.....	4,050	16,500	20,550
Llano.....	1,900	2,620	4,520
Pojoaque.....	550	1,890	2,440
Middle Rio Grande Conservancy District.....	11,680	69,930	81,610
Total.....	18,180	102,760	120,940

† The Middle Rio Grande Conservancy District contains other lands, both Indian and non-Indian.

Mr. O'BRIEN. Thank you. Now I have a much more general question: Commissioner, I have a very high respect for your background in this field. It is intensified by my own lack of background. At times I feel something like an eastern lamb who has strayed into a western fold. But these matters, after we get through with them, will be decided by a number of other people from the East, and I have been very anxious to cooperate in reclamation projects, because I feel that what helps the West helps the East, of course.

But I am a little curious about this particular project, really two projects, one having been \$86 million, and we are told, at least the testimony would indicate, that a great part of the water involved here could be used for municipal purposes. I have no quarrel with that, because I understand the water shortage in that part of the country.

The second part is that which would help the Navajo Indians and as I understand it that would be about \$135 million, largely non-reimbursable; is that right?

Mr. DOMINY. Yes.

Mr. O'BRIEN. How would you answer me if I asked in view of your experience in this field, if you believe that the philosophy, the spirit, the intent of the reclamation law meets squarely with this project or are we spreading that reclamation tent to cover too much ground?

Mr. DOMINY. I would say, Mr. O'Brien, without reservation, that the San Juan-Chama is a meritorious participating project. It is fully in accord with the principles that the Congress has repeatedly endorsed in the Missouri River Basin project, in the Colorado storage project and in other western developments in recent years and particularly since the passage of the Reclamation Project Act of 1939. This act clearly established the premise that irrigators should pay up to their ability to pay, with the balance of the reimbursable project cost to be returned to the Treasury from revenues available from municipal water sales or power sales.

With respect to the Navajo project, this I will let Mr. Crow speak on for his agency. It is being justified by the Interior Department on the basis that there is still a debt owed to the Navajo Tribe that can be repaid at least in part by giving them this opportunity to become more self-sufficient and they as a nation of people are doing a tremendous job to my own knowledge in pulling themselves up by their own bootstraps out there on a desert reservation. I am sure Mr. Crow would want to supplement that statement.

Mr. O'BRIEN. Before he does, may I say I agree wholeheartedly on the merits of helping the Navajos and I agree wholeheartedly we owe the debt. I know the people in my district would want it paid. But the question that keeps popping up before me, is this the way to do it. Were the reclamation laws designed to cover that or should we seek another method of paying that debt. I am sure you feel you are within the scope of the reclamation laws here and I am inclined to go along with you, but I get just a little disturbed as I see projects, not involved here this morning, 98 percent power and that magic tent, reclamation, covers the whole business.

Now each may be worthy. Municipal water supply, of course, is necessary, it is a matter of national interest. The debt to the Navajo is necessary and a matter of national interest. But I wonder if we stretch that reclamation cover too much, if it might not snap on us one day. That is my fear and I express it here because I think it is a subject we will hear more about in another forum.

Mr. DOMINY. Of course as we get into a basin development certainly many of our projects are aimed directly at total basin resources development. You inevitably find some units of the whole that would be primarily power, some that are primarily municipal and industrial, but the whole package fits together in a basin so that actually here in the Colorado storage project ultimately the predominance of the project will be irrigation and the same with the Missouri River Basin and the same on the Snake River. Whereas individual interests will be before your committee, they are primarily one or the other.

Mr. O'BRIEN. Yes, but we have to go before Congress with the individual projects where we have been staring nakedly at the 98 percent power and they will wonder why we did not put it in originally when it could be covered by this whole blanket.

Mr. DOMINY. Of course, I happen to be among those that are very happy that Congress did not give us broad authorization and I insist we come back unit by unit because as I said here earlier this year, to the extent that we are unable to come back before this committee, composed not only of western members, but of people from other parts

of the United States in the national interest, I think that is all.

Under general authority, does have some broad authority directly to the A. This has been presented to the Interior, including come up here unit by unit Congress for special consideration.

Mr. O'BRIEN. That and some other projects link the whole package.

Mr. DOMINY. In addition to standing out analysis needs the assistance of previous projects.

Mr. ASPINALL.

Mr. O'BRIEN. I

Mr. ASPINALL. development project the Navajo project of the Indian all participating project.

Mr. DOMINY. V

Mr. ASPINALL. of these projects take advantage of

Mr. DOMINY. A is a separate package the Nation in light

Mr. O'BRIEN. comparatively small it as 60 percent position?

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across that I had Leavitt Act as superintendent irrigator can pay except the Navajo project.

Mr. DOMINY. T I did not go to the to Indians in any point was the cost ability of the Indian the Colorado storage Colorado storage project.

Mr. O'BRIEN. T \$135 million be charged

Mr. DOMINY. B but it would not be

Mr. O'BRIEN. A

without reservation, that participating project. It is Congress has repeatedly in the Colorado storage in recent years and par- on Project Act of 1939. irrigators should pay up the reimbursable project revenues available from

will let Mr. Crow speak the Interior Department the Navajo Tribe that the opportunity to be of people are doing a telling themselves up by reservation. I am sure ment.

I agree wholeheartedly I agree wholeheartedly district would want it up before me, is this the designed to cover that or at debt. I am sure you ion laws here and I am a little disturbed as I 98 percent power and business.

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basin development cer- at total basin resources of the whole that would municipal and industrial, so that actually here in e predominance of the the Missouri River Basin individual interests will one or the other.

for Congress with the g m dly at the 98 per- not put it in originally

ong those that are very authorization and I insist here earlier this year, k before this committee, people from other parts

of the United States, and justify these projects as being in the broad national interest, then they should not be built.

Under general reclamation law actually the Secretary of Interior does have some broad authorities to find projects authorized and come directly to the Appropriations Committee for construction funds. This has been pretty largely abandoned because recent Secretaries of the Interior, including the current one, believe that they ought to come up here unit by unit and be tested before the committees of the Congress for specific authorization.

Mr. O'BRIEN. Then it is your belief that in considering this project and some other projects, we have to go back to the total picture and link the whole puzzle together?

Mr. DOMINY. Very definitely. I think each of these units in addition to standing on its own feet from a benefit-cost ratio and pay-out analysis needs to be considered by the Congress in the broad substance of previous enactments in general reclamation law.

Mr. ASPINALL. Will the gentleman yield?

Mr. O'BRIEN. I yield to the gentleman from Colorado.

Mr. ASPINALL. Mr. Dominy, does the Colorado River Storage Development Act provide that these participating projects outside of the Navajo project, in which Indians are involved, will bear the cost of the Indian allocations so far as the cost of construction of these participating projects is concerned?

Mr. DOMINY. Very definitely.

Mr. ASPINALL. In other words, the Navajo project is the only one of these projects under the Upper Colorado River program that can take advantage of the Leavitt Act?

Mr. DOMINY. As I mentioned to Congressman O'Brien, the Navajo is a separate package, has to be considered such for other benefits to the Nation in light of obligations, real or implied, to the Indians.

Mr. O'BRIEN. Then we should consider the Navajo project as a comparatively small branch on a large tree rather than considering it as 60 percent of the project we now have before us, is that your position?

Mr. DOMINY. Yes, I think so.

Mr. O'BRIEN. Thank you.

Mr. ASPINALL. Mr. Chairman, I am not so sure that I got the idea across that I had in mind. It not only takes any benefit from the Leavitt Act as such, but the amount over and above which the irrigator can pay will be borne by the Basin Fund on all projects except the Navajo project?

Mr. DOMINY. That is exactly what I understood you to be asking. I did not go to the Leavitt Act because the Leavitt Act is applicable to Indians in and outside the Colorado River Basin. But your point was the costs of the Navajo Indian Irrigation project, above the ability of the Indians to pay is not a burden to the power users on the Colorado storage project. It would be on any other units of the Colorado storage project where Indian lands are involved.

Mr. O'BRIEN. This perhaps is not any question, but where will this \$135 million be charged, against what?

Mr. DOMINY. It will be charged against the Navajo Indian project, but it would not be—

Mr. O'BRIEN. And paid from the general Treasury?

Mr. DOMINY. It would be paid from the general Treasury and there would not be required to be any return to the general Treasury.

Mr. O'BRIEN. That is the point I make. Then this is a very specific exemption from the ordinary reclamation project because of a debt the Nation owes to the Navajo Indians, is that right?

Mr. DOMINY. That is right, Mr. O'Brien.

Mr. O'BRIEN. Then we should not apply the same yardstick here that we would to other projects?

Mr. DOMINY. That is right, except I want to add that in my judgment benefits will flow from this irrigation project to the Nation equally whether that investment were made under reclamation law as it applies to non-Indian lands. There will be many benefits in my judgment to the economy of the Nation flowing from turning desert land into good productive farmland.

Mr. O'BRIEN. I agree with you. I just wanted to know not only what I am doing, but why I am doing it and you have made it clear to me. Thank you. That is all.

Mr. ROGERS. Mr. Hosmer.

Mr. HOSMER. Mr. Dominy, can you tell us when the last time was that the Bureau came up to Congress and recommended against a reclamation project?

Mr. DOMINY. Mr. Hosmer, normally these projects do not come to Congress until the Bureau and the Interior Department have found them to be engineeringly and economically feasible and therefore we are generally here in support of the project.

Mr. HOSMER. Then you would say it was in the range of 30 or 40 years anyway since you have come up and recommended against a project?

Mr. DOMINY. We have taken such action even in recent times. One such action, just this past year I think, involved the Pine River extension project. This project was authorized by the Colorado Storage Project Act on the basis of preliminary findings that the project was found economically and engineeringly feasible. Unfortunately, detailed studies established that it was not and we so reported to the Congress. As I say, normally there is close liaison between us and the Members of Congress and they do not introduce a bill or the Department does not send up a proposed bill until after the economic and engineering feasibility has been determined.

Mr. HOSMER. You get all your ducks set up in a row?

Mr. DOMINY. We send up unfavorable reports to Congress frequently, what we call "wrap-up" reports. After we have investigated a project, Mr. Hosmer, if it is not found economically and engineeringly feasible, we advise Congress to that effect.

At that point, if someone introduced a bill to authorize it nonetheless, we would be up here in opposition to it. But, as I say, normally there is not any bill introduced to try to get such a project.

Mr. HOSMER. So to get it introduced, you tie it into some kind of a basin operation and average it out. That is what is done; is it not?

Mr. DOMINY. As I said in answer to questions of Mr. O'Brien, each of the units under the basin concept has to stand on its own feet by a finding of feasibility, that it is economically and engineeringly feasible.

Mr. HOSMER. In on the Navajo Dam

Mr. DOMINY. Yes

Mr. HOSMER. How

Mr. DOMINY. In Dam and Reservoir

Mr. HOSMER. How ability figure?

Mr. DOMINY. It is in the estimate

Mr. HOSMER. What as set forth in the

Mr. DOMINY. Yes

Mr. HOSMER. And

Mr. DOMINY. For project cost does not

Mr. HOSMER. In would have to include not?

Mr. DOMINY. In

Mr. BURNETT. The principal regulation

to be paid for out of the delivery and

Mr. HOSMER. If cost benefit; would

Mr. DOMINY. In Navajo Dam investment

Mr. BURNETT. The participating project

the storage reservoir Canyon, Flaming

justification purpose Dam is included

Mr. HOSMER. In storage on the river

Mr. BURNETT. It is an average for storage project.

Mr. HOSMER. In water through the

ously, down the revenue. Do you here?

Mr. BURNETT.

Mr. HOSMER. Yes

Mr. BURNETT.

Storage Project facilities in the San

ated potential potential

110,000 acre-foot

Mr. HOSMER. Incidentally, this Navajo irrigation project depends on the Navajo Dam and Reservoir; does it not?

Mr. DOMINY. Yes, sir.

Mr. HOSMER. How much did that cost?

Mr. DOMINY. I do not have the exact figure in mind for Navajo Dam and Reservoir. I can put it in the record.

Mr. HOSMER. Has that cost been included in arriving at your feasibility figure?

Mr. DOMINY. I am told the cost is roughly \$43 million and believe it is in the estimated cost of the project.

Mr. HOSMER. Would not your cost-benefit ratio based on the project as set forth in the bill include the cost there?

Mr. DOMINY. Yes, sir.

Mr. HOSMER. And it did not include the dam and reservoir?

Mr. DOMINY. Excuse me one moment. The \$135 million Navajo project cost does not include the Navajo Dam.

Mr. HOSMER. In order to achieve a realistic cost-benefit ratio, you would have to include the cost of the dam and reservoir; would you not?

Mr. DOMINY. I would like Mr. Burnett to comment on that.

Mr. BURNETT. The Navajo Dam was authorized as one of the four principal regulation reservoirs of the Colorado River storage project, to be paid for out of basin power revenues, and the \$135 million cost is for the delivery and distribution system for the Navajo project.

Mr. HOSMER. If you allocated a proper amount you would have less cost benefit; would you not?

Mr. DOMINY. Just a moment, Mr. Hosmer. Mr. Burnett, is the Navajo Dam involved in the cost-benefit ratio in any way?

Mr. BURNETT. Yes; for the purpose of the benefit-cost ratio, all participating projects have a \$2 per acre-foot depletion allowance for the storage reservoirs of the Colorado River storage project, Glen Canyon, Flaming Gorge, Curecanti, and Navajo. So for economic justification purposes, an appropriate part of the cost of the Navajo Dam is included in the benefit-cost ratio.

Mr. HOSMER. In other words, it is averaged out against all the storage on the river, is that right, in the upper basin?

Mr. BURNETT. The depletion allowance figure of \$2 per acre-foot is an average for all of the four storage reservoirs in the Colorado storage project.

Mr. HOSMER. Let me ask you this: When you take and divert water through the mountains, you do not generate power with it, obviously, down the main stream. So you lose a certain amount of power revenue. Do you know how much is involved in the bills before us here?

Mr. BURNETT. As to power revenues that might be lost?

Mr. HOSMER. Yes.

Mr. BURNETT. Because of the provisions of the Colorado River Storage Project Act which precluded the installation of power facilities in the San Juan-Chama diversion project, we have not evaluated potential power revenues or potential power installations in the 110,000 acre-foot initial stage diversion.

Mr. HOSMER. I am talking about the 110,000 acre-feet of water that does not go down the Colorado River and produce power in the installations on the river. Has that power loss been calculated?

Mr. BURNETT. That power loss for all of those downstream dams was not included in any benefit-cost ratio.

Mr. HOSMER. On a basin basis that would be a factor; would it not?

Mr. DOMINY. Certainly there is the loss of revenue and it could be calculated. If the overall basin project is still economically feasible and has a favorable benefit-cost ratio in spite of the fact you have lost some of the power benefits by this diversion project, you still have a feasible undertaking.

Mr. HOSMER. You only take a blanket figure when it does you good and disregard it when it deteriorates the cost-benefit ratio; do you not?

Mr. DOMINY. Well, Mr. Hosmer, the Congress did not authorize in the Colorado storage project a power project per se and it is not being planned on the maximum potential yield of power. They authorized a broad basin concept project with emphasis on irrigation and the development of the Nation's economy through bringing full water supply to otherwise arid and unproductive land.

Mr. HOSMER. I still believe it is fairly implicit in my question what the answer should be. We will leave that one.

Now we are talking about this initial stage of the San Juan-Chama to divert 110,000 acre-feet. The word "initial" implies there is something else coming along; does it not?

Mr. DOMINY. If it does—if the comprehensive plan of development which we covered in our studies should later be presented for an understanding, it would need to be authorized and it would be considered by the Congress exactly as is now the case for the initial stage.

Mr. HOSMER. At this present time, can you give us any idea of whether this might go ahead or what its value would be?

Mr. DOMINY. No, sir. We have a study which indicates a maximum potential which is called the comprehensive plan. But there is no proposal to go ahead at this time with that maximum undertaking.

Mr. HOSMER. Do you mean to tell us that on that basis of just this dream stuff you are coming up here and asking Congress to give you a stray \$3 million to build a large-sized tunnel? Is that all you are coming up with to back up that \$3 million?

Mr. DOMINY. No. Our study—

Mr. HOSMER. Our taxpayers have to pony up to make up that \$3 million.

Mr. DOMINY. As I said, Mr. Hosmer, our studies indicate the feasibility of the ultimate comprehensive development.

Mr. HOSMER. Well, there is no doubt in your mind about that, and one of the arguments will be that we have already got \$3 million invested.

Mr. DOMINY. It is entirely possible it will be.

Mr. HOSMER. Is that not a fact?

Mr. DOMINY. I only say it is not now being urged and it is not in the present legislation before you for consideration and it will not be

built unless it has had an opportunity.

Mr. HOSMER. rises and sets.

Mr. DOMINY. but I suspect full project.

Mr. HOSMER. on it; are you

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built unless and until you have had an opportunity, the Congress has had an opportunity, to review it.

Mr. HOSMER. But you know it is coming as certainly as the sun rises and sets, do you not?

Mr. DOMINY. Well, I do not know that it is quite that inevitable, but I suspect there will some day be the desire to go ahead with the full project.

Mr. HOSMER. You are betting \$3 million of the taxpayers money on it; are you not?

Mr. DOMINY. We are investing \$3 million, all of which will be reimbursed to the Treasury under the Colorado Storage Project Act.

Mr. HOSMER. What good is it to expend \$3 million if you are not going ahead?

Mr. DOMINY. As a matter of fact, even in the initial stage, because of the erratic nature of the runoff, the full capacity of those tunnels may be used in some years even if only the initial stage is completed.

Mr. HOSMER. Let us get into that erratic nature of the runoff. One of the gentlemen here was going to give us some figures for 30 years, 30-year period, 1928 to 1957. Right?

Mr. DOMINY. Yes, sir.

Mr. HOSMER. There have been at least 3 years on which you have studies and probably very good ones that are not in this period and that is 1958 and 1959 and 1960. Do you think you could furnish the figures for those years as well?

Mr. DOMINY. Mr. Riter.

Mr. RITER. We will furnish you what we have. If the records are available through 1960, we will give them to you.

Mr. HOSMER. I ask unanimous consent that the figures for all available years subsequent to 1957 be included in the statistics to be furnished the committee.

Mr. ROGERS. Without objection, it is so ordered.

(The material referred to appears on p. 115.)

Mr. SAYLOR. Would the gentleman yield?

Mr. HOSMER. Yes.

Mr. SAYLOR. I am greatly concerned with the statement that just appeared in the record which apparently is a deliberate attempt by the Bureau of Reclamation to lay the groundwork for power in this project. Now it is about time you people downtown understand that Congress, when we passed this act, meant what we said. We did not say there was supposed to be power eventually or in some stage of the San Juan-Chama project, just as has been stated here in this record. Congress, when we passed this act, said that—

with reference to the plans and specifications for the San Juan-Chama project—  
not the initial stage or anything else. The project—

storage for the regulation and control of the water imported in the San Juan River shall (1) be limited to a single off-stream dam and reservoir on a tributary of the Chama River, (2) be used solely for control and regulation and no power facilities shall be established, installed, or operated thereat, and (3) be operated at all times by the Bureau of Reclamation of the Department of Interior in strict compliance with the Rio Grande Compact as administered by the Rio Grande Compact Commission.

I want to make the record very clear that Congress does not want you or your successor coming up here and saying that on a day in April 1961 we told you that we did not have any power in the initial stages. Congress told the Bureau of Reclamation when we passed the Upper Colorado River Storage Act we did not want any power down there. And if there is anyone down there dreaming you are going to put any power in San Juan-Chama, you may torpedo this faster than you have any idea.

Mr. DOMINY. May I assure you, Mr. Saylor, that all of my testimony here up to this point, and all of it for the balance of the hearing, will be to the effect that I fully intend to operate within the rules and law and policy laid down by the Congress.

Mr. SAYLOR. There is that statement in the record. One of your men said there is no power in the initial stage for the San Juan-Chama. Congress told you there would be no power in the San Juan-Chama project.

Mr. DOMINY. We understand that.

Mr. SAYLOR. Make sure the rest of the people down there that work for you do too.

Mr. DOMINY. If there was any indication to the contrary, it was just a bad choice of words, sir. There is no intent to evade or to indicate an unawareness of the instructions of Congress on this point, I assure you.

Mr. SAYLOR. I thank the gentleman from California.

Mr. HOSMER. You talked about the initial stage of the San Juan-Chama providing irrigation water to land in the Cerro, Taos, Llano, and Pojoaque, tributary irrigation units of the Rio Grande Basin. And there are 22,800 acre-feet there. How much water are you going to supply by the way of supplemental to the present acreage and how much to another 16,500 presently unirrigated acres?

Mr. DOMINY. I would like Mr. Ralph Charles to give you the details on that.

Mr. CHARLES. There are 30,000 acre-feet—let me check my figures—

Mr. HOSMER. If you want to supply them for the record later, do so.

Mr. CHARLES. It is 29,900 on the tributaries, it is 22,600 on the Middle Rio Grande.

Mr. HOSMER. When you figure the amount per acre of new irrigation water and of supplemental water in those various subdivisions, I ask unanimous consent that that figure be furnished for the record at this point.

Mr. ROGERS. Without objection, it is so ordered.

Mr. CHARLES. We will be glad to furnish it.

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Tributary units:	
Cerro:	
New lands.....	
Supplemental.....	
Unit total.....	
Taos:	
New lands.....	
Supplemental.....	
Unit total.....	
Llano:	
New lands.....	
Supplemental.....	
Unit total.....	
Pojoaque: Supplemental.....	
Subtotal (tributary)	
Middle Rio Grande	
Servancy District Supplemental.....	
Total Irrigation.....	

<sup>1</sup> Otowi gate is the point of diversion of Rio Grande water.  
<sup>2</sup> Excludes Rio Grande water.  
<sup>3</sup> Excludes 5,430 acre-feet.

## INFORMATION REGARDING

The amount of water shown in the table is equivalent amount of Rio Grande water required for the replacement requirement. To this requirement and transmission loss, obtain the total allocation.

Mr. HOSMER. By the municipal and your statement.

Mr. DOMINY. \$55,622,000.

Mr. HOSMER. I which you describe through the transmission of Rio Grande, is it not going to be used in the Valley and which Texas?

Mr. DOMINY. (exchange of water) have prior rights area that now has

(The information referred to follows:)

Depletion of Irrigation water, San Juan-Chama project

	Acres	A.F./acre supplied	Allocation in thousands of acre-feet			
			Supplied at point of use	Demand at Otowi gage <sup>1</sup>	Channel and reservoir loss	Demand at tunnel portal
Tributary units:						
Cerro:						
New lands.....	7,900	1.0	27.9			
Supplemental.....	3,920	.3	1.3			
Unit total.....	11,820		9.2	9.0	0.9	9.9
Taos:						
New lands.....	6,740	1.66	11.2			
Supplemental.....	13,810	.02	3.2			
Unit total.....	20,550		11.4	11.2	1.2	12.4
Llano:						
New lands.....	1,900	2.42	4.6			
Supplemental.....	2,620	.57	1.5			
Unit total.....	4,520		6.1	6.0	.7	6.7
Pojoaque: Supplemental.....	2,440	.3	.7	.7	.2	.9
Subtotal (tributary).....	39,330		27.4	26.9	3.0	29.9
Middle Rio Grande Conservancy District Supplemental.....	81,610	.24	19.5		3.1	22.6
Total Irrigation.....	120,940		46.9	46.4	6.1	52.5

<sup>1</sup> Otowi gage is the point at which additional depletions of Rio Grande water are replaced by San Juan River water.  
<sup>2</sup> Excludes Rio Grande water transferred from 2,100 acres of class 6 exchange lands.  
<sup>3</sup> Excludes 5,430 acre-feet of nonbeneficial use made available for irrigation use by means of project works.

INFORMATION REGARDING AMOUNT OF NEW AND SUPPLEMENTAL IRRIGATION WATER PER ACRE, SAN JUAN-CHAMA PROJECT

The amount of water supplied to both new and supplemental irrigation is shown in the tabulation below and is adjusted to show, in the last column, the equivalent amount of imported water depleted. The additional on-site depletion of Rio Grande waters was adjusted by appropriate losses or credits to show the replacement required at the Otowi gage where replacement must be made. To this requirement, was added evaporation losses from Heron No. 4 Reservoir and transmission losses between the reservoir and the point of replacement to obtain the total allocation of San Juan River water.

Mr. HOSMER. Mr. Dominy, you stated that the total to be repaid by the municipal water users in the Albuquerque area was \$56,622,000 and your statement says \$55,622,000. Which figure is correct?

Mr. DOMINY. Apparently I misread the figures because it is \$55,622,000.

Mr. HOSMER. In connection with the portion of your statement in which you describe these various reservoirs and the water flowing through the transmountain system and down eventually into the Rio Grande, is it not a fact that the water that comes across the mountain is going to be used to replace water that is now used in the Rio Grande Valley and which is responsible for the shortage of deliveries to Texas?

Mr. DOMINY. Certainly to some extent this project involves an exchange of waters so that the tributary projects can use waters that have prior rights in the lower valley and in the middle Rio Grande area that now have to come on down. These can be held back and

used in the tributaries and San Juan water will be released in the mainstream for use in the Middle Rio Grande.

Mr. HOSMER. And the end result is going to be to take care of New Mexico's deficit to Texas?

Mr. DOMINY. Not at all. We have very clearly planned this project to avoid that very thing, which is, as you know, one of the requirements of the Colorado Project Act.

Mr. HOSMER. Yes; you are going to measure the water at various places, and so forth. But the actual, practical, net effect is going to be to take up their debt under the Rio Grande compact.

Mr. DOMINY. I do not agree that is the actual fact at all, quite the contrary. We will operate this project wholly apart from the compact problem as it fixes the water supply between New Mexico and Texas.

Mr. HOSMER. Let me ask you this question, then: Is it your opinion that if this project gets built and operating, there are going to be any more deficits in deliveries to Texas by New Mexico?

Mr. DOMINY. It is my opinion that construction and operation of this project will have no bearing on the relationship of water supply among Colorado and New Mexico and Texas under their interstate compact.

Mr. HOSMER. Now that is not the question I asked you. I asked you, in your opinion, if this project is built and put into operation, will there be thereafter any deficiencies in deliveries to the State of New Mexico or to the State of Texas?

Mr. DOMINY. This, of course, I cannot answer because it would be merely expressing an opinion as to the future water supply runoff conditions on the Rio Grande. I can say that the construction and operation of this project under the Colorado Storage Act and its requirements and limitations will not affect the deficit position among these three States on the river.

Mr. HOSMER. Some is going into Elephant Butte Dam, though.

Mr. DOMINY. Water that will eventually run into the Elephant Butte Dam is not water from the San Juan River by reason of the San Juan-Chama project.

Mr. HOSMER. You mean it is all going to be intercepted and not going to run down?

Mr. DOMINY. It will be intercepted.

Mr. HOSMER. There will not be any spilloff or anything down there and getting into the Elephant Butte Dam?

Mr. DOMINY. There certainly will be a comingling of water in runoff, but this project is designed and will be operated so that it will not be adding additional water at the New Mexico-Texas line.

Mr. HOSMER. Then would not your answer to my question be that if there are deficiencies now in the deliveries to Texas, there certainly will not be after this is built.

Mr. DOMINY. I mean it will have no bearing on the deficiencies. The deficiencies will depend entirely upon the availability of Rio Grande water within the Rio Grande Basin itself.

Mr. HOSMER. You have got more water flowing into Elephant Butte, but that is not going to affect the situation at all. Do your people have any figures on what the present use in New Mexico of

water from the 275,100 acre-feet

Mr. DOMINY.

Mr. ROGERS.

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Mr. DOMINY.

(Whereupon, the session adjourned at 1:30 p.m.)

Mr. ASPINALL

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STATEMENT BY S. E.

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Mr. DOMINY. I think Mr. Riter has the figure here.

Mr. ROGERS. The subcommittee will have to stand adjourned now under the rules of the committee until 1:30 p.m., when we will resume the questioning of Mr. Dominy.

Just one second now so there is no misunderstanding. Mr. Aspinall tells me that his request had to do with the hearing of out-of-town witnesses this afternoon, though we cannot continue with the question and answer period here. I have an idea that it is going to require most of the afternoon to hear the out-of-town witnesses. I expect the best thing to do is just go on with that as it was previously ordered and then we will notify the Department later on.

Mr. DOMINY. Very good, Mr. Chairman.

(Whereupon, at 11:45 a.m., the subcommittee adjourned to reconvene at 1:30 p.m., the same day.)

#### AFTERNOON SESSION

Mr. ASPINALL (presiding). The Subcommittee on Irrigation and Reclamation will resume its hearing.

This afternoon we do not know just how long we can stay in continuous session. We may have to recess and go over to answer a quorum call. In any event, we will have a short 2-hour period. We must finish with the witnesses today.

The first statement will be received from Mr. Reynolds, State engineer of New Mexico and secretary of the Interstate Stream Commission. He will be accompanied by David P. Hale, interstate stream engineer of New Mexico.

It is my understanding, Mr. Reynolds, that you wish to have your statement filed in the record and then will testify to it for about 10 minutes orally.

#### STATEMENT OF S. E. REYNOLDS, STATE ENGINEER AND SECRETARY OF THE INTERSTATE STREAM COMMISSION, ACCOMPANIED BY DAVID P. HALE, INTERSTATE STREAM ENGINEER FOR THE STATE OF NEW MEXICO

Mr. REYNOLDS. Yes, sir, if I may do so that is the way I should like to proceed.

Mr. ASPINALL. This is a joint statement for the both of you?

Mr. REYNOLDS. Yes, sir.

Mr. ASPINALL. Without objection, it will be printed in the record and Mr. Reynolds will be permitted to make his oral presentation.

(Mr. Reynolds' prepared paper follows:)

#### STATEMENT BY S. E. REYNOLDS AND DAVID P. HALE CONCERNING THE SAN JUAN-CHAMA DIVERSION PROJECT AND NAVAJO IRRIGATION PROJECT

##### INTRODUCTION

My name is S. E. Reynolds. I am State engineer and secretary of the Interstate Stream Commission of the State of New Mexico. In these capacities I have responsibility for the administration and development of the water resources of the State. Mr. David P. Hale, who joins me in this statement, is

interstate stream engineer for the State of New Mexico. We appear in support of H.R. 2506, H.R. 2552, and S. 107, which would authorize the Navajo Irrigation project and the San Juan-Chama diversion project in New Mexico.

The Navajo and San Juan-Chama projects were fully described before this committee at the hearing on H.R. 2352, H.R. 2494, and S. 72 in May of last year. Also, testimony on these projects has been submitted to the Interior and Insular Affairs Committee of the Senate in connection with S. 3648 of the 85th Congress, S. 72 of the 86th Congress, and S. 107 of the 87th Congress, and is available to this committee in the records of those hearings. In view of the record that has been made on these projects I shall attempt to avoid insofar as possible in this statement any testimony which is repetitious in nature. However, we respectfully invite your attention to the earlier record.

#### LANGUAGE CHANGES

Your attention is particularly invited to the statement which Claud Mann and I presented to the Irrigation and Reclamation Subcommittee of the Senate Interior and Insular Affairs Committee on March 15 of this year in support of S. 107. That statement discusses in some detail the changes that were made in the form of the bills which your committee considered on May 20, 1960, to arrive at the language of the bills which your committee is considering today. Our analysis of the changes shows that none of them would affect the feasibility of either of the projects.

#### WATER SUPPLY FINDING

You will remember that at the hearings before your committee last year Mr. Sparks, representing the State of Colorado, approved the language of the bills that you are considering today and urged this committee to act favorably upon such legislation. However, Mr. Sparks also said, " \* \* \* the approval of the State of Colorado is predicated upon a finding by the Secretary of the Interior that the operation of the New Mexico projects will not adversely affect the water supply of the proposed Animas-La Plata project in Colorado and New Mexico. From our own studies we have concluded that it is highly improbable that the Secretary could make any finding to the contrary." The finding requested by Mr. Sparks has been furnished by a letter from the Secretary of the Interior to Congressman Aspinall, dated November 16, 1960. That letter states in part, " \* \* \* it cannot be said that development of these projects—Navajo irrigation project, San Juan-Chama project, and Animas-La Plata project—is in conflict over water supply or that the economic feasibility of the Animas-La Plata project is impaired because of such conflict." A copy of that letter is attached to the statement which we have filed with the committee.

#### FEASIBILITY FINDING

I am also pleased to note that since the last hearing before this committee on these projects, the Secretary of the Interior in a report to the Chairman of the Interior and Insular Affairs Committee of the Senate, dated March 14, 1961, found both the Navajo project and the San Juan-Chama project engineeringly feasible and economically justified, and recommended the enactment of legislation authorizing the projects. The Bureau of the Budget did not object to the submission of that report. This report—which is the result of years of careful engineering and economic investigation—certifies that the benefits to be expected from these projects exceed the estimated cost of constructing and operating the projects, and that these costs can be repaid as required by applicable law.

#### BENEFIT-COST RATIOS

The Department of the Interior has found, using a 50-year period of analysis, that the total evaluated benefits to be expected from the Navajo irrigation project exceed the estimated annual costs in a ratio of 1.3 to 1. Using a 100-year period of analysis this ratio is 1.62 to 1. For the San Juan-Chama project the total benefits exceed the total annual costs in a ratio of 1.03 to 1 in a 50-year period of analysis, and the total benefits exceed the annual costs in a ratio of 1.26 to 1 for a 100-year period of analysis.

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xico. We appear in support authorize the Navajo Irriga- project in New Mexico. e fully described before this and S. 72 in May of last submitted to the Interior nnection with S. 3648 of the 07 of the 87th Congress, and se hearings. In view of the all attempt to avoid insofar ch is repetitious in nature. earlier record.

As provided by the Colorado River Storage Project Act, the repayment of costs allocated to the Navajo irrigation project, which are within the capability of the land to repay, would be subject to the Leavitt Act; costs beyond the capability of the lands to repay would be nonreimbursable in recognition of the fact that assistance to the Navajo Indians is a responsibility of the entire Nation.

Costs of the San Juan-Chama project which are allocated to municipal purposes would be repaid in full with interest at the rate established by the Colorado River Storage Project Act as amended by the act of June 27, 1960. That part of the costs of the San Juan-Chama project which are allocated to irrigation and which are within the ability of the lands to repay would be paid by the water users. That part of those costs which are beyond the ability of the lands to repay would be repaid to the Federal Treasury from New Mexico's apportionment of the Upper Colorado River Basin fund revenues as provided by the Colorado River Storage Project Act.

AVAILABILITY OF POWER-REVENUE CREDITS

ated which Claud Mann St. Committee of the Senate 15 of this year in support the changes that were made considered on May 20, 1960, to mmittee is considering today. m would affect the feasibility

We would particularly invite your attention to the testimony of Mr. Don Burnett, Chief of Project Planning, Bureau of Reclamation, at the hearing before this committee last May. Mr. Burnett's testimony shows that the power-revenue credits anticipated to be available for New Mexico projects, under the terms of the Storage Project Act, are sufficient to permit construction to be undertaken on the San Juan-Chama project as soon as it may be authorized by the Congress. An extrapolation of the estimates given by Mr. Burnett indicates that the remaining power-revenue credits anticipated to be available to New Mexico are sufficient to permit construction of the proposed Animas-La Plata project to be undertaken also, as soon as that project may be authorized.

CROP SURPLUSES—GENERAL

your committee last year Mr. ved the language of the bills mmittee to act favorably upon " \* \* \* the approval of the the Secretary of the Interior will not adversely affect the project in Colorado and New l that it is highly improbable e contrary." The finding re- letter from the Secretary of ember 16, 1960. That letter elopment of these projects— ject, and Animas-La Plata the economic feasibility of of such conflict." A copy of ave filed with the committee.

There are those who oppose the authorization of reclamation projects on the theory that these projects will contribute to troublesome crop surpluses. This theory does not withstand close scrutiny, and I doubt that the problem requires much discussion before this committee. However, we would like to spend just a few moments discussing the relationship of the San Juan-Chama and Navajo projects to this question. On March 15, 1961, Congressman Aspinall included in his remarks in the Congressional Record an excellent evaluation by the Bureau of Reclamation of the relationship of reclamation crop production to agricultural surpluses. In summary, the evaluation shows that reclamation farms are contributing very little to the commodity surpluses, and in fact, may have reduced surpluses. For example, when a reclamation project makes available a reliable water supply, diversification of crops is possible with a resultant reduction in the acreage devoted to wheat, which is the No. 1 surplus commodity. Most of the small grain, corn, and sorghum produced on western irrigated farms is used in the production of livestock and the maintenance of dairy herds in or near the project area and does not find its way into the price-support program. For example, corn grown on irrigated lands plays a strategic role in the scheme of farm livestock feeding in the project area, and is not in competition with corn grown in midwestern commercial corn areas; any extensive shipment of corn from these areas would be impractical because of the cost of transportation, consequently, little, if any, greater use of midwestern corn in the westernmost States would be realized. The evaluation points out that there are current deficiencies, and not surpluses, of the meat, dairy products, fresh vegetables, and fruits that irrigated farms produce so well.

earing before this committee in a report to the Chairman the Senate, dated March 14, n Juan-Chama project engi- recommended the enactment reau of the Budget did not port—which is the result of estigation—certifies that the ed the estimated cost of conse costs can be repaid as re-

The most important point made in the evaluation is that by 1980 our present population of 177 million will have increased by 67 million to a total of 244 million people. To support this increase of 38 percent in our population we will have to increase crop yields by 41 percent and add a net 20 million acres of cropland. These increases in yield and cropland acreages will not occur automatically, and we will need well-directed effort and considerable financial support to avoid a situation in which the problem is severe shortages and not surpluses of food and fiber.

a 50-year period of analysis, from the Navajo irrigation tio of 1.3 to 1. Using a 100- the San Juan-Chama project a ratio of 1.03 to 1 in a 50- exceed the annual costs in a

In the Department of Agriculture's report to the Senate Select Committee on National Water Resources it is assumed that irrigated acreage in the Western

States will be increased by 5.4 million acres in the period 1951 to 1980 to help meet the requirements of our growing population. When it is realized that during the 58-year history of reclamation, facilities have been constructed for irrigation services for only 8.1 million acres, it seems clear that a sustained strong effort beginning now will be necessary to meet the goal of an additional 5.4 million acres by 1980.

#### CROP SURPLUSES, NEW MEXICO PROJECTS

Most of the statements in the Bureau's evaluation of the relationship of irrigated farming to crop surpluses are applicable to the development proposed in the legislation you are considering today. There are presently about 175,000 acres under irrigation in the 7 counties in New Mexico in which the lands that would be furnished water from the San Juan-Chama project are located. The principal crops grown are alfalfa, pasture, corn, small grains, sorghum, fruit, and truck, and a small amount of cotton. None of the crops produced from these lands in 1960 found their way into the support program except the cotton from about 1,300 acres of the 2,200 acres of cotton planted in the 7 counties. The supervisor of the Commodity Credit Corporation loan program in New Mexico has advised me that in his opinion there is a real need for increased production of feed in the Rio Grande Valley in New Mexico to support the livestock and dairy industry of the area which must expand to meet the demands of an increasing population.

The crops grown on the 57,000 acres presently irrigated in San Juan County, where the Navajo irrigation project would be located, are quite similar to those grown on irrigated lands in the Rio Grande Valley, except that no cotton at all is grown in San Juan County. None of the crops from San Juan County lands were in the price-support program in 1960.

I am convinced that if the Navajo and San Juan-Chama projects were in full operation today they would contribute little or nothing to crop surpluses; but would produce the meat, fruit, truck, and dairy products that are needed to furnish a balanced diet to people in the project areas and in the rest of the country. It should be emphasized that if the projects were authorized today, the irrigation benefits would not be available for 10 to 15 years, and if these and other meritorious irrigation projects are not authorized we will be suffering severe shortages of food and fiber before two decades have passed.

#### WATER SUPPLY—DEPLETION ALLOCATION

At the hearing before the Senate Interior and Insular Affairs Committee on S. 107 on March 15, 1961, Mr. Raymond Matthew, chief engineer of the Colorado River Board of California, presented testimony purporting to show that New Mexico's allocation of the consumptive use of water under the Colorado River compact is not adequate for present and authorized uses from the San Juan River and its tributaries in New Mexico, and the projects that would be authorized by the legislation that you are considering today.

Mr. Matthew seems to infer from his reading of special master Simon Rifkind's December 5, 1960, report to the U.S. Supreme Court in the suit, *Arizona v. California, et al.*, that the decree recommended would somehow limit consumptive use of water by the upper basin States of the Colorado River system to a maximum of 4,800,000 acre-feet per year. Mr. Matthew seems to believe that Judge Rifkind has found that the Congress has limited the upper basin to this maximum. The absurdity of this notion is clearly revealed in the colloquy reported in the record of the Senate hearing on S. 107. In the course of this colloquy between Senator Anderson, Senator Carroll and Senator Kuchel, Senator Kuchel said " \* \* \* I would be laughed out of this Congress if I argued before this committee that this bill, or any other bill, providing for the development of the Upper Colorado River Basin ought not to be approved by Congress because the master said that there was some kind of ceiling that had been entered into which you could not break." Section 3 of the Colorado River Storage Project Act makes it perfectly clear that the Congress did not intend to affect the rights of the upper basin States under the Colorado River compact. The section says, "It is not the intention of Congress, in authorizing only those projects designated in section 1 of this act, and in authorizing priority in planning only those additional projects designated in section 2 of this act, to limit, restrict, or otherwise interfere with such comprehensive development as will provide for the consumptive use by States of the Upper Colorado River Basin of waters, the use of which

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*Arizona v. California* States to the us compact of 1922. tainly the rights 1922, cannot be in *Arizona v. California*

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is apportioned to the Upper Colorado River Basin by the Colorado River compact and to each State thereof by the Upper Colorado River Basin compact, nor to preclude consideration and authorization by the Congress of additional projects under the allocations in the compacts as additional needs are indicated."

*Arizona v. California, et al.*, involves the rights of each of the lower basin States to the use of water allocated to the lower basin by the Colorado River compact of 1922; no State is party to the suit as an upper basin State. Certainly the rights of the upper basin States under the Colorado River compact of 1922, cannot be limited or affected in any way by the decree to be handed down in *Arizona v. California, et al.*

The water supply study which Mr. John Bliss filed with this committee at the hearing on the San Juan-Chama and Navajo projects on May 20, 1960, shows that, within the limitations of the Colorado River compact of 1922, the upper basin States will be able to deplete the flow of the Colorado River at Lee Ferry under the water supply conditions of the 1909-1956 period by at least 7.2 million acre-feet per year; and that, under the terms of the Upper Colorado River Basin compact, New Mexico's share of this depletion as measured at sites of use will amount to at least 838,000 acre-feet per year. This amount of depletion is adequate for all of New Mexico's present and authorized uses from the Colorado River system, for the projects that would be authorized by the legislation you are considering today, and for New Mexico's share of the proposed Animas-La Plata project; with a substantial amount remaining available for future developments in the State including municipal and industrial uses.

WATER SUPPLY—DIVERSION REQUIREMENTS

Mr. Matthew's statement also questions whether the San Juan River and its tributaries will furnish enough water for all diversion requirements in New Mexico including the proposed Navajo and San Juan-Chama projects. Table 2 of Mr. Matthew's statement purports to show, using the hydrology of the 1931-1959 period, a deficiency of 228,000 acre-feet per year for these requirements.

One error in Mr. Matthew's figures arises out of his assumption that all uses in New Mexico below Navajo Dam must be served from Navajo Reservoir. For example, the table shows a diversion demand of 55,000 acre-feet per year for the Utah Construction Co. power project as being met from Navajo Reservoir. As a matter of fact the diversion and storage facilities for this project are now under construction below the confluence of the Animas and San Juan Rivers, and the requirements of this project will be met largely from the flows of the Animas River and in part from return flows from uses served by Navajo Reservoir.

Table 2 of Mr. Matthew's statement also is misleading in that the indicated spill of 225,000 acre-feet from Navajo Reservoir is based on the assumption of a completely unrealistic reservoir operation. This figure comes from a Bureau of Reclamation study in which it is estimated that the total demand on Navajo Reservoir in the year 2020 would amount to 600,000 acre-feet per year. This amount would serve the demands of the small Hammond irrigation project, the Navajo project and contracts for about 70,000 acre-feet per year for potential municipal and industrial or other uses. The Bureau study shows that this total demand would be met without shortages and 225,000 acre-feet per year would be permitted to spill from Navajo Reservoir. An economically designed water supply project must contemplate reasonable shortages to the requirements served during drought periods. If the project is designed to meet all requirements without shortage under all possible runoff conditions, large amounts of water will be spilled from project storage and optimum use of the resource cannot be made. Bureau of Reclamation officials have advised me that the study cited by Mr. Matthew is not intended to reflect the Bureau's estimate of the maximum demand that can be served from Navajo Reservoir; rather, the study reflects the Bureau's estimate of the demand that may be put on the reservoir by the year 2020. The demand can be increased above the amount estimated for that year and the amount of spill and evaporation loss thus decreased.

The statement filed with this committee by Mr. Bliss last year estimated that 225,000 acre-feet per year would be available from Navajo Reservoir for municipal and industrial purposes after the requirements of the Navajo and San Juan-Chama projects and all present and authorized uses have been met.

It is extremely important to note that this is an estimate of the amount of water remaining available and not an estimate of the requirements at any particular date. To call this estimate a requirement, as Mr. Matthew has done, is misleading. In this connection we would point out that the Bureau of Reclamation report cited by Mr. Matthew implies that the demand for water from Navajo Reservoir for municipal and industrial purposes will reach 70,000 acre-feet per year about 60 years from now.

It is clear that there is ample water available from the San Juan River and its tributaries for the Navajo, San Juan-Chama, and Animas-La Plata projects, as the Secretary of the Interior advised Mr. Aspinall in his letter of November 16, 1960, with a very substantial amount remaining available for potential municipal and industrial use. It is not necessary to decide at this time precisely how much water should be made available from Navajo Reservoir for these potential future uses, and that decision can be much more wisely made a few decades from now when the course of municipal and industrial and other development in the San Juan Basin is better known, and when a longer water supply record is available for study. Section 7(a) of the bill directs the Secretary of the Interior to make this decision with all due regard for the requirements of the projects for which we are seeking authorization. That section provides that, "The Secretary shall not enter into contracts beyond a total amount of water that, in his judgment, in the event of shortage will result in a reasonable amount being available for the diversion requirements for the Navajo irrigation project and the initial stage of the San Juan-Chama project as specified in sections 2 and 6 of this act."

#### CONCLUSION

In conclusion, we respectfully urge the committee's early and favorable action on this legislation which would authorize projects of such vital importance to the State of New Mexico. We are most grateful for this opportunity to appear before you in support of these projects.

Mr. REYNOLDS. At the outset, I should like to just briefly outline the material covered in the statement. It summarizes the favorable findings of the Department of the Interior as to the engineering and economic feasibility of these projects. The statement also touches on the question of crop surpluses with particular reference to your remarks, Mr. Chairman, in the Congressional Record of March 15, 1961, and shows the relationship of those remarks to the project area that would be benefited in New Mexico.

Briefly, we are able to say of the presently irrigated 175,000 acres in the Rio Grande Valley under the San Juan-Chama projects, none of the crops produced on those irrigated lands in 1960 found their way into the support program with the exception of an entirely negligible 1,300 bales produced in the lower area of the Rio Grande Conservancy District.

Mr. ASPINALL. You mean of cotton?

Mr. REYNOLDS. Yes, sir.

Of approximately 57,000 acres presently irrigated in San Juan County none produced any crops which found their way into the support program in 1960. San Juan County, of course, is the area where the proposed Navajo irrigation project would be located. Since arriving in Washington, I have received from Col. R. S. Garman, Deputy Commander of the Holomon Air Force Missile Development Center near Alamogordo, New Mexico, a letter pointing out possible future requirements of the development center for water from the San Juan-Chama diversion project, requesting that the initial stage of the project be developed with sufficient capacity so that those potential future requirements could be met economically from that project if necessary.

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the San Juan River and Animas-La Plata projects, in his letter of November 1959, available for potential depletion at this time from the Navajo Reservoir for much more wisely made a dam and industrial and other uses and when a longer water supply bill directs the Secretary regard for the reclamation. That section projects beyond a total amount of water will result in a reasonable amount for the Navajo irrigation project as specified

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irrigated 175,000 acres in the San Juan-Chama projects, none of which in 1960 found their origin in an entirely negligible amount of the Rio Grande Con-

irrigated in San Juan and their way into the project, of course, is the area which would be located. Since the project is from Col. R. S. Garman, Chief Engineer of the Missile Development Center, pointing out possible sources for water from the project, that the initial stage of the project is to increase the capacity so that those who are economically from that

With your permission, Mr. Chairman, I should like to file that letter in the record. Yesterday, in his statement, Mr. Utton gave the opinion that 3 acre-feet per acre was the consumptive use requirement on presently irrigated lands in San Juan County. Actually the court has adjudicated for most of the presently irrigated lands in New Mexico and San Juan County a duty of 3 acre-feet per acre measured on the land. This amount of water applied to the land will result in a consumptive use of somewhere between 1.5 and 2 acre-feet per acre. This figure is nearly comparable to the 2.3 acre-feet per acre of depletion set forth in the report on the Navajo project. Actually, the consumptive use figure of 2.3 acre-feet per acre for the Navajo project includes some consumptive losses in the canals and laterals of the projects.

Therefore, it is somewhat higher than the consumptive use requirement on the lands themselves. This figure of 2.3 acre-feet per acre for the Navajo project was developed by the San Juan technical committee upon which were representatives of the States of New Mexico, Colorado, the Bureau of Reclamation and the Bureau of Indian Affairs. Mr. J. R. Ryder, who in my opinion is one of the foremost hydrologists in the country, was chairman of that committee. Mr. Harry Blaney of the Department of Agriculture advised the committee as to consumptive use requirements.

Mr. Blaney, I am sure this committee knows, is certainly one of the foremost experts on the subject of consumptive use of crops. This committee also determined the return flows to be expected from the Navajo project. I think that the figures developed as to consumptive use and as to return flows set forth in the report can certainly be relied upon.

In summary, I should like to say that Mr. Utton in his testimony in referring to a duty of 3 acre-feet per acre is not talking about consumptive use requirements. There is not, as Mr. Utton fears, a shortage of 70,000 acre-feet per year built into the projects. Mr. Utton also stated that he had received from me a letter stating that New Mexico's share of the upper basin depletion in the 10-year period ending in 1959 would amount to only 585,000 acre-feet per year.

Actually, my letter which was addressed to Mr. Brown, who was president of the San Juan County Farm Bureau, stated that without the storage capacity contemplated under the Colorado River Storage Project Act, our share would have been only about 585,000 acre-feet per year. But with the project storage we could continue to deplete the river at about the long-term average rate even in periods of low supply such as the 10-year period ending in 1959.

That, of course, is the primary objective of the Colorado River storage project.

At the hearing before the Senate Interior and Insular Affairs Committee on S. 107 on March 15 of this year, Mr. Matthew, chief engineer of the Colorado River Board of California, presented testimony purporting to show that New Mexico's allocation of the consumptive use of water under the Colorado River compacts is not adequate for present and authorized uses from the San Juan River and its tributaries in New Mexico, and the projects that would be authorized by the legislation that you are considering today.

Mr. Matthew seems to infer from his reading of Special Master Simon Rifkind's, December 5, 1960, report to the U.S. Supreme Court in the suit, *Arizona v. California*, et al., that the decree recommended would somehow limit consumptive use of water by the upper basin States of the Colorado River system to a maximum of 4,800,000 acre-feet per year. Mr. Matthew seems to believe that Judge Rifkind has found that the Congress has limited the upper basin to this maximum. The absurdity of this notion is clearly revealed in the colloquy reported in the record of the Senate hearing on S. 107. In the course of this colloquy between Senator Anderson, Senator Carroll, and Senator Kuchel, Senator Kuchel said:

I would be laughed out of this Congress if I argued before this committee that this bill, or any other bill providing for the development of the Upper Colorado River Basin ought not to be approved by the Congress because the master said that there was some kind of ceiling that had been entered into which you could not break.

Section 3 of the Colorado River Storage Project Act makes it perfectly clear that the Congress did not intend to affect the rights of the upper basin States under the Colorado River compact. This section says:

It is not the intention of Congress, in authorizing only those projects designated in section 1 of this act, and in authorizing priority in planning only those additional projects designated in section 2 of this act, to limit, restrict, or otherwise interfere with such comprehensive development as will provide for the consumptive use by States of the Upper Colorado River Basin of waters, the use of which is apportioned to the Upper Colorado River Basin by the Colorado River compact and to each State thereof by the Upper Colorado River Basin compact, nor to preclude consideration and authorization by the Congress of additional projects under the allocations in the compacts as additional needs are indicated.

*Arizona v. California, et al.*, involves the rights of each of the Lower Basin States to the use of water allocated to the lower basin by the Colorado River Compact of 1922; no State is party to the suit as an Upper Basin State. Certainly the rights of the Upper Basin States under the Colorado River Compact of 1922, cannot be limited or affected in any way by the decree to be handed down in *Arizona v. California, et al.*

The water supply study which Mr. John Bliss filed with this committee at the hearing on the San Juan-Chama and Navajo projects on May 20, 1960, shows that, within the limitations of the Colorado River Compact of 1922, the Upper Basin States will be able to deplete the flow of the Colorado River at Lee Ferry under the water supply conditions of the 1909-56 period by at least 7.2 million acre-feet per year; and that, under the terms of the Upper Colorado River Basin Compact, New Mexico's share of this depletion as measured at sites of use will amount to at least 838,000 acre-feet per year. This amount of depletion is adequate for all of New Mexico's present and authorized uses from the Colorado River system, for the projects that would be authorized by the legislation you are considering today, and for New Mexico's share of the proposed Animas-La Plata project; with a substantial amount remaining available for future developments in the State including municipal and industrial uses.

The period used in the water supply study filed with the committee last year, the 1909 to 1956 period, is the same period used by both Arizona and California in the water supply studies introduced in the

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Supreme Court litigation, *Arizona versus California*. And there appears to be no disagreement that the virgin flow at Lee Ferry in this period averaged 15.2 million acre-feet per year.

Furthermore, the study submitted by Mr. Bliss is consistent with the report made by Leeds, Hill & Gewett in 1953 for the State of Colorado. This report has been reproduced as Senate Document 23 of the 84th Congress, the first session. This report shows that with a total reservoir capacity of 38 million acre-feet in the upper basin a delivery of 7½ million acre-feet annually can be made at Lee Ferry with a depletion of 7½ million acre-feet in the upper basin.

Mr. Matthew's statement also questions whether the San Juan River and its tributaries will furnish enough water for all diversion requirements in New Mexico including the proposed Navajo and San Juan-Chama projects.

Table 2 of Mr. Matthew's statement purports to show using the hydrology of the 1931-59 period a deficiency of some 280,000 acre-feet per year for these requirements. One error in Mr. Matthew's figures arises out of his assumption that all uses in New Mexico below Navajo Dam must be served from Navajo Reservoir. For example, the table shows a diversion demand of 55,000 acre-feet for the Utah Construction Co. power project as being met from Navajo Reservoir. As a matter of fact, the diversion and storage facilities for this project are now under construction below the confluence of the Animus and San Juan Rivers and the requirements of this project will be met largely from the flows of the Animus Rivers and in part from uses served by Navajo Reservoir.

Table 2 of Mr. Matthew's statement also is misleading in that the table indicated spill of 225,000 acre-feet from Navajo Reservoir is based on the assumption of a completely unrealistic reservoir operation. This figure comes from a Bureau of Reclamation study in which it is estimated that the total demand on Navajo Reservoir in the year 2020 would amount to 600,000 acre-feet per year.

This amount would serve the demands of the small Hammond irrigation project, the Navajo project, and contracts for about 70,000 acre-feet per year for potential municipal, industrial or other uses.

The Bureau study shows that this total demand would be met without shortages and that 225,000 acre-feet per year would be permitted to spill from Navajo Reservoir. An economically designed water supply project must contemplate reasonable shortages to the requirements served during drought periods. If the project is designed to meet all requirements without shortage under all possible runoff conditions, large amounts of water will be spilled from project storage and optimum use of the resources can not be made.

The Bureau of Reclamation officials have advised me that the study cited by Mr. Matthew is not intended to reflect the Bureau's estimate of the maximum demand that can be served from Navajo Reservoir. Rather the study reflects the Bureau's prediction of the demand that might be put on the reservoir by the year 2020.

The demand can be increased above the amount estimated and the amount of spill and evaporation loss thus decreased.

The statement filed with this committee by Mr. Bliss last year estimated that 225,000 acre-feet per year would be available from Navajo Reservoir for municipal and industrial purposes after the require-

ments of the Navajo and San Juan-Chama projects and all present and authorized uses have been met.

It is extremely important to note that this is an estimate of the amount of water remaining available and not an estimate of the requirements at any particular date. To call this estimate a requirement, as Mr. Matthew has done, is misleading.

In this connection we would point out again that the Bureau of Reclamation report cited by Mr. Matthew implies that the demand for water from Navajo Reservoir for municipal and industrial purposes will reach 70,000 acre-feet per year about 60 years from now. It is clear that there is ample water available from the San Juan River and its tributaries for the Navajo, San Juan-Chama, and Animus-La Plata projects as the Secretary of the Interior advised Mr. Aspinall in his letter of November 16, 1960, with a very substantial amount remaining available for potential municipal and industrial use. It is not necessary at this time to decide precisely how much water should be made available from Navajo Reservoir for these potential future uses and that decision can be much more wisely made a few decades from now when the course of municipal, industrial, and other development in the San Juan Basin is better known, and when a longer water supply record is available for study.

Section 7(a) of the bill directs the Secretary of the Interior to make this decision with all due regard for the requirements of the projects for which we are seeking authorization. That section provides that the Secretary shall not enter into contracts beyond the total amount of water that in his judgment in the event of shortage will result in a reasonable amount being available for the diversion requirements for the Navajo irrigation project and the initial stage of the San Juan Chama project as specified in sections 2 and 6 of the act.

If the Secretary did contract for as much as 225,000 acre-feet a year for municipal, and industrial uses from Navajo Dam, in addition to the requirements of the Hammond project and the Navajo project, there would occur in the period 1928 to 1959, inclusive, 7 years of shortage. That 7 years of shortages in a 32-year period. These shortages would be as follows:

In 1947, 15 percent; 1951, 36 percent; 1952, 1 percent; 1954, 34 percent; 1955, 53 percent; 1956, 51 percent; and 1957, 3 percent.

The average shortage in the period would be about 6 percent. The average spill from Navajo Reservoir during that period would be about 80,000 acre-feet per year. These are serious shortages, but I believe that the Secretary might well enter into contracts for as much as 225,000 acre-feet per year from Navajo Reservoir over and above the requirements of the Hammond and Navajo project, primarily because the large shortages that I have indicated arise primarily from the unprecedented 4 years of continuous drought that occurred in the period 1953 through 1957, and a recurrence of those 4 years of drought is highly improbable.

We recognize that it is not practical for most municipal and industrial users to take shortages as great as 50 percent. As a matter of fact, they need not. It is possible to make interim transfers from irrigation use to municipal-industrial use with adequate compensation to the irrigator. If the municipal-industrial user had to pay as much as \$500 an acre for the irrigator's water for a single year, which

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to me is a completely unrealistic figure, the cost would amount to only about 30 cents per thousand gallons to the municipal-industrial user. I think that is not unreasonable for a municipal-industrial user to pay to fill occasional shortages. We pay about this amount for water in Santa Fe now.

In any event, regardless of what the Secretary may ultimately conclude about the probability of a recurrence of the 1953 to 1956 drought and about the amount of water that should be contracted from Navajo Reservoir for future uses, I think it is perfectly clear that there is ample water at sites of use and within New Mexico's allocation under the compacts for the San Juan-Chama, Navajo, and Animas-La Plata projects with a substantial amount remaining available for future uses. This precise amount need not be determined at this time. Certainly it can be decided much better a few decades from now when the developments and demands in the basin are better known, and certainly the Secretary is directed by the bill to make this decision with due regard to the requirements of the projects that would be authorized.

In conclusion, Mr. Hale and I would like to express our deep appreciation for the opportunity to be heard by this committee, and ask your early favorable action on this bill.

Mr. ASPINALL. Thank you very much, Mr. Reynolds.

If there is no objection, the letter from the Acting Secretary of Interior, Mr. Bennett, dated November 16, 1960, to me as chairman of the committee, will be inserted in the record at this point. Hearing no objection, it is so ordered.

(The letter referred to follows:)

DEPARTMENT OF THE INTERIOR,  
OFFICE OF THE SECRETARY,  
Washington, D.C., November 16, 1961.

Hon. WAYNE N. ASPINALL, *Chairman,*  
*Committee on Interior and Insular Affairs,*  
*House of Representatives,*  
Washington, D.C.

DEAR MR. ASPINALL: Pursuant to your request of August 17, 1960, we are glad to furnish the following information and findings as to the availability of water supply for the San Juan-Chama, Navajo Indian, and Animas-La Plata projects. Engineers of the Bureau of Reclamation have cooperated with engineers from Colorado and New Mexico in studying the availability of water for these proposed projects in Colorado and New Mexico. These studies support the findings described in subsequent paragraphs.

The San Juan-Chama project and the Navajo Indian irrigation project would divert water at or above the Navajo Reservoir on the San Juan River near Blanco, N. Mex. The diversion requirements for these 2 projects are shown in published reports to total 618,000 acre-feet annually. The available longtime average annual supply at the Navajo Dam site, after allowing for uses by authorized projects in Colorado, bypasses to meet existing uses, and the Hammond project in New Mexico, is in excess of 1 million acre-feet.

A preliminary report prepared in 1954 for the proposed Animas-La Plata project shows an annual diversion demand from the Animas River of about 250,000 acre-feet. The longtime average annual available flow, after allowing for bypass of water to meet existing downstream uses from the Animas River in Colorado and New Mexico, at the Tefts diversion site located about 20 miles upstream from Durango, Colo., is about 400,000 acre-feet.

The long-time (46-year period, 1912-58) annual historic flow of the San Juan River at Farmington, N. Mex., below the confluence with the Animas River is 1,900,000 acre-feet.

Estimates made by Bureau engineers and hydrologists, and which are being used by the Bureau in studies basic to the overall Colorado River storage project, indicate that within the next 100 years the total depletions of streamflow applicable to the Upper Basin will reach about 6,200,000 acre-feet. Of this total, about 3,900,000 is related to already existing and federally authorized uses as well as including allowances for the Blue River settlement under section 11 of Public Law 485, 84th Congress, and the Utah Construction Co. right. When there are added to this amount (3,900,000) the depletions to be caused by the Navajo Indian irrigation project, the initial stage of the San Juan-Chama project, and the Animas-La Plata project, the total becomes about 4,375,000. This total is approximately 70 percent of that estimated to occur by year 2062.

From our studies of presently available longtime streamflow records, we believe that the Colorado River storage projects units (Glen Canyon, Navajo, Flaming Gorge, and Curecanti) have ample conservation storage capacity to permit the depletion contemplated throughout this 100-year period. We do not feel we are justified in attempting to forecast beyond a 100-year period.

Taking into account the streamflow records for the San Juan River and the estimated rate of increase of the Upper Basin depletions, we are convinced there is a water supply, with occasional tolerable shortages, for the San Juan-Chama (initial stage), Navajo Indian, and Animas-La Plata projects throughout any reasonable payout period and at least for 100 years. Consequently, it cannot be said that development of these projects is in conflict over water supply or that the economic feasibility of the Animas-La Plata project is impaired because of such conflict.

Sincerely yours,

ELMER F. BENNETT,  
*Acting Secretary of the Interior.*

Mr. ASPINALL. As I understand the position of the State of New Mexico at the present time, it is that they are willing to have the Animas-La Plata project, if and when it is authorized and constructed, given sufficient water to make it, too, a feasible project. Is that right?

Mr. REYNOLDS. Yes; New Mexico is very much interested in the development of that project.

Mr. ASPINALL. If it is necessary to deviate from some present plans that might be thought of in the operation of the San Juan-Chama, but especially the Navajo Dam reservoir, in order to assure the feasibility of the Animas-La Plata, the people of the State of New Mexico are desirous of that sort of operation.

Mr. REYNOLDS. Mr. Chairman, it is our understanding in the present bill the Secretary may use Navajo Reservoir to provide exchange storage benefits to the Animas-La Plata project if such an operation would benefit that project. We have no objection to that so long as the requirements from the reservoir, including requirements for the Animas-La Plata projects, are all on parity.

Mr. ASPINALL. Your reference to "on parity" means that the projects would be equally responsible in the case of a shortage, as I understand it, to supply the prior users downstream. Is that what you mean?

Mr. REYNOLDS. I mean by that that no project or no user would have first call on Navajo Reservoir. Any shortages from Navajo Reservoir to users under Navajo Reservoir would be shared equally, or equitably in proportion to the diversion requirements of those users.

Mr. Aspinall, if I may, our position on this is set forth quite clearly in attachment 14 of the statement which I presented to the committee last year. I think that says very much what I have just said.

Mr. ASPINALL. It is from some of the people as to whether or not they are assured that they, too, if the water is available to the users.

Mr. REYNOLDS. It shows clearly that at the Animas-La Plata Navajo Dam to the A

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on the Animas River that. The State is believe that there will be indicated. Although on the project, would benefits whatever from

Mr. ASPINALL. You used in determining Were you referring

Mexico study, or were placed in the record

Mr. REYNOLDS. I have system which were placed last year. It appears

Mr. ASPINALL. Do you

Mr. REYNOLDS. Yes, the record are those from our

Mr. ASPINALL. With this point in the record study which brings up

Mr. REYNOLDS. I mean that through 1959.

Mr. ASPINALL. But

Mr. REYNOLDS. Yes

Mr. ASPINALL. Under record at this point.

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Mr. ASPINALL. I think that is well, but there are still some questions from some of the people who are interested in the Animas-La Plata as to whether or not in periods of extreme shortage they might be assured that they, too, will get benefits out of the Navajo Reservoir if the water is available in order to supply those downstream prior users.

Mr. REYNOLDS. I think, Mr. Aspinall, that the water supply studies show clearly that actually Navajo Dam cannot do a great deal for the Animas-LaPlata project since you cannot take water from the Navajo Dam to the Animas-LaPlata project.

Mr. ASPINALL. That is right.

Mr. REYNOLDS. You can only give the exchange storage.

Mr. ASPINALL. That is right.

Mr. REYNOLDS. The problem is finding adequate storage capacity on the Animas River for that project. The work is going on with that. The State is contributing to the studies. We have reason to believe that there will be a better water supply than the earlier studies indicated. Although the water supply figures in the earlier study on the project, would, I think, provide a feasible project without any benefits whatever from Navajo Reservoir.

Mr. ASPINALL. You referred in this presentation to a study that you used in determining the availability of water. I don't seem to see it. Were you referring to your study 8 which I understand is the New Mexico study, or were you referring to the studies of the river which were placed in the record?

Mr. REYNOLDS. I was referring to the studies of the Colorado River system which were placed in the record by Mr. Bliss at the hearings last year. It appears on page 75 of the record.

Mr. ASPINALL. Do you have the date of your operation study No. 8?

Mr. REYNOLDS. Yes, sir. The shortages which I read into the record are those from our operation study No. 8.

Mr. ASPINALL. Will you furnish to the committee for inclusion at this point in the record, unless there is an objection, your complete study which brings it down to the present time, if you have it?

Mr. REYNOLDS. I do not have it with me. I think we can show that through 1959.

Mr. ASPINALL. But you will send it to us?

Mr. REYNOLDS. Yes, sir.

Mr. ASPINALL. Unless there is objection it will be placed in the record at this point.

(The data to be submitted follow:)



1945	1,216	91	1,095	112	117	24	508	224	36	111	0	0	0	0	0	0	0	0	0
1946	1,494	73	1,291	130	130	23	508	224	33	644	0	0	0	0	0	0	0	0	0
1947	1,360	22	1,502	62	62	23	508	224	32	586	0	0	0	0	0	0	0	0	0
1948	1,351	7	1,319	45	39	15	325	147	22	639	0	6	8	183	0	0	0	0	36
1949	1,443	118	1,339	155	155	23	508	224	29	410	0	0	0	0	0	0	0	0	1
1950	1,513	28	1,485	64	64	23	508	224	27	840	0	0	0	0	0	0	0	0	0
1951	1,433	27	1,406	53	53	15	337	149	19	479	0	0	8	171	0	0	0	0	34
1952	1,487	50	1,437	49	49	11	250	110	17	410	0	0	12	251	0	0	0	0	0
1953	1,504	49	1,455	62	55	12	259	113	19	410	0	0	11	249	0	0	0	0	31
1954	1,509	110	1,372	139	139	23	508	197	25	407	0	0	0	249	0	0	0	0	39
1955	1,366	69	1,297	139	126	23	508	224	39	867	0	0	0	0	0	0	0	0	4
1956	1,362	7	1,355	38	38	23	508	224	30	1,059	0	0	0	0	0	0	0	0	0
Total	31,406	1,092	28,837	3,334	3,309	493	15,318	6,719	1,024	591	2,553	25	43	935	449	150	0	0	0
Average	981.4	62.2	901.1	104.2	103.4	21.6	478.7	210.0	32.0	179.8	79.8	0.8	1.4	29.3	14.0	5.9	0	0	0

New Mexico's Navajo Reservoir Operation Study No. 8 was originally made for the period 1925-54; it was subsequently extended to include 1955, and it now has been extended for uses beyond the year 1959. For study No. 8, it was assumed: (1) That runoff flow from extended below Navajo Dam would meet the demands of existing rights below Fairmount; (2) That, based on streamflow records, Navajo Reservoir would be full at the start of the study period; and (3) that throughout the study period the reservoir would have the capacity shown by the table below to be remaining after 100 years of sediment accumulation.

Dead storage below elevation, 5,900 feet	Active capacity	Initial capacity	Estimated sediment accumulation	Capacity at end of 100 years
-----	-----	672	252	410
-----	-----	1,028	65	960
Total capacity at normal water stage	-----	1,700	330	1,370

In years of shortage, the available water was prorated according to normal diversion requirements of the several demands.

Column 2. Recorded flow of San Juan at Hiteco through Decemil or 1954; estimated for remainder of period of study from recorded flow of San Juan near Archibald, Colorado.

Column 3. Estimated future depletions by full development of Pine River project in Colorado; Bureau of Reclamation data through October 1955; subsequent values estimated by New Mexico.

Column 4. Estimated future depletions by authorized Weimliche Pass diversion project in Colorado; Bureau of Reclamation data through October 1953; subsequent values estimated by New Mexico.

Column 5. Column 2 minus columns 3 and 4. Flow available for project development.

Column 7. Estimated depletions by initial stage, San Juan-Chama project; Bureau of Reclamation data through October 1955; subsequent values estimated by New Mexico. This column does not reflect drawdown in storage provided in the Rio Grande Basin which would increase the amount available from the diversion project in the study period.

Column 8. Estimated demand for new lands in floodment project and small areas.

Column 9. Estimated demand for Navajo irrigation project; supplemental report of Bureau of Indian Affairs dated March 1957.

Column 10. Demands assumed to be uniform throughout year.

Column 11. Reduction of amount available for diversion; computed by prorating shortages.

Column 12. Reduction of normal diversion demand; computed by prorating shortages except in years marked by an asterisk (\*) when shortages were due to low flow prior to runoff season.

Column 13. Sum of shortages to demands on Navajo Reservoir divided by annual demand of 755,000 acre-feet.

Mr. ASPINALL. Do I understand from your statement, Mr. Reynolds, that it is your position that there will be sufficient revenues in the basin funds to the credit of New Mexico to pay that amount of the San Juan-Chama diversion which the users cannot pay within the 50-year period from the date of completion of the project?

Mr. REYNOLDS. Yes, sir. In this I rely on the testimony given by Mr. Don Burnett before this committee last year. It is my understanding that they have made a reevaluation and that if results are even more favorable in that respect, I have not seen that later data.

Mr. ASPINALL. The gentleman from Pennsylvania.

Mr. SAYLOR. Mr. Reynolds, according to the figures that have been supplied to this committee by the Department, this project is to, first, divert 110,000 acre-feet on the San Juan River for utilization in the Rio Grande Basin in New Mexico. As the engineer for the State of New Mexico, is it your understanding that this is to be an annual diversion?

Mr. REYNOLDS. The average annual diversion.

Mr. SAYLOR. That is not what I asked you. I want to know whether or not it is to be an annual diversion.

Mr. REYNOLDS. I am not sure I understand the question, Mr. Saylor.

Mr. SAYLOR. I want to know whether or not you expect every year after this is built you will have diverted 110,000 acre-feet.

Mr. REYNOLDS. In many years the amount will be much greater than that. In other years much less, sir. That is the amount diverted through the divide. The amount used from the reservoir on the east side will run very close to 110,000 acre-feet in each year.

Mr. SAYLOR. In other words, you do not expect this to be a uniform diversion of 110,000 acre-feet?

Mr. REYNOLDS. No, sir; it cannot be so operated. The water is not available in that amount on these tributaries that would be tapped in each year.

Mr. SAYLOR. Why do you say that water is not available?

Mr. REYNOLDS. It simply is not physically available at the point of diversion in the amount of 110,000 acre-feet in each and every year. That is why there is 400,000 acre-feet of re-regulation provided on the east side of the Continental Divide.

Mr. SAYLOR. If you are willing to take the Bureau's figures for the high flow years and their projection of this for the future, why would you come before this committee and say that the recurrence of drought of 4 years which you specified is highly probable.

Why is that drought any more improbable than years of heavy snowpack on the other side?

Mr. REYNOLDS. There are some 60-odd years of record available on the Colorado River, and there has never been before 4 consecutive years of drought of the intensity of the years 1953, 1954, 1955, and 1956.

Mr. SAYLOR. In the 60-year period.

Mr. REYNOLDS. Yes, sir. A statistical analysis shows that it is highly improbable that you will have four such consecutive years at any time in the future.

Mr. SAYLOR. Might I say to you, sir, that you apparently have not paid much attention to some of the things that your own State has done, because you have some people out there that have done a remark-

able job in forestry. You have an area that are a lot older of those trees indicates that the State during the lifetime of the last one you are talking about.

Some of us are trying to get the State use it. But when you get a sort of shakes our country because your own State's had droughts a great deal worried a little bit about the board required by the board in acres of new land into each acre-foot on each one of those half the water, is that right?

Mr. REYNOLDS. The amount.

Mr. SAYLOR. It says you supply to 22,800 acres to be going to put on that? There are more acres here than there is water to do with it.

Mr. REYNOLDS. I think the diversion requirement or the amount of water diverted from the application of the amount of water diverted.

There are in this project of lands on tributaries of the amount by which those amount to be diverted on 66 percent, if you take 33 percent one would be returned to the State.

Mr. SAYLOR. Who are you talking about?

Mr. REYNOLDS. Which one? Mr. SAYLOR. Evaporation in the State of New Mexico. I have found that if you have you would like to have it.

Mr. REYNOLDS. Yes, sir.

Mr. SAYLOR. You are talking about the Navajo Reservoir. You are talking about the Navajo Reservoir. That is in accordance with the Mexico in accordance with the River compact, I am sure.

Mr. SAYLOR. There is nothing about the evaporation thing about the evaporation a little short. It is one of what the Master said that Congress cannot put any water.

Mr. REYNOLDS. As I remember the River compact they do not put against the States in proportion of the reservoir. There are some

ment, Mr. Reynolds, sufficient revenues in the amount of the project pay within the project?

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figures that have been required for this project is to, first, utilize the water in the reservoir for the State of New Mexico to be an annual

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question, Mr. Saylor. How much do you expect every year?

It will be much greater than the amount diverted from the reservoir on the east side of the river.

This is to be a uniform

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Mr. Reynolds' figures for the future, why would you expect a recurrence of drought

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shows that it is not consecutive years at

Apparently we have not done our own State has done a remark-

able job in forestry. You have a lot of trees in your State and in this area that are a lot older than 60 years. An examination of the rings of those trees indicates that you may have and you have had in your State during the lifetime of those trees droughts that would make the last one you are talking about fade into insignificance.

Some of us are trying to be for this project and trying to help the State use it. But when you come along and make statements like this, it sort of shakes our confidence in the other things you say about it because your own State's forestry department has shown that you have had droughts a great deal worse than the ones you specified. I am worried a little bit about this 3-acre-feet per acre which you say is required by the board in your State. If you are going to put 16,500 acres of new land into cultivation, and you are going to put 3 acre-feet on each one of those, that takes 49,500 acre-feet. That is almost half the water, is that right?

Mr. REYNOLDS. The arithmetic is correct, sir.

Mr. SAYLOR. It says you are going to put a supplemental water supply to 22,800 acres that are now irrigated. How much are you going to put on that? The reason I am asking is that there are more acres here than there is water. I want to know what you are going to do with it.

Mr. REYNOLDS. I think I need to know whether we are talking about diversion requirement or depletion. The amount of the depletion resulting from the application of water to the land is much less than the amount of water diverted to the lands.

There are in this project some 30,000 acre-feet for the irrigation of lands on tributaries of the northern Rio Grande. This is the amount by which those projects would deplete the waters, not the amount to be diverted on the land. Using an irrigation efficiency of 66 percent, if you take 3 acre-feet on the land, two would be used and one would be returned to the river.

Mr. SAYLOR. Who are we going to charge the evaporation losses to?

Mr. REYNOLDS. Which evaporation losses, if I may, sir?

Mr. SAYLOR. Evaporation losses that are going to occur somewhere in the State of New Mexico. I have been there a number of times and I have found that if you had a nice, cool day like we have outside now, you would like to have it. That 110° situation evaporates water.

Mr. REYNOLDS. Yes, sir.

Mr. SAYLOR. You are going to put some of this water up in the Navajo Reservoir. You are going to have a lot of evaporation.

Mr. REYNOLDS. That evaporation will be charged against New Mexico in accordance with the provisions of the Upper Colorado River compact, I am sure.

Mr. SAYLOR. There is not anything in the compact that says anything about the evaporation. This is one of the places where it is a little short. It is one of the places where you are commenting on what the Master said that Congress might not change. You know Congress cannot put any water in that river.

Mr. REYNOLDS. As I recollect the terms of the Upper Colorado River compact they do provide that evaporation would be charged against the States in proportion to the use made by the States from the reservoir. There are other details that say how evaporation shall

be charged from the regulatory reservoirs. Certainly I am sure this will be charged in accordance with that compact. Certainly we have taken it into account in our tabulation for the requirements of these new projects for New Mexico.

Mr. SAYLOR. Now you say that if this project is built, and later on they build the other project referred to by the chairman, that you want them to be of equal standing. I am a little worried about that because with your theory of equal footing we may end up with two projects, neither of which will function due to a water shortage. Whereas if we would provide that the first project built should get the water in case of a shortage, then you would be assured of one project that would work.

Mr. REYNOLDS. The provisions of the bills being considered today provide that shortages or, rather, that all uses under Navajo Reservoir shall share the shortage in time of shortage in proportion to the diversion requirements of those uses. I think that would protect any uses that are developed in the future, uses depending on Navajo Reservoir.

Mr. SAYLOR. That is in the bill. That was the author's idea when he drew up the bill. But this committee is going to write the bill. What comes out of this committee may not be what is in the bill as you are looking at it now.

What would your position be if this committee said we will approve the San Juan-Chama project but it has first call on New Mexico's water in case of shortage? Very frankly, my reasoning is just this: If we have to have two projects and we only have enough to feed one, I am going to make one good one. That might be a little cruel to the farmers who are going to move into the other project, but I would rather see one group live than two groups not live. If the San Juan-Chama is authorized in my opinion—and if it is the first one authorized—it should have first call on the water that is in the reservoir.

Mr. REYNOLDS. Mr. Saylor, we are convinced by our studies and by the Bureau of Reclamation studies that there is adequate water for the Navajo-San Juan-Chama, Animas-LaPlata project. We could not support a bill which would authorize only the San Juan-Chama project.

Mr. SAYLOR. I did not ask you to support a bill which only specified one.

Only time, as you say, will tell whether or not there is enough water for the second project. So since we are going to authorize this one, one of the changes that I think should be made is that we specify that if there is not enough water for both of them, this project be authorized and that this project have first call on the water from the reservoir. Years from now we may find out that there is not enough water. Twenty years from now we may find out that there is not enough water to build both of them and supply them with a full supply of water.

Mr. REYNOLDS. You are referring to the ultimate stage of the San Juan-Chama, rather than to the initial stage, sir?

Mr. SAYLOR. That is right.

Mr. REYNOLDS. I see. I think it may well be that there will not be enough water for all of the requirements that may develop in the

San Juan Basin, plus ultimate. This, I think, we can't see yet. We do not know at this time, as we have not yet determined the requirements will be in the San Juan Basin. We will be in the Rio Grande Basin. We want at this time to commit the San Juan-Chama project.

Mr. SAYLOR. If we build to the ultimate stage. We are not building to the ultimate stage.

Mr. REYNOLDS. Yes, sir; investment of about \$3 million that subsequent stages can be built. We feel that this degree of investment was wise and sound.

Mr. SAYLOR. This is when your State decide that you want development of the San Juan Basin.

Mr. REYNOLDS. If it appears when this decision must be made on the side of the Divide, we should make it in order to do it. We think we are in a position to do it.

Mr. SAYLOR. That is all, Mr. Chairman.

Mr. ASPINALL. The gentleman.

Mr. SAUND. Mr. Reynolds, courtesy the chairman has known that he is holding the debate. I happen to be a member but I had to come over here.

Mr. REYNOLDS. I was not appreciative of the courtesy of the group.

Mr. SAUND. Mr. Reynolds' statement:

Certainly the rights of the Compact of 1922 cannot be lightly handed down in *Arizona v. California*.

Isn't that a really broad statement?

Mr. REYNOLDS. I do not know the Upper Basin States part. Mr. Saund, that you might certainly may be a broad statement.

Mr. SAUND. Mr. Morris would think it is a very broad statement by the Department of Interior.

Paragraph 1 is a recognition that *California* could well make a claim that could require different principles.

The Department of Interior, Basin, does recognize this and gives an opportunity before this committee on

San Juan Basin, plus ultimate stages of the San Juan-Chama project. This, I think, we can't see yet. The State feels certainly that it cannot know at this time, as well as we need to know, what the ultimate requirements will be in the San Juan Basin and what the requirements will be in the Rio Grande Basin. It is for this reason that we do not want at this time to commit ourselves to ultimate stages of the San Juan-Chama project.

Mr. SAYLOR. If we build this tunnel, we are building it for the ultimate stage. We are not building it for a partial stage.

Mr. REYNOLDS. Yes, sir; we certainly recommend this proposed investment of about \$3 million for additional capacity in this tunnel so that subsequent stages can be accommodated if they become necessary. We feel that this degree of flexibility in the use of our water resources was wise and sound.

Mr. SAYLOR. This is when the Bureau downtown and the agencies of your State decide that you have some feasible projects in the ultimate development of the San Juan-Chama, is that right?

Mr. REYNOLDS. If it appears to the State some decades from now when this decision must be made that this water is needed on the east side of the Divide, we should not like to have to spend \$15 million then in order to do it. We think it is wise to spend about three now so that we are in a position to do that if and when it becomes necessary.

Mr. SAYLOR. That is all, Mr. Chairman.

Mr. ASPINALL. The gentleman from California, Mr. Saund.

Mr. SAUND. Mr. Reynolds, I hope you appreciate the extent of courtesy the chairman has extended to you this afternoon. Do you know that he is holding the hearings at a time when the House is debating a \$600-million appropriation bill? It is a very interesting debate. I happen to be a member of the Foreign Affairs Committee, but I had to come over here. I hope you appreciate it.

Mr. REYNOLDS. I was not aware of that, but I am certainly most appreciative of the courtesy that Mr. Aspinall has shown all of our group.

Mr. SAUND. Mr. Reynolds, in your statement you make this statement:

Certainly the rights of the Upper Basin States under the Colorado River Compact of 1922 cannot be limited or affected in any way by the decree to be handed down in *Arizona v. California*.

Isn't that a really broad statement?

Mr. REYNOLDS. I do not feel that it is too broad, sir, since there are no Upper Basin States party to the suit. I might suggest, if I may, Mr. Saund, that you might rather hear our attorney on that point. It certainly may be a broad statement for me to make as an engineer.

Mr. SAUND. Mr. Morris told me that you also have a law degree. I would think it is a very broad statement. Here is a pamphlet put out by the Department of Interior dated February 16, 1960. It says:

Paragraph 1 is a recognition that the Supreme Court in the lawsuit *Arizona v. California* could well make findings of fact and conclusions of law which could require different principles and criteria from those proposed.

The Department of Interior, talking about the water in the Upper Basin, does recognize this matter. If the chairman allows my request and gives an opportunity for the witnesses from California to appear before this committee on this bill, and if some statements are made

which might be contrary to this broad statement of yours, will you be willing to come back and answer some more questions?

Mr. REYNOLDS. Indeed, I would be pleased with the opportunity to come back, Mr. Saund, before this committee at any time.

Mr. SAUND. On page 11 of your statement you have this figure of 7.2 million acre-feet per year. Is that a typographical error or is that correct?

Mr. REYNOLDS. That is correct, sir.

Mr. SAUND. The reason I ask that question is that I have heard the figure 7.5 million mentioned so many times I thought that might be an error. How do you arrive at the 7.2 and not the 7.5?

Mr. REYNOLD. We arrived at this through an operations study. That is, we assumed certain reservoirs on the river, and then operated this system and the answer came out that the Upper Basin could deplete it by 7.2 million acre-feet per year while making deliveries of 7.5 million acre-feet per year to the Lower Basin.

Mr. SAUND. In other words, that 7.5 figure is not the Upper Basin's figure. It could be lower than that. In your case it was 7.2. I thought that was a typographical error.

Mr. REYNOLDS. No, sir.

Mr. SAUND. You mentioned Mr. Matthews' name here so many times in this statement. I was not here. I was in California. Did Mr. Matthews appear before the committee yesterday?

Mr. REYNOLDS. No, sir. I was referring to material filed by Mr. Matthews at the Senate hearing on S. 107 on March 15 of this year.

Mr. SAUND. Would it be fair to ask that if Mr. Matthews is given an opportunity to testify before this committee some time in the near future you will come and submit to questions in regard to your remarks about Mr. Matthews?

Mr. REYNOLDS. Yes, sir.

Mr. SAUND. Then another statement you make here. You said that a section of the bill provides that the Secretary shall not enter into contracts beyond a total amount of water that in his judgment, and so forth. Do you know that the Secretary has entered into some contracts where the people who contracted for that water and built projects on that basis are beginning to wonder if they will have the water. So the Secretary may not be right all the time; is that correct? Do you know about some projects in southern California which have been constructed on the basis of contracts made with the Secretary of the Interior and we are in fear that we may not have any water for those projects.

Mr. REYNOLDS. Yes; I am familiar with that.

Mr. SAUND. So you want us to believe that the Secretary will not make any mistakes?

Mr. REYNOLDS. No, sir; I am sure no man is infallible, but I would be satisfied with his decision. We feel that these are judgments that somebody must make and he, with his staff, is competent to make the studies required and to make these judgments properly.

Mr. SAUND. If you appeared before the committee next time, maybe we will go into details about that and I will tell you what I mean. I happen to represent a district where we have projects and are fearful that we will not get the water. We have obligated ourselves and constructed the projects and we think we are not going to have any water. We relied on the judgment of the Secretary of the Interior in the contracts we have with him. It is something that happened.

Thank you very

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Thank you very much.

Mr. ASPINALL. The gentleman from California, Mr. Hosmer.

Mr. HOSMER. Mr. Reynolds, you supplied testimony the last time we heard this bill with respect to the Upper Colorado River water requirements for New Mexico. That totaled how much? Was it 808,000 acre feet, roughly?

Mr. REYNOLDS. We set forth a list showing potential uses amounting to 818,000 acre-feet and showed a residual amount of 20,000 acre-feet. These are not to be construed as demands. The 225,000 acre-feet for municipal-industrial use set forth as remaining available for such uses in the table actually was the number taken from this project study or operation study No. 8.

That study was developed by the State in an effort to study what should be the capacity of the Navajo Dam.

Mr. HOSMER. You also calculate your entitlement on the Colorado River at 838,000.

Mr. REYNOLDS. I think that is not necessarily what we consider our entitlement. We feel that we are justified in using that number for planning purposes. We feel that 838,000 is a conservative estimate of our entitlement under the compacts.

Mr. HOSMER. Is that 11½ percent of 7.5 million?

Mr. REYNOLDS. It so happens that is 11¼ percent of 7.45 million acre-feet.

Mr. HOSMER. So you are then assuming for planning purposes, at least, that amount of water is available to the upper basin States on an annual average?

Mr. REYNOLDS. No, I think not necessarily. The assumption is that 838,000 acre-feet is a conservative estimate of New Mexico's entitlement under the compact. We would have that entitlement even though the upper basin were able to deplete the river by only 7.2 million acre-feet per year.

Mr. HOSMER. Then you would have less than your entitlement?

Mr. REYNOLDS. That is right. But not less than 838,000.

Mr. HOSMER. In other words, the amount of water you actually get depends not on what is written in the compact but on the actual amount of water available.

Mr. REYNOLDS. I think it is going to depend on both of those things.

Mr. HOSMER. Even though you may be entitled to water, if it is not physically there, you will not get it.

Mr. REYNOLDS. If it is not there, we are not going to be entitled to it.

Mr. HOSMER. Any deficiency below the amount upon which the upper basin entitlement was based has to result in a deficiency in wet water usable by these States.

Mr. REYNOLDS. I am sorry. I don't understand the question, Mr. Hosmer.

Mr. HOSMER. Let me put it this way. Do you have a magic wand in New Mexico which you can wave and produce water where none exists.

Mr. REYNOLDS. No, sir.

Mr. HOSMER. Then in order to use water, the water has to be in existence; is that right?

Mr. REYNOLDS. Yes, sir.

Mr. HOSMER. If you divide it up amongst the upper basin States, so much water, 11½ percent of which is New Mexico's, but the total amount of water on which those divisions are based is not in existence,

then you are not going to get 11½ percent, are you? Or do you intend to take some other State's share of it, like Colorado?

Mr. REYNOLDS. That question I can answer. I can understand it. The answer is no. We certainly will not take more than we are entitled to. Certainly we are confident that what we are asking for here can be served by an adequate water supply within our entitlement and within the amount of water physically available in the river.

Mr. HOSMER. Within the amount physically available. It is just like kids and sour balls. If they divide up five sour balls between them and there are actually only four, some kid is going to get hurt altogether or they are going to chew them up in rotation or something. Isn't that right?

Mr. REYNOLDS. I am sure that would happen. That is the reason we have looked at the hydrologic record very carefully.

Mr. HOSMER. You have made a lot of complaints about Mr. Matthews' figuring, and I presume he will be given an opportunity to testify and I will let him straighten out that record. There is someone you did not complain about, and that is the Colorado Water Conservation Board. Are you familiar with the fact that they make certain statistical studies of the Colorado River water, its use and so on?

Mr. REYNOLDS. Yes, sir. In some of those studies we have worked with them.

Mr. HOSMER. Do they always come out with the same answers you do?

Mr. REYNOLDS. I am sure they don't always come out with the same answer. They apparently have in this project. I think Mr. Sparks said last year that he was confident that the Secretary could not make a finding other than that there was adequate water for these projects without impairment to Animas-La Plata project. Certainly in that answer we are together.

Mr. HOSMER. In respect to where your figures differ, is this committee to take your word that in those cases the Colorado Water Conservation Board is wrong and you are right?

Mr. REYNOLDS. I am not aware of any differences. I feel that the figures that we have presented to this committee are certainly right, to the best of our ability.

Mr. HOSMER. What do you figure to be New Mexico's demand on the Navajo Reservoir annually?

Mr. REYNOLDS. This, of course, depends on what point in time you are talking about. Upon completion of the Navajo project the requirements would be of the order of 530,000 acre-feet per year. The small Hammond irrigation project, we hope, will be in operation within about 1 year.

Mr. HOSMER. Isn't the Hammond project going to take some water out of the Navajo Reservoir?

Mr. REYNOLDS. Yes, sir, about 23,000 acre-feet per year.

Mr. HOSMER. And the Navajo is going to take 580,000?

Mr. REYNOLDS. Yes, sir.

Mr. HOSMER. And municipal-industrial uses are going to take 224,000?

Mr. REYNOLDS. Not in my opinion for many, many years. In the opinion of the Bureau of Reclamation that would amount to 70,000 acre-feet in the year 2020.

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Mr. HOSMER. The Colorado Water Conservation Board figures it is going to be 225,000.

Mr. REYNOLDS. I think they may have adopted our figure of the amount remaining available for such uses, which, of course, is not necessarily a requirement.

Mr. HOSMER. I think you sold a bill to the Congress the other time you were here that you are going to divert 225,000 acre-feet for municipal and industrial uses.

Mr. REYNOLDS. At page 78 of the record of hearings of May 20, 1960, we show figures available for future developments, municipal-industrial water from Navajo Dam, 112,500. This is our estimate of the depletion that would result from the diversion of 225,000 acre-feet. The tabulation, I think, is clearly the amount of water remaining available. Certainly, I am not prepared to estimate the date at which there would be a demand for that amount of water from Navajo Reservoir for those purposes.

Mr. HOSMER. Will you look at the same line you are reading and notice it has a footnote No. 4 and will you read that, please?

Mr. REYNOLDS. The footnote explains the 112,500 as the estimated depletion by the diversion of 225,000 acre-feet per year for municipal-industrial uses.

Mr. HOSMER. That is all going to go below the dam; is it not? It is all going to be used below the dam?

Mr. REYNOLDS. That water?

Mr. HOSMER. Yes.

Mr. REYNOLDS. Certainly, I don't know at this time. I might clarify the point by pointing out that if there are ultimate stages of the San Juan-Chama project constructed, that figure would need to be reduced. That is, that amount would not be available.

Mr. HOSMER. This Colorado Water Conservation Board in their tabulation of a column 4, which is entitled, "Demand on Navajo Reservoir," and it is 783,000 acre-feet a year in the ultimate. Of that, 224,000 is listed for municipal-industrial use. Are they right or wrong?

Mr. REYNOLDS. I am not familiar with the basis of their estimate if they have that listed as a demand.

Mr. HOSMER. It could go that high according to your footnote.

Mr. REYNOLDS. The water would be available for that much, sir.

Mr. HOSMER. Assuming that there was water in the quantity that you specified?

Mr. REYNOLDS. Yes, sir.

Mr. HOSMER. Incidentally, Mr. Reynolds, earlier you were talking about this figure for planning purposes and all that sort of thing. Do you have another figure in mind as to what water actually will be available?

Mr. REYNOLDS. You are speaking of our estimate, conservative estimate of 838,000?

Mr. HOSMER. Yes.

Mr. REYNOLDS. I think there may be as much as 850,000 available to us. It is going to be somewhere in that neighborhood. We feel that 838,000 is a conservative estimate of our entitlement.

Mr. HOSMER. You are familiar with the Hill report?

Mr. REYNOLDS. Yes, sir.

Mr. HOSMER. He said that there would be 6.2 million.

Mr. REYNOLDS. Yes. I am familiar with that statement. I don't remember his exact number. Mr. Hill also pointed out that with 38 million acre-feet of storage in the upper basin the upper basin could deplete the river by 7.5 million a year, making a delivery of 7.5 million to the lower basin each year. That is from the same report.

Mr. HOSMER. That would require a great deal more storage.

Mr. REYNOLDS. Thirty-eight million is what Mr. Hill placed.

Mr. HOSMER. Is Mr. Hill in the same category as Mr. Matthews and the Colorado Water Conservation Board?

Mr. REYNOLDS. I feel all those gentlemen you named are very excellent engineers. I know Mr. Hill quite well. I have a high regard for him.

Mr. HOSMER. But you feel they are wrong?

Mr. REYNOLDS. No, I think Mr. Hill is right. I think 38 million acre-feet in the period that he studied would certainly provide a 7.5 million depletion of the upper basin while making a 7.5 million acre-feet of delivery each year to the lower basin.

Mr. HOSMER. But you don't feel Mr. Matthews is right?

Mr. REYNOLDS. I think Mr. Matthews did not fully understand the distribution of water uses in New Mexico. He misinterpreted, I believe, the language of our table. These I don't think are very serious errors. I did feel it was necessary to clarify the record on these points.

Mr. HOSMER. Maybe Mr. Matthews has an "if" like Mr. Hill has of some kind. Maybe you would agree with him if you knew what the "if" is. Would that be possible?

Mr. REYNOLDS. I think this is possible if there were different assumptions than appear to be in Mr. Matthews' statement. It might be that Mr. Matthews might have been saying that if we furnish the Utah Construction Co. project water from Navajo Reservoir then that 55,000 demand would be on Navajo Reservoir. Certainly, it would be.

Maybe that is Mr. Matthews' assumption. As a matter of fact, that is not contemplated. The Utah Construction Co. will get their water from the Animas River and return flows from Navajo and at this time do not intend to contract for water from Navajo Reservoir.

Mr. HOSMER. Let us get to your figure of what the average annual demand is including this 224,000 on this Navajo Reservoir. What is the maximum figure for the average annual demand on the reservoir?

Mr. REYNOLDS. If a figure of 224,000 is used, the demand, then, is about 755,000 acre-feet per year, as I recollect it.

Mr. HOSMER. On the Hammond project that comes to about 30,000 below what the Colorado people estimate. I don't know what your Hammond project figure is. In last year's hearings you have 6,800 acre-feet and I think a moment ago you mentioned 23,000 acre-feet. Which of those figures is correct?

Mr. REYNOLDS. The figure set forth in the table appearing on page 78 of the record of last year, 6.8 thousand, is an estimate of the depletion that might be caused by the Hammond project. The diversion for Hammond project from Navajo Dam would amount to about 23,000 acre-feet per year.

Mr. HOSMER. Colorado says you are going to use for miscellaneous purposes other than the Navajo irrigation project about 96,000 acre-feet; is that right?

Mr. REYNOLDS. I cover. We show it for the extension of projects which are below the confluence.

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Matthews is right? not fully understand the He misinterpreted, I be- n't think are very serious rify the record on these

"if" like Mr. Hill has of im if you knew what the

f there were different as- ws' statement. It might ng that if we furnish the Navajo Reservoir then Reservoir. Certainly, it

n. As a matter of fact, ruction Co. will get their lows from Navajo and at r from Navajo Reservoir. what the average annual vajo Reservoir. What is demand on the reservoir? ised, the demand, then, is t it.

that comes to about 30,000 I don't know what your s hearings you have 6,800 mentioned 23,000 acre-feet.

e table appearing on page s an estimate of the deple- d project. The diversion would amount to about

g to use for miscellaneous project about 96,000 acre-

Mr. REYNOLDS. I don't know what item the figure is intended to cover. We show in our table 24,700 acre-feet of depletion required for the extension of Indian projects in New Mexico. Those are small projects which are being slightly extended. They are on the San Juan below the confluence of the Animas.

Mr. HOSMER. They apparently found out about some uses that your office has not found out about yet according to this figure.

Mr. REYNOLDS. This may not be so. They may be talking about diversion requirements.

Mr. HOSMER. This is not diversion. This is demand on the Navajo Dam for all kinds of water.

Mr. REYNOLDS. I don't know what they have in mind.

Mr. HOSMER. What is your figure for the evaporation on the Navajo Dam?

Mr. REYNOLDS. 39,000.

Mr. HOSMER. Their figure is lower than yours. They get a total of 885,000 annual demand on that dam, less 100,000 returnable use flow, for a net of 785,000. Does that sound fair and reasonable?

Mr. REYNOLDS. I would have to analyze those figures very carefully before answering that question, Mr. Hosmer.

Mr. HOSMER. Do the calculations you mentioned on the amount of water run from 1942 to 1957, or what period were you using?

Mr. REYNOLDS. The study I mentioned used the period 1909 to 1956. In my oral testimony today I made another estimate to the 32-year period, 1928-59.

Mr. HOSMER. This becomes a disturbing factor because the Bureau told us this morning that they worked from the period 1928 to 1957, and they said there were not any reliable figures before 1928 at all. Do you have reliable figures on the flow before 1928 that they don't have?

Mr. REYNOLDS. I don't recollect that statement. Certainly, some of the early years of 1909 to 1956 period are based in part on estimates by the U.S. Geological Survey. I think that they are useful figures and should be used in studying the hydrology of the Colorado River.

Mr. HOSMER. The Colorado Water Conservation Board figures show for the 1942-56 period an in-flow into the Navajo Reservoir of 648,500 as the annual average and the demand of 785,000 on the reservoir, which is some 130,000 to 140,000 shortage on the average.

I presume they have some basis for that?

Mr. REYNOLDS. I don't know, sir.

Mr. HOSMER. They also show in their 11-year period from 1945 to 1956, inclusive, that in each of those consecutive years except one, which was 1949, that there was a considerable deficit. Out of that time the reservoir would not be able to deliver water in 4 years and deliver much less than required in six of the other years.

Are you familiar with those figures at all?

Mr. REYNOLDS. I am not familiar with their figures, sir. I do have before me the shortages that would occur in the period 1928-59.

Mr. HOSMER. Those are the figures that you and the Bureau used?

Mr. REYNOLDS. These are the figures from operation study No. 8, which assumes a demand of 224,000 for municipal-industrial purposes on the river.

Mr. HOSMER. The demand is how much?

Mr. REYNOLDS. Assumes an ultimate demand of 225,000 acre-feet per year for diversion to uses other than the projects for which we are seeking authorization.

Mr. HOSMER. Those figures themselves show that the reservoir is pretty sick during a number of years, do they not?

Mr. REYNOLDS. Yes, indeed. In the 1953-56 period, it was extremely rough on all water-supply projects in the West. We did find that we could survive.

Mr. HOSMER. They were not too good in 1946, 1947, and 1948 either, were they?

Mr. REYNOLDS. Our studies show that there would be no shortages from Navajo Reservoir for these very large assumed demands in the years 1946 or 1948. There would be a 15 percent shortage in 1947.

Mr. HOSMER. What happened to the economics of the project when these shortages occurred?

Mr. REYNOLDS. Of course, shortages have an adverse economic effect. These shortages that I have listed here in the period 1928 to 1959 are not reflected in these project studies, of course, would not affect the feasibility.

Mr. HOSMER. It seems to make a great deal of difference what period of time you base your figures on, is that not right?

Mr. REYNOLDS. I think the ultimate result should not differ materially. It is my feeling about hydrology that you should study the longest period of record available.

Mr. HOSMER. If you are working on an average there must be some length of time that you use to achieve the average which would amount to the complete water cycle, would it not?

Mr. REYNOLDS. I am not sure I understand the question, sir. But certainly, the average figure will depend upon what period you choose to average.

Mr. HOSMER. That is right. By a judicious selection of years you can make a project look awfully good, or vice versa, you can make it look awfully bad.

Mr. REYNOLDS. This is exactly the reason, Mr. Hosmer, that we chose the entire period of record upon which we could place any reliance, 1909 to 1956, the period which was adopted by the experts retained by Arizona and California to represent them in that big lawsuit.

Mr. HOSMER. By like token, if the length of that period amounts to either more or less than a complete water cycle, the figures are going to be inaccurate. They may show more water or they may show less water.

Mr. REYNOLDS. They show essentially the entire period of reliable record. That is the best you can do in hydrology.

Mr. HOSMER. But you cannot operate a reservoir in a series of dry years on some extended average, can you?

Mr. REYNOLDS. No, sir. In a study such as the one we presented here, we don't use this long-term average figure. We show the operation of the reservoir throughout each one of the years in this long period. If you can make it through the entire period, then you know you are sound.

Mr. HOSMER. The Colorado figures are going to be pretty short in some parts of this period. What is the capacity of that Navajo Reservoir?

Mr. REYNOLDS. 1.7 billion acre-feet.

Mr. HOSMER. How do you figure that?

Mr. REYNOLDS. About 1.7 billion acre-feet is the amount of reservoir capacity.

Mr. HOSMER. In case your testimony proves less upper basin water look diminishes in production.

Mr. REYNOLDS. Mr. Hosmer, in water supply available that we have estimated for which we seek out Animas-La Plata project very interested.

Mr. HOSMER. I am interested. But insofar as the economics of the project is concerned.

Mr. REYNOLDS. With respect to the economics of the project.

Mr. HOSMER. I don't see a diminishment in water supply at the point where you would have a shortage.

Mr. REYNOLDS. Give us requires only 700,000 acre-feet.

Mr. HOSMER. You are talking about 700,000 acre-feet.

Mr. REYNOLDS. Yes, within that limitation.

Mr. HOSMER. My understanding is somewhere around two billion acre-feet.

That is all, Mr. Chairman.

Mr. ASPINALL. The question is whether you are in this country that I am talking about.

Mr. REYNOLDS. The question is whether you are in this country that I am talking about.

Mr. MORRIS. Can you give us any different criteria for the water supply for the other irrigation projects as to water supply?

Mr. REYNOLDS. No, sir.

Mr. MORRIS. You are talking about the water supply for the other irrigation projects as to water supply?

Mr. REYNOLDS. Yes, sir.

Mr. HOSMER. If there is a unanimous consent to present this table of the Colorado River project.

Mr. ASPINALL. Will you please present the record?

Mr. HOSMER. I would like to present the record.

Mr. ASPINALL. The record is being presented.

Hearing none, it is adjourned. (The table referred to is on page 11.)

Mr. REYNOLDS. 1.7 million acre-feet, approximately.

Mr. HOSMER. How much of it is usable?

Mr. REYNOLDS. About 1.03 million. I might qualify that, sir. That is the amount of reservoir capacity above the inlet to Navajo Canal.

Mr. HOSMER. In case these hypotheses upon which you have based your testimony prove to be incorrect, and it turns out that there is less upper basin water available which you can latch on to, the outlook diminishes in proportion to the deficiency of water, does it not?

Mr. REYNOLDS. Mr. Hosmer, there could be a very material decline in water supply available to New Mexico, a decline below the figures that we have estimated and still be plenty of water for the projects for which we seek authorization without impairment of the proposed Animas-La Plata project in which the State of New Mexico is also very interested.

Mr. HOSMER. I am sure. I am sure the people there are satisfied. But insofar as the economics of the projects are concerned—

Mr. REYNOLDS. Without adverse effect on the economics, sir.

Mr. HOSMER. I don't think it is necessarily true. How much of a diminishment in water would you have to have before you reached the point where you were in difficulty?

Mr. REYNOLDS. Given a full supply for all presently authorized uses requires only 700,000 acre-feet a year.

Mr. HOSMER. You cannot pay out your project on that basis?

Mr. REYNOLDS. Yes, sir. This would not affect these projects within that limitation.

Mr. HOSMER. My figures show that you are only going to get somewhere around two-thirds of that.

That is all, Mr. Chairman.

Mr. ASPINALL. The gentleman from New Mexico.

Mr. MORRIS. Mr. Reynolds, do you know of any irrigation project in this country that has a 100-percent water supply every year?

Mr. REYNOLDS. There are certainly none in our State, sir.

Mr. MORRIS. Can you think of any offhand in any other State?

Mr. REYNOLDS. No; I think of none, sir.

Mr. MORRIS. Did the Bureau of Reclamation to your knowledge use any different criteria in determining the hydrology for this project and the water supply for this river in determining the hydrology on any of their other irrigation projects where they have made recommendations as to water supply?

Mr. REYNOLDS. No, sir.

Mr. MORRIS. You are familiar with the letter of November 16, 1960, to Mr. Aspinall, signed by Mr. Bennett, Acting Secretary of Interior?

Mr. REYNOLDS. Yes, sir; I am.

Mr. HOSMER. If the gentleman will yield I would like to ask unanimous consent to insert at the period of my questioning of the witness this table of the Colorado Water Conservation Board.

Mr. ASPINALL. Will you let the Colorado witness put it in the record?

Mr. HOSMER. I would like it in at this point.

Mr. ASPINALL. I have no objection. Is there any objection?

Hearing none, it is so ordered.

(The table referred to follows:)

COLORADO WATER CONSERVATION BOARD, DENVER, COLO.  
Navajo Reservoir and San Juan Chama operation study 1a (revised and extended to 1960)  
[In thousands of acre-feet]

Year	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1942	704	86.0	618.0	785	960.0	1.169	869	771	88	
1943	1,198	117.0	1,081.0	785	960.0	1.169	869	771	88	
1944	1,312	124.0	1,188.0	785	960.0	1.169	869	771	88	
1945	352	47.0	305.0	785	883.0	1.169	869	771	88	
1946	664	76.0	588.0	785	1,169	1.169	869	771	88	
1947	1,161	112.0	1,049.0	785	1,169	1.169	869	771	88	
1948	1,349	130.0	1,219.0	785	1,169	1.169	869	771	88	
1949	1,479	147.0	1,332.0	785	1,169	1.169	869	771	88	
1950	281	39.0	242.0	785	1,142	1.142	842	771	71	
1951	1,451	155.0	1,296.0	785	1,169	1.169	869	771	88	953
1952	467	64.0	403.0	785	1,169	1.169	869	771	88	953
1953	421	53.0	368.0	785	1,169	1.169	869	771	88	953
1954	439	71.0	368.0	785	0	756	452	771	(121)	731
1955	1,395	161.0	1,234.0	785	449.0	752	452	771	(315)	515
1956	1,265	127.0	1,138.0	785	0	1,169	869	771	(319)	(99)
1957	315	40.0	275.0	785	1,169	1,169	869	771	88	(99)
1958	875	120.0	755.0	785	1,169	1,169	869	771	88	(99)
1959					1,169	1,169	869	771	88	(99)
1960					1,169	1,169	869	771	88	(99)
Average, 1943-50	784	90.7	693.5	785	444.2					
Average, 1914-50	1,070									

EXPLANATION

Col. 1: Reflects the historic flow less 45,000 acre-feet for possible future use in Colorado, based on operating year Nov. 1 to Oct. 30.  
 Col. 2: Based upon water availability and diversion capacity as computed by Bureau of Reclamation.  
 Col. 3: Col. 1 minus col. 2.  
 Col. 4: Demand computed as follows (present and future):  
 Navajo irrigation project..... 508,000  
 Hammond project..... 23,000  
 Municipal and industrial..... 224,000  
 Other Indian uses..... 96,000  
 Reservoir evaporation..... 34,000  
 Total..... 885,000  
 Less useable return flow 1..... 100,000  
 Net demand..... 785,000  
 1 Probably will be greater.

Col. 5: Col. 5 (previous year) plus col. 3 minus col. 4.  
 Col. 6: Computed as follows:  
 Demand at and below Navajo Reservoir (diversion)..... 885,000  
 San Juan-Chama (depletion)..... 110,000  
 Existing uses (depletion)..... 68,000  
 New Mexico share of mainstream reservoir depletion..... 73,000  
 Animas-La Plata project (depletion in New Mexico)..... 33,000  
 Total..... 1,169,000  
 Col. 7: Col. 6 less 300,000 allowance for unuseable return flow. This allowance is probably excessive, and undoubtedly so in years of low streamflow.  
 Col. 8: Based upon virgin flow at Lee Ferry and computed under terms of the Colorado River compact and Upper Colorado River Basin compact. For purposes of this study it was assumed that at the end of 1942 there was 20 million acre-feet of storage in Glen Canyon Reservoir available as replacement for upper basin uses (this storage figure and therefore the depletion allowance is undoubtedly too high for the period of study).  
 Col. 9: Col. 7 minus col. 8.  
 Col. 10: Computed on the basis of consecutive 10-year periods reckoned in continuing progressive order.

Mr. MORRIS. In this letter the depletions applicable to the next 10 years within the next 10 years?

Mr. REYNOLDS. Yes, sir.

Mr. MORRIS. Also, in terms of water supply, as I understand, you are seeking authorization in which we are also interested.

Mr. REYNOLDS. Yes, sir, clear.

Mr. MORRIS. You say that?

Mr. REYNOLDS. Yes, sir.

Mr. MORRIS. And more?

Mr. REYNOLDS. Yes, sir.

Mr. MORRIS. Who is trying on irrigation projects?

Mr. REYNOLDS. By the way, of crops?

Mr. MORRIS. Yes.

Mr. REYNOLDS. I think you know best in that field.

Mr. MORRIS. Who is Mr. Reynolds? The I know he still is.

Mr. MORRIS. Do you know Reclamation has made studies made to other studies in irrigation projects?

Mr. REYNOLDS. No, sir, the amount of water required in the area, and as they so often with Mr. Blaney and others.

Mr. MORRIS. How much Mexico's share of the output in that way, after the authorization today are there will remain in New Mexico in the neighborhood?

Mr. MORRIS. Now you say?

Mr. REYNOLDS. Yes, sir.

Mr. MORRIS. You are of the Bureau of Reclamation New Mexico in power project.

In your opinion their this San Juan-Chama project?

Mr. REYNOLDS. Yes, sir.



Mr. MORRIS. In this letter, as I read it, they estimate that the total depletions applicable to the upper basin will reach 6.2 million acre-feet within the next 100 years. Is that your understanding of the letter?

Mr. REYNOLDS. Yes, sir; that is my understanding of it.

Mr. MORRIS. Also, in this letter they go on to say that there is ample water supply, as I understand the letter, for the projects which we are seeking authorization in this bill and the Animas-La Plata project in which we are also interested?

Mr. REYNOLDS. Yes, sir; I think that statement in the letter is very clear.

Mr. MORRIS. You say that is a fair statement?

Mr. REYNOLDS. Yes, sir.

Mr. MORRIS. And most anyone can understand this letter if they read it?

Mr. REYNOLDS. Yes, sir.

Mr. MORRIS. Who is the recognized authority throughout this country on irrigation projects and on the water supply for irrigation projects?

Mr. REYNOLDS. By that you mean water requirements for irrigation of crops?

Mr. MORRIS. Yes.

Mr. REYNOLDS. I think Mr. Harry Blaney is probably the man I know best in that field and who most of us know best.

Mr. MORRIS. Who is Mr. Blaney with?

Mr. REYNOLDS. The Department of Agriculture, or was. As far as I know he still is.

Mr. MORRIS. Do you know of any exceptions that the Bureau of Reclamation has made in this water supply study that they have not made to other studies in considering the water supply available for irrigation projects?

Mr. REYNOLDS. No, sir. So far as I know the Bureau of Reclamation has followed their usual course in their estimate determination of the amount of water required for the crops to be grown in the project area, and as they so often do, I know they have in this case consulted with Mr. Blaney and others in the Department of Agriculture.

Mr. MORRIS. How much water will remain available under New Mexico's share of the compact, or proposed share if you would like to put it that way, after the requirements for these projects that we seek authorization today are satisfied and the present users are satisfied?

Mr. REYNOLDS. I think that we can conservatively estimate that there will remain in New Mexico's allocation under the compacts a depletion in the neighborhood of 120,000 to 130,000 acre-feet.

Mr. MORRIS. Now you are talking about depletion?

Mr. REYNOLDS. Yes, sir.

Mr. MORRIS. You are satisfied and you have reviewed the findings of the Bureau of Reclamation with regard to the money available to New Mexico in power revenues under the Colorado River storage project.

In your opinion their study is correct that New Mexico can pay off this San Juan-Chama within the 50-year period?

Mr. REYNOLDS. Yes, sir.

Col. 5: Col. 5 (previous year) plus col. 3 minus col. 4.	885,000
Col. 6: Computed for low Navajo Reservoir (diversion) demand at and below Navajo Reservoir.	140,000
San Juan-Chama* (depletion).	68,000
Existing uses (depletion).	73,000
New Mexico share of mainstream reservoir depletion.	33,000
Animas-La Plata project (depletion in New Mexico).	33,000
Total	1,169,000

Col. 7: Col. 6 less 300,000 allowance for unuseable return flow. This allowance is probably excessive, and undoubtedly so in years of low streamflow.

Col. 8: Based upon virgin flow at Lee Ferry and computed under terms of the Colorado River compact and Upper Colorado River Basin compact. For purposes of this study it was assumed that at the end of 1942 there was 20 million acre-feet of storage in Glen Canyon Reservoir available as replacement for upper basin uses (this storage figure and therefore the depletion allowance is undoubtedly too high for the period of study).

Col. 9: Col. 7 minus col. 8.

Col. 10: Computed on the basis of consecutive 10-year periods reckoned in continuing increments of 10 years.

EXPLANATION

Col. 1: Reflects the historic flow of 45,000 acre-feet for possible future use in Colorado, based on operating year Nov. 1, 1900 to Oct. 30, 1900.	508,000
Col. 2: Based upon water available and diversion capacity as computed by Bureau of Reclamation.	23,000
Col. 3: Col. 1 minus col. 2.	224,000
Col. 4: Demand computed as follows (present and future):	66,000
Navajo irrigation project.	34,000
Hammond project.	885,000
Municipal and industrial.	100,000
Other Indian uses.	100,000
Reservoir evaporation.	785,000
Total	785,000
Less useable return flow 1.	100,000
Not demand.	785,000
1 Probably will be greater.	

Mr. MORRIS. Is it your understanding, also, that regardless of whether the second stage of the San Juan-Chama is ever constructed or not, that the \$3 million allocated for future uses in this bill will be repaid by power revenues available to New Mexico under the upper Colorado storage compacts?

Mr. REYNOLDS. That is my understanding.

Mr. MORRIS. I think that is all the questions I have at this time.

Mr. ASPINALL. The gentleman from Colorado.

Mr. CHENOWETH. Mr. Reynolds, I am glad to see you again. You have made a splendid presentation. In the interest of time I will ask just one question. I am not clear concerning your plans for the second stage. Is that something you plan in the near future or is it just something that is being talked about?

Mr. REYNOLDS. I don't think, personally, that is in the near future, Mr. Chenoweth. So far as the State's position is concerned, we feel that one cannot determine at this time where that block of water is going to best serve the needs of the people of the State of New Mexico, whether it will be in the San Juan Basin or the Rio Grande Basin. We do feel we must make it possible to bring that water into the Rio Grande Basin economically if it develops that water is best needed.

Mr. CHENOWETH. You will take 110,000 acres in the first stage?

Mr. REYNOLDS. Yes, sir.

Mr. CHENOWETH. The second stage you will take 235,000.

Mr. REYNOLDS. Yes. The second stage would add 125,000, to bring it to a total of 235,000.

Mr. CHENOWETH. Is the water available?

Mr. REYNOLDS. Yes, sir.

Mr. CHENOWETH. It is not a question of the water being available?

Mr. REYNOLDS. No, sir. It is a question of where this water can be best used to serve the interests of the State.

Mr. CHENOWETH. The question is where the water should be put to the best use?

Mr. REYNOLDS. Yes, sir.

Mr. CHENOWETH. That is the main issue involved?

Mr. REYNOLDS. Yes, sir.

Mr. CHENOWETH. You don't know the time involved?

Mr. REYNOLDS. That is right.

Mr. CHENOWETH. That is all, Mr. Chairman.

Mr. ASPINALL. The gentleman from California.

Mr. JOHNSON. I will yield to my colleague from New Mexico.

Mr. MORRIS. I ask unanimous consent that the statement of the city manager of Albuquerque be inserted in the record. He had to catch a plane.

Mr. ASPINALL. Unless there is an objection.

Mr. HOSMER. It is that whole handful of papers, reserving objection?

Mr. MORRIS. No, Mr. Chairman. This is several copies of the statement. It is rather short.

Mr. ASPINALL. Unless there is objection, it will be submitted for the record at the end of the questioning of Mr. Reynolds.

Hearing no question, it is so ordered. (See p. 162.)

Mr. JOHNSON. No further questions.

Mr. ASPINALL. T

Mr. NYGAARD. M

I was asked to hold testimony in the record to those who know the statement yesterday. I think it is entirely conceivable that one and, no doubt according to industry to provide for

Also, in the Navajo water for the irrigation definition of this in Navajo project that

I also have the presented that we and these various are tightly allocated for

I was wondering growth of population to care for those people is to be allocated to would have the present

Mr. REYNOLDS. I actually goes to come from Navajo Reservation of the Interior. As water, I have not been invite your attention select committee. I in San Juan County Bureau of Business

In an economy situation area, a depletion of needs of that many believe this also is in the neighborhood of

Obviously, it is and certainly I am water over and above in that area until 19

Mr. NYGAARD. So this one-half million I gather that they are going to jeopardize the use of the there any chance of

Mr. REYNOLDS. I tried to state here Mexico could be used. Certainly, our law provides

also, that regardless of Chama is ever constructed are uses in this bill will be Mexico under the upper

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r. Reynolds.  
See p. 162.)

Mr. ASPENALL. The gentleman from North Dakota.

Mr. NYGAARD. Mr. Reynolds, I was asking a question yesterday and I was asked to hold the question until today, and it pertains to the testimony in the record that has not been made clear to me yet. Maybe to those who know the history of the legislation it has. In Mr. Utton's statement yesterday he indicated that San Juan County, which presently has approximately a 50,000 population, by the year 2000 will conceivably be one-half million, which will be an increase of 450,000 and, no doubt accompanying that, there naturally will have to be industry to provide for the living and income of that many people.

Also, in the Navajo Indian project we are attempting to provide water for the irrigation of Indian lands. I believe according to the definition of this it is approximately 60 percent of the water of the Navajo project that is to be used for that purpose.

I also have the understanding from the testimony that has been presented that we are in a tight situation as far as water is concerned and these various drops of water as they come over have been very tightly allocated for various uses.

I was wondering what the problem would be in the future as to the growth of population here and as to where the water would come from to care for those people. Would it be extracted from the portion that is to be allocated to the Indians for irrigation on their lands? Who would have the preference in the use of this water, in other words?

Mr. REYNOLDS. I think the question of preference of use of water actually goes to contracts with the Secretary. That is, uses of water from Navajo Reservoir must be under contract with the Secretary of the Interior. As to the number of people that might need this water, I have not been able to check Mr. Utton's figure. I would invite your attention to a figure that we have presented to the Senate select committee. We show an estimated population of 227,500 people in San Juan County in 1980. This figure was provided me by the Bureau of Business Research at the University of New Mexico.

In an economy such as that presently existing in the Albuquerque area, a depletion of about 22,000 acre-feet per year would care for the needs of that many people. I am familiar with another figure. I believe this also is in the files of the Senate select committee. This is in the neighborhood of 130,000 people in that basin by the year 2000.

Obviously, it is very difficult to make such population projections, and certainly I am not able to do it. I would say that there is ample water over and above the needs of the Indians for the requirements in that area until 1980 and then some left.

Mr. NYGAARD. Suppose we use the hypothetical case that there be this one-half million people and there is need of water for the people. I gather that they have priority on the water use. Are we in any way going to jeopardize the amount of water that by increases in population to the use of the Navajo Indians on their irrigation project? Is there any chance of that happening?

Mr. REYNOLDS. I don't believe so. Certainly as Governor Mechem tried to state here yesterday, any of the water in the State of New Mexico could be used for municipal and industrial purposes. Certainly, our law provides that water can be transferred from irrigation

use to any other use, municipal or industrial, if such transfer does not impair other existing rights.

Certainly, our cities have the power of condemnation that they may use in acquiring water for the needs of the municipality. I might point out, and I think we are talking about something many decades from now, there are some 90,000 acre-feet of water presently being used in the San Juan Basin in New Mexico, largely in irrigation. That is other than these projects we are talking about here. Certainly, way on down the line somewhere, I think we are going to find there will be transfers from irrigation to municipal and industrial use if these population projections that put a half million people in San Juan County are right. But I think it is a long time away.

Mr. NYGAARD. There is not anything in the future that is possibly foreseeable that would take place? The reason for asking this question is that one of the major reasons for the Navajo Indian portion of this legislation is to provide a better livelihood for them. The thing that was disturbing me a little bit in this connection is that supposing that we provide water in this area, that there should be a promotion of other industries, and there are a lot of minerals in that area that could provide for mining and other types of industries, that by bringing this water in for the Indians that we could entice a number of other people, perhaps accidentally, and eventually we would have to take the water away from the Indians. What would be the outcome of the motives of this committee in that respect?

Could they be disturbed through that happening? I know that I am talking about things that are a bit possibly illogical, but in case those events occurred, our duty as a committee is to do something primarily for the Indian in this project.

We want to see that is protected. That is the reason for asking this question.

Mr. REYNOLDS. Certainly, I don't think they can be divested of their rights in New Mexico.

Mr. NYGAARD. That is one of the points that were brought out, too, yesterday. That is the matter of New Mexico law in regard to the treatment of the Indians. That was another purpose in asking this question. Thank you.

Mr. ASPINALL. The gentleman from California, Mr. Saund.

Mr. SAUND. Mr. Reynolds, you mentioned the name of a Mr. Blaney. You say that he, in your opinion, would be the most reliable authority on the supply of water, is that not correct?

Mr. REYNOLDS. Yes, sir. I consider Mr. Blaney an eminent authority on the subject of the consumptive use requirements of crops in irrigated areas.

Mr. SAUND. I thought you were talking about the supply of water.

Mr. REYNOLDS. No, sir.

Mr. ASPINALL. Thank you very much, Mr. Reynolds.

Thank you, Mr. Hale.

Mr. REYNOLDS. Thank you very much for the opportunity, Mr. Chairman.

(The statement of Edmund L. Engel, city manager, Albuquerque, N. Mex., follows:)

## STATEMENT

Mr. Chairman and I am city manager of the city of San Juan County, Rio Grande.

The order is for the area, part of the Valley. Deficit in the growth of

Albuquerque reservoir of this source to

Albuquerque's area, however limited. The Mexico are dependent on the Chama project. Development of the needs and the Albuquerque stand

The year 1950 water consumption systems of the city plan

Water consumption year. The average assumption was for public uses

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The official limits of 201,188

Estimates of future employment of metropolitan area minimum and maximum

Water use in rate of 4 gallon per capita in sanitary and refrigeration

for Albuquerque use of 4.15 gallon per capita use of 275 gallon per capita

Total water use projected on the 147,000 to 172,000 population. The

\* Population statistics Herkenboht, "Technique of Albuquerque, N. M. Metropolitan Area 1950-1970." Bureau of Economic Information. \* Leo W. Jackson, Symposium on Problems for Arid Resources

## STATEMENT OF EDMUND L. ENGEL, CITY MANAGER OF THE CITY OF ALBUQUERQUE

Mr. Chairman and members of the committee, my name is Edmund L. Engel and I am city manager of the city of Albuquerque, N. Mex. I am here in behalf of the city commission and the citizens of Albuquerque to support the proposed San Juan-Chama transmountain diversion project which would enable the transfer of San Juan River water to the Rio Grande River for use by residents of the Rio Grande Valley.

The orderly development of water resources is of major significance to urban areas, particularly those located in arid regions such as the Upper Rio Grande Valley. Deficiency of water supply in these regions can severely alter or inhibit the growth pattern of cities and surrounding economically dependent areas.

Albuquerque's chief source of water supply at present is the underground reservoir of the Rio Grande depression. In recent years, the city has developed this source to a high degree in order to meet the increased water needs of Albuquerque's rapidly expanding population. Slowly dropping water tables in the area, however, indicate definitely that the underground water supply is limited. The continued growth and prosperity of Albuquerque and central New Mexico are dependent on the development of water resources to supplement those of the underground basin. The city of Albuquerque feels that the San Juan-Chama project is the most feasible method of supplementing its water supply. Development of this resource is contingent on decisions of the National Government and for this reason I want to give the committee an estimate of future water needs and the implications of Federal Government activities within the Albuquerque standard metropolitan area.

## FUTURE WATER NEEDS

The year 1956 has been selected as the base year on which estimates of future water consumption are projected. Population served by public and private water systems of the Albuquerque standard metropolitan area in 1956 was estimated by the city planning department to be 210,000 people.

Water consumption for nonagricultural purposes totaled 56,100 acre-feet that year. The average daily consumption was 41 million gallons. Per capita consumption was 195 gallons each day. This figure includes industrial, commercial, and public uses of water.

The quantity of water needed by the Albuquerque area in the future will depend on the size of the population to be served and its pattern of consumption.

The official 1960 census indicated a population within the Albuquerque city limits of 201,189. The population of the standard metropolitan area was 262,199. Estimates of future population, based on current growth trends and projections of employment opportunities, indicate that by 1975 the Albuquerque standard metropolitan area will have between 475,000 and 562,000 persons.<sup>1</sup> These are minimum and maximum estimates based on different methods of computation.

Water use in arid regions has been shown to increase at an average annual rate of 4 gallons per capita per day.<sup>2</sup> This results from technological developments in sanitation, new household appliances, increased use of air conditioning and refrigeration and changes in water use habits. Actual consumption figures for Albuquerque show an average annual rate of increase in daily per capita use of 4.15 gallons. Projected to 1975 this trend will result in a rate of water use of 275 gallons per capita per day.

Total water use in the Albuquerque standard metropolitan area during 1975, projected on the basis of estimated population and per capita use, will be from 147,000 to 172,000 acre-feet. The lower figure is based on the minimum estimated population and the higher figure is based on the maximum estimated population. These figures are summarized in table I.

<sup>1</sup> Population studies used in determining these figures are: Daniel A. Evatt and Gordon Herkenhoff, "Technical Financial Report on the Water and Sewer Systems of the City of Albuquerque, N. Mex.," September 1956. Ralph L. Edgel, "Projection of the Population of Metropolitan Albuquerque to the Year 2000 A.D.," dittoed pages with tables, May 17, 1956. Ralph L. Edgel, "Projection of Population for New Mexico Counties to 1965," Business Information Series, No. 33, June 1957.

<sup>2</sup> Leon W. Jackson, "Municipal and Industrial Water Requirements and Problems." A Symposium on Problems of the Upper Rio Grande: An Arid Zone River, U.S. Commission for Arid Resource Improvement and Development, Publication No. 1, 1957, p. 17.

TABLE I.—Estimated water use and population, Albuquerque standard metropolitan area, 1956 and 1975

	1956	1975
Population served.....	210,000	475,000-562,000
Water needs:		
Per capita.....gallons per day..	195	275
Total annual demand.....acre-feet..	56,000	146,000-172,000

The average daily usage for the Albuquerque standard metropolitan area in 1975 will be between 131 and 153 million gallons. During the peak consumption period of mid-summer, water consumption is double the annual daily average. Based on the maximum estimated population, peak daily water consumption in 1975 will be 306 million gallons. The maximum capacity of the city water system now is 111.7 million gallons per day. The city water system will have to be expanded to more than twice its present capacity if it is to meet 1975 needs.

## EMPLOYMENT AND INCOME ANALYSIS

The influence of Government activity in Albuquerque is quite significant. In 1956, 22,100 of 71,100 employed persons in the Albuquerque standard metropolitan area worked for units of Government.<sup>3</sup> Of these, 16,675 were employed by the U.S. Government.

In addition to direct Government employment, Government expenditures for defense purposes contributed indirectly to other employment, principally two large manufacturing firms which worked entirely on Federal defense contracts. Direct and indirect Government employment accounted for 31.1 percent of total employment in 1956. When basic employment is considered, the percentage is higher. (Basic employment is concerned with goods, services, and capital for export to consumers outside the Albuquerque standard metropolitan area.) The National Government alone contributed directly and indirectly some 60 percent of total basic employment. Direct and indirect income payments by governmental agencies constituted 51.6 percent of total income payments (33.8 percent direct and 18 percent indirect).

The ratio of employed persons to the total population of Albuquerque in 1956 was 1 to 2.96. By applying this ratio to the number of employees paid either directly or indirectly by the National Government it can be estimated that these payments supported approximately 74,000 persons. These 74,000 persons used approximately 19,635 acre-feet of water—or approximately 35 percent of the total amount of water used.

## NATIONAL DEFENSE REQUIREMENTS

The Rio Grande Valley in New Mexico has three major areas where the impact of national defense operations on the economy is significant. These are the Atomic Energy Laboratories at Los Alamos; the combined Kirtland Field-Sandia Base installations at Albuquerque; and the Holloman Air Force Base—White Sands Missile Range near Alamogordo and Las Cruces. These installations make the middle Rio Grande Valley one of the most vital areas in the national defense program. Their water problems are definitely interrelated with those of the Rio Grande underground water basin and thus are a part of the complex pattern of development which has occurred throughout the valley.

Long before the establishment of the national defense installations the surface waters of the Rio Grande were fully appropriated. Since the Rio Grande Compact was ratified in 1938, every new application to appropriate waters from this stream has been protested and denied.

The defense installations have contributed their share to the water supply problems of the basin. Persons involved in national defense activities in 1956 used 19,635 acre-feet of water in the Albuquerque area. Los Alamos, a city of 13,037 and completely a defense installation uses in excess of 2,000 acre-feet of water per year. Similarly, at Las Cruces the water used by the increased population brought in by defense activities is estimated to be at least 2,000

<sup>3</sup> Andrew W. Wilson, "The Economic Supports of Albuquerque, N. Mex.," city of Albuquerque, planning department, unpublished report.

acre-feet annually. water consumption quereque to plead it

The future need Without referring t tions normally can in water needs. At requirements, some

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We need your I thank you for tunity which is m standard metropo persons to the no San Juan-Chama to pay for the wa

Mr. ASPINALL Mr. HOSMER, to make a wha letter that I sen day I had not r ceived a wire f ent, he says th Kuchel with re

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ALYSIS

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Albuquerque, N. Mex., city of Albu-

acre-feet annually. Coming from a fully appropriated stream, this amount of  
water consumption is significant and, in itself, is an adequate basis for Albu-  
querque to plead its cause.

The future needs of these defense installations are even more important.  
Without referring to any specific plans, we can point out that all such installa-  
tions normally can expect a reasonable rate of growth and a reasonable increase  
in water needs. At the same time, it is only prudent to prepare for unforeseen  
requirements, some of which might be quite large.

In summary, I want to emphasize three points: First, authorization of the  
San Juan-Chama diversion project is essential to protect all of the present water  
users as well as to assure a firm supply for the defense installations in the  
Rio Grande Basin; second, Federal activity has played an important part in  
the expansion of demands for Rio Grande Basin water; and third, development  
of all available water resources is necessary for continued improvement of the  
economy of the cities and villages of the Rio Grande watershed.

This is not to assume that Albuquerque's future growth will be conditioned  
on corresponding expansion of Government services. Permits for commercial  
and residential construction issued by the city building department during 1958  
totaled \$66,635,404 compared with total building permits of \$36,327,748 in 1957.  
During 1959, permits for building construction totaling \$69,660,284 were issued.  
This demonstrates a remarkable growth in Albuquerque's economy, especially  
when it is remembered that 1958 was a year in which Government operations  
were not expanded in Albuquerque and the rest of the country was experiencing  
a recession.

To maintain this rate of growth, water supplies in Albuquerque must be  
greatly expanded. The city has a master plan for expansion of its water facilit-  
ties. The gradually falling level of ground water in the Rio Grande Basin, how-  
ever, indicates that this source of water can be depleted. Only by obtaining  
its proposed share of San Juan River water can Albuquerque cope with its  
greatly expanding needs.

On behalf of the citizens of Albuquerque, I urgently request this committee  
to weigh the evidence and remember that your action today will have tre-  
mendous significance for the growth and prosperity of Albuquerque and New  
Mexico tomorrow.

We need your help now.

I thank you for the privilege of appearing before you today and the oppor-  
tunity which is mine to plead the cause of some 262,000 people in the Albuquerque  
standard metropolitan area who speak not only for themselves but for those  
persons to the north and south of them who urgently need the water from the  
San Juan-Chama project. The city of Albuquerque is ready, willing, and able  
to pay for the water it will receive under this project. Thank you again.

Mr. ASPINALL. The next witness is Pablo Roybal, of Nambe, N. Mex.

Mr. HOSMER. While the witness is coming forward I would like  
to make a unanimous consent request and state that it relates to a  
letter that I sent on April 11 to the Governor of California. Yester-  
day I had not received a reply and I sent him a wire and today I re-  
ceived a wire from him in reply. For the information of those pres-  
ent, he says that he is taking the same position as Senators Engle and  
Kuchel with respect to these projects and adds:

It is my understanding that both Senators Kuchel and Engle have voted on  
the San Juan-Chama and Navajo projects. They were convinced, as I am, that  
it does not harm California's position in any way.

I think the people who come here from New Mexico are entitled  
to know what the Governor's attitude is. I believe it is ill-advised  
because in effect it repudiates the recommendation of the amendments  
that are sought by the Colorado River Board, and it will be my inten-  
tion to disregard the Governor's statement and continue to press for  
the necessary and reasonable protection of the vital interest of Cali-  
fornia and its many interests in this water.

I ask unanimous consent to include at this point my letter of April 11, my reply to the Governor of April 24 and the Governor's reply of April 25.

Mr. ASPINALL. Without objection, it is so ordered and it will be placed in the record at this point.

(The letters and telegrams referred to follow:)

WASHINGTON, D.C., April 24, 1961.

Gov. EDMUND BROWN,  
The Capitol, Sacramento, Calif.:

Navajo and San Juan Chama hearings on new Upper Colorado River projects commence this morning. I still have no reply from you on my urgent request by letter dated April 11 for unambiguous statement of position of State of California respecting these projects. Please expedite reply.

Congressman CRAIG HOSMER,  
18th District, California.

APRIL 25, 1961.

Hon. CRAIG HOSMER,  
Washington, D.C.:

As I stated publicly in a widely reported Washington, D.C., press conference last Wednesday, I am taking the same position as Senators Engle and Kuchel with respect to these projects. We conferred and agreed that while we intend to work to protect California's water supply in every way, we do not wish to take the obstructionist position of opposing all Upper Colorado River projects. We believe each project should be considered on its own merits. It is my understanding that both Senators Kuchel and Engel have already voted on the San Juan-Chama and Navajo projects. They were convinced, as am I, that this does not harm California's position in any way. We are further convinced that an official California stand against all such projects regardless of their merit or their impact on California's water supply would be extremely damaging to efforts to obtain projects, including many designed to assure adequate water supplies for southern California. Letter follows.

Sincerely,

EDMUND G. BROWN, Governor.

HOUSE OF REPRESENTATIVES,  
Washington, D.C., April 11, 1961.

Re Upper Colorado River projects.

Hon. EDMUND G. BROWN,  
The Capitol, Sacramento, Calif.

DEAR GOVERNOR: The following bills are before the Congress involving varying annual increased utilization of Colorado River water by upper basin States: San Juan-Chama-Navajo, costing \$221 million and using 110,000 acre-feet of water; Savery-Pothook, costing \$25 million and using 35,000 acre-feet of water; Fryling Pan-Arkansas, costing \$170 million and using 69,000 acre-feet of water.

As you know, these are the immediate projects up for authorization and behind them are a long series of additional water-consuming proposals.

Two weeks ago California's congressional delegation met with representatives of the State water resources office, your attorney general's office, and the Colorado River Board. The general seriousness of the situation on the Colorado for southern California was outlined in context of the special master's recommendations in the case of *Arizona v. California*.

The Colorado River Board representatives suggested that our delegation oppose further developments on the Upper Colorado until the Supreme Court makes its decision in *Arizona v. California*, at which time the water available to States along the river may become determinable. The State water resources director and the representatives of the attorney general's office declined to approve or disapprove of the Board's position.

During the course of the two meetings between members of the delegation and these groups from California, I pointed out that the Colorado River Board speaks for a subdivision of the States. It cannot fix and establish a position for the State as a whole which California's 2 Senators and 30 Congressmen can

look to for guidance in the aforementioned.

It was brought to the attention of the Congressmen that other projects in California are being considered by Congressmen quite like yours' legislative action. Other Upper Colorado River projects are being prevented from coming to agreement, however vigorous the prevention authority.

In short, if projects until they require unity can only be matter backed to other States.

For your information, California has the other for State can do of California enunciated by

In request policy as to substantially the congressional Colorado project to southern this water supply establishing men that build these do it. They select the let

"In any emergency moratorium. In effectual be distressed action may Federal rec

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look to for guidance in regard to their individual decisions to support or oppose the aforementioned bills.

It was brought out during the sessions that opposition from California Congressmen to these bills might well result in concerted opposition by delegations from other reclamation States by way of retaliation to further reclamation projects in California. This would adversely affect the interests of California Congressmen who may be seeking such projects. I fully agree that such retaliation quite likely might be the result. I pointed out, however, in light of prior years' legislative history in connection with the Upper Colorado project and other Upper Basin projects, that unless the State's congressional delegation comes to agreement to oppose such projects substantially as a bloc, opposition, however vigorous, by only a part of the State's delegation has little chance to prevent authorization of additional Upper Basin projects.

In short, if the Colorado River Board's request for a moratorium on such projects until the Supreme Court makes its decision is to be effectuated, it requires unity amongst the California congressional delegation, and that unity can only be achieved if California's Governor enunciates a State policy on the matter backed up by his authority to speak for the whole State in its relationship to other States and to the Federal Government.

For your information, I expressed the thought during these discussions that California has for a long time tried to keep one foot in the Colorado River and the other foot in the reclamation money trough; that the day is passed when the State can delay a choice between one or the other; that what affects one part of California affects the whole State; that the choice should be made and enunciated by you and that it probably should be made on the basis of economics.

In requesting your State water resources director for an expression of State policy as to the temporary moratorium, and as to policy thereafter, I said substantially this: "Refusal by you promptly to establish such a policy will leave the congressional delegation divided in its stand and permit building of more Upper Colorado projects which in turn will diminish Colorado River water supplies to southern California. It will cost considerable amounts of money to replace this water source, assuming even that it can be replaced. On the other hand, establishing such a policy could lead to retaliation by other States. This could mean that California would have to spend considerable amounts of money to build these reclamation projects rather than getting the Federal Government to do it. Therefore, your course might be to calculate each of these costs and select the least costly alternative."

"In any event, you cannot escape responsibility. If you fail to call for a moratorium, that very inaction will amount to a choice because it will result in effectual opposition to Upper Basin developments and the consequences will be distress to one section of the State. If you do call for a moratorium, that action may result in disappointment to other sections of the State desiring Federal reclamation projects."

"I do not envy you in the dilemma you face. It is a difficult decision either way. I do, however, urge that you decide quickly. The San Juan-Chama-Navajo bill has already passed the Senate and is up for hearings in the House Committee on Interior and Insular Affairs commencing April 24. Guidance from you should be in our hands prior to that date as to the moratorium matter. I would hope that you could establish policy as to the longer range immediately following the Supreme Court's decision."

It is to be noted that following the Washington discussions, Attorney General Mosk sent a memorandum to the delegation under date of April 4, 1961, in which he sets out the disturbing situation on the Colorado and declines to take a position with respect to the above-mentioned bills by stating: "I am confident that each member of the California delegation, if possessed of the full facts, will discharge his individual responsibility wisely \* \* \*"

It is apparent that Mr. Mosk misconceives the actual location of the necessary decision in this matter. It is not in Washington in the individual Congressman's and Senator's offices. It is in Sacramento, in your office, and on you.

In closing this memorandum Mr. Mosk said: "One solution would be to defer action on any new Colorado River Basin project until the decision in *Arizona v. California* becomes final, probably not more than a year from now. Another solution would be to require, as a prerequisite to authorization of any new project, a complete inventory of the water supplies of the Colorado River Basin and a legislative determination which would preclude the possibility of over-commitment of the limited water resources."

PROJECT

print my letter of April  
the Governor's reply of

ordered and it will be

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W., D.C., April 24, 1961.

Colorado River projects  
on my urgent request  
of position of State of  
reply.

CRAIG HOSMER,  
District, California.

APRIL 25, 1961.

W., D.C., press conference  
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G. BROWN, Governor.

REPRESENTATIVES,  
W., D.C., April 11, 1961.

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Immediately following, Mr. Mosk went on to say:  
 "The difficulties inherent in the later solution are very great, prior to the decree, in view of the uncertainties inherent in the litigation. Therefore, I think it can best be left to the judgment of our delegation what course to pursue in the light of the precise legislative proposals that may be made in the interval before *Arizona v. California* is decided."

I presume Mr. Mosk speaks for you in this matter, but he does not appear to speak clearly.

Does this mean you already have made your decision? Is it, for all practical purposes, that you and your administration repudiate the request of the Colorado River Board? Or, do you desire the California delegation in Congress to function as an effective unit to attempt to keep new projects off the river pending the Supreme Court's decision?

Again, may I request your early and unambiguous reply.

Cordially,

CRAIG HOSMER,  
 Member of Congress.

Mr. ASPINALL. You may proceed with your statement, Mr. Roybal.

#### STATEMENT OF PABLO ROYBAL, OF NAMBE, N. MEX.

Mr. ROYBAL. Mr. Chairman and members of the committee, I am Pablo Roybal and I am a farmer living in Nambe, N. Mex. I was born and raised in this community and graduated from New Mexico College of Agricultural and Mechanical Arts at Las Cruces, N. Mex. By Texas or Kansas standards I am a very small farmer, but there are no big farms in our entire area. Nambe is one of many little farming communities which have existed along the tributary streams of the Rio Grande since the colonization by the Spanish over 300 years ago. The area is now populated by the Indians of seven pueblos, by a large number of Americans of Spanish descent, and by a rapidly increasing number of "Anglos," many of whom have come here to work at the Atomic Energy installation at Los Alamos.

This is and always has been an agricultural area, but an existence dependent on the agriculture has always been marginal. One can best understand our problems by flying over the area in an airplane. The Rio Grande, which here is at an elevation of about 5,500 feet, runs down the middle of the valley with flat but semiarid land on either side extending to the mountains which rise to more than 13,000 feet. The river is fed from both sides by numerous small tributaries which through much of the year appear as dry watercourses. Looking down from the airplane most of the land is dry and brown, capable of supporting only pinon, juniper, sagebrush, and cactus. The river and the little streams, however, are fringed with green indicating the fields and orchards of thousands of little farmers like myself.

These farmers have been trying to support themselves and their families in this region for centuries. The Indians were irrigating fields of corn and a primitive kind of squash 700 years ago, and most of the present acequias, the irrigation ditches, were established when the land was under the Spanish crown. In no part of this area can human existence be maintained without water either from the streams or from wells.

Each year the spring runoff fills our streams with far more water than can be used for irrigation. This excess water, which would be

except for the flat. These storms are they cause terrific tion of silt down Rio Grande at Al section of the city.

Public Law 560-vention Act as a cannot permit his watersheds in que water from the s irrigation through the destructive su

Under the term small tributary s an understandable ers in southern N rights. But we a cannot use much o

The San Juan-C that it does includ streams. The ade Grande Rivers fr be done without ba

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CRATO HOSMER,  
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BE, N. MEX.

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except for the flashfloods resulting from the frequent thunderstorms. These storms are not only destructive to the local ditches but also they cause terrific erosion of valuable soil with resulting transportation of silt downstream. Because of this silting the riverbed of the Rio Grande at Albuquerque is some 6 feet above the level of a large section of the city.

Public Law 566, the Small Watershed Protection and Flood Prevention Act as amended will do much to aid the landowner but it cannot permit him to use more water than he gets now. Most of the watersheds in question are on Federal land. The ability to impound water from the spring runoff, however, would give ample water for irrigation through the growing season and give added control to the destructive summer floods.

Under the terms of the Rio Grande compact of 1939, we on the small tributary streams are forbidden to impound any water—this is an understandable and necessary protection for the farmers and ranchers in southern New Mexico and Texas and we desire to respect their rights. But we are hurting and our crops are suffering because we cannot use much of the water in our own streams.

The San Juan-Chama project offers the solution to our problem in that it does include provision for impounding water in the tributary streams. The additional water diverted into the Chama and the Rio Grande Rivers from the San Juan area would assure that this could be done without hurting our friends farther south.

The San Juan-Chama project is terribly expensive and one should consider seriously whether the area to be benefited is really worth salvaging. It is the oldest continuously populated area in the United States, but is classed by the State employment security commission as a labor depressed area and parts of the area have recently been designated by the Federal Government as requiring the distribution of surplus foodstuffs. The average farm income in this region is less than \$400 a year. This is in spite of the fact that surveys by the Soil Conservation Service have classed the soils as some of the best in the Nation.

Existing records and even the memories of some of our older citizens indicate that in years past these streams ordinarily ran with an acceptable flow during the entire summer. That the streams now carry less water cannot be blamed on the weather but on a complex combination of ecological factors, some of them natural and some manmade. Past grazing has eliminated much grassy cover and replaced it with many phreatophytes, the trees and shrubs which extract enormous quantities of water from underground. Manmade wells caused little effect for many years but now the withdrawal of water for domestic use, for irrigation, for industry and for our large and vital military and atomic energy installations is lowering water tables to a significant degree. This is more than a local problem and affects certainly a half million people in northern New Mexico alone.

The result of these conditions in our valleys is an increasing dependence on Federal aid and welfare payments by the State. In Rio Arriba County alone welfare payments for direct relief total well over a million dollars a year. As for population, we are in one of the fastest growing areas of the country. The shortage of water is keeping our farmers living a submarginal existence as second-class citizens.

Our needs are quite comparable to those in the cities for slum clearance except that with us the provision of adequate water for irrigation will permit our people to continue to occupy land which has been in their families for many generations. These are proud people but discouraged by the inability to utilize the water that flows down their streams in the spring. Also they are largely poor people who certainly cannot afford deep wells for irrigation. And even if they could put down such wells this would in time only intensify the problem by lowering the water table even further.

This is good land, able to produce large crops of fruit, alfalfa, and vegetables if it has enough water. In most of our little valleys the land could produce four times as much as it does now if there were an adequate and dependable water supply. Those crops would in turn sustain and restore self-respect to a population group of predominantly Indian and Spanish descent but just as American as any others.

Many parts of the United States are looking forward to serious water shortages and it is obvious that these problems must be met with bold and courageous measures designed to conserve our existing water supplies and develop new ones. The San Juan-Chama project is far less bold and daring than some of the other projects which will be proposed in the next 25 years, but it offers the solution to one pressing problem. Any depressed area will ultimately have an adverse effect on more fortunate regions nearby. We want to pay what part of the cost we can so that we may regain our self-respect and become substantial and productive citizens, so that our children and grandchildren can live on their own land with a pride which is the right of every American.

I appreciate the opportunity to present this statement and urge your support of the San Juan-Chama project. If there are any questions I might answer, I will be glad to do so.

Mr. ASPINALL. Your testimony substantiates the statement which has been made heretofore that you do not contemplate growing crops which are in surplus.

Mr. ROYBAL. That is correct.

Mr. SAYLOR. How big is the average farm that you refer to in this district?

Mr. ROYBAL. In my area I would say the average farm runs just a little over 10 acres, small farms.

Mr. SAYLOR. What do you grow in these crops?

Mr. ROYBAL. We grow mostly fruits, vegetables, and things that we consume locally.

Mr. SAYLOR. You say the average farm income is less than \$400 a year. Is that correct?

Mr. ROYBAL. That is correct. That is a very small amount. We have to supplement that income by outside-of-farm work.

Mr. SAYLOR. How do you mean outside farm work?

Mr. ROYBAL. Off-the-farm work.

Mr. SAYLOR. In other words, your principal source of income has to be off the farm rather than on it?

Mr. ROYBAL. It does not take an awful lot of living in that country, and there is some outside work.

Mr. SAYLOR. The Reclamation Act for the development of most of the land in the compact between the headwaters.

Mr. ROYBAL. That we could supplement asking for a store for 2,400 acres of

Mr. ASPINALL. Not, thank you very

The next two Andres Martinez.

#### JOINT STATEMENT

Mr. CATER. Mr. Martinez and I have a

To assist you in your background in

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Mountains.

Sheep, beef and stock. In recent

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The soils in the productive when irrigated

The central part of the United States acres under culture

Mr. SAYLOR. The reason that you are not able to use the Small Projects Act for the development of the water in your area is that, first, most of the land is owned by the Federal Government and, secondly, the compact between the United States and Mexico forbids in storage in the headwaters?

Mr. ROYBAL. That is correct. The reason is the compact and if we could supplement that which you will see on the bill, we are only asking for a storage of 1,500 acre-feet of water, which is very small for 2,400 acres of land which we cultivate under the Micauca unit.

Mr. ASPINALL. Are there any other questions of Mr. Roybal? If not, thank you very much for your presentation.  
The next two witnesses will be Mr. William B. Cater and Mr. Andres Martinez.

JOINT STATEMENT OF W. P. CATER AND ANDRES A. MARTINEZ,  
TAOS COUNTY, N. MEX.

Mr. CATER. Mr. Chairman and members of the committee, Mr. Martinez and I have a joint statement.  
To assist you in considering this bill, I wish to present the following background information:

Taos County is located in the north-central part of New Mexico, in a declared low-income area. The present population is about 15,700, almost 2,000 less than in 1950.

The lowest elevation in the county is 6,500 feet, and the highest is at the top of Wheeler Peak, which is 13,151 feet. Most villages lie at elevations ranging from 7,000 to 7,500 feet. Due to the fact that the county is situated in a mountainous area, the crop growing season ranges from 90 to 110 days. This makes it difficult for farmers as they can only plant short growing season crops. Average annual precipitation in the average elevation zone is about 12 inches. In the high mountains precipitation may exceed 40 inches. In 1960 precipitation was below normal.

According to the 1959 Census of Agriculture, there are now only 693 farms in the county. This reduction from 1,082 was due to the change in the definition of a farm between 1954 and 1959. There are 379 farms that range from 10 to 49 acres, and 46 farms below 10 acres. Total land area in the county is 1,443,840 acres. Nearly 600,000 acres are federally owned and over 500,000 acres include farmland classified as cropland, pastureland, woodland, et cetera. Of the privately owned land, approximately 40,000 acres are under irrigation. Irrigation of this land is by direct diversion from the numerous streams that flow into the Rio Grande from the Sangre de Cristo Mountains.

Sheep, beef cattle, and milk cows make up most of the county livestock. In recent years, several county farmers and ranchers had to reduce their livestock, especially sheep, because of drought and overgrazed range conditions.

The soils in the irrigated areas are chiefly alluvial and highly productive when irrigation water is available.

The central part of Taos County is one of the oldest settled regions of the United States. In this area there are approximately 14,000 acres under cultivation which are served by 62 community ditch sys-

tems. These ditches divert irrigation water from the numerous small streams that flow into the Rio Grande. Water rights in this area date back to 1740 when the first agreement was reached with regards to the use of water between the Pueblo Indians and the Spanish colony of Taos. Numerous water rights were filed after that date and all water use prior to 1907 was adjudicated under the Rio Grande compact before construction of the Elephant Butte Dam, and this was when our water troubles started.

Studies made indicate that at present there is not enough water to properly irrigate the present 14,000 acres, but under this diversion project there would be sufficient water to irrigate 20,000 acres in this area. Under the provisions of the Rio Grande compact we cannot now build storage reservoirs, but must deliver the water to our neighbors from the lower Rio Grande of New Mexico and Texas.

We have an oversupply of water in the spring but the supply is short during the critical part of the growing season, which is June and July. This oversupply has led to a practice of applying large amounts of irrigation water in the early part of the growing season, resulting not only in injury to the land and crops but also to inefficient use of our water resource.

Under present conditions, heads of farm families depend almost entirely on outside work for a living. However, if these communities had sufficient irrigation water, the farm families could raise garden crops to can, dry, and freeze. We could even sell to local merchants who now purchase fresh vegetables from Arizona, Texas, and California. With plenty of irrigation water, there would be worlds of opportunities for all these people to stay in their lovely valley instead of having to go out with their entire families to obtain seasonal work in other States. Water is sorely needed. We have the land, but where is the water?

The per capita average income for our county is about \$659, while for the State as a whole it is about \$1,600; this against a national average per capita income of \$1,920.

Statistics show that 85 percent of our high school graduates leave the county within 3 months after graduation and another 10 percent leave the county within 2 years.

You can see that the situation in the area is bad. We believe, therefore, that the San Juan-Chama-Trans-Mountain diversion, and our case, the Taos and Cerro units of the project proposed by the bill will provide a way to greatly improve the economic condition of our people.

This bill would permit construction of dams in our streams so that we could hold back the heavy spring runoff and use it for irrigation in the late part of our growing season. The water so stored would be replaced in the Rio Grande for existing rights lower down, by water brought over from the Colorado River through the Chama River. This increased storage of water in our area would permit our people to grow commercial vegetables and similar crops having a high cash value and thereby greatly relieve the present economic distress. This type of farming also requires a considerable amount of hand labor, and would furnish employment locally so that the people would not need to go away from the area to seek employment elsewhere.

We also believe the present bill with good structure efficient use of the of both soil and w

I believe that the main diversion project storage of water, assure us of sufficient throughout the additional storage permit putting into sagebrush.

The assurance would stop the problem in the season, and soil fertility. The produce and there

A more diversion project than is part of the fact that economically in a valley for by this bill will

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Mr. ASPINALL, if you could receive

We also believe that the construction of this project as set out under the present bill would, by rebuilding the present irrigation systems with good structures and better ditch grades, provide for a much more efficient use of the water, and a much greater degree of conservation of both soil and water.

I believe that the construction of the San Juan-Chama-Trans-Mountain diversion project and the Taos and Cerro units would permit storage of water in our area during the heavy spring runoff and assure us of sufficient water to properly irrigate the present acreage throughout the entire growing season. And that it would, through additional storage and more efficient management of the water, permit putting into production 15,000 acres of new land that is now in sagebrush.

The assurance of sufficient water throughout the growing season would stop the present practice of excessive application of water early in the season, and thereby prevent soil erosion, leaching, and loss of soil fertility. This would mean higher yields and better quality of produce and thereby increase the farmer's income.

A more diversified type of farming would be possible under this project than is possible under existing conditions. Our area, because of the fact that we have practically no commercial industries, is economically in a very bad way, and we believe that the project provided for by this bill would be a big shot in the arm in our area.

We could raise other crops such as beets, potatoes, onions, strawberries, apples, and numerous other crops in addition to our irrigated pastures; alfalfa and small grains which we are raising presently.

I know what can be done. On one farm north of Taos Valley, where there is a continuous supply of water, a farmer raises plenty of food for his large family. The family has a freezer overflowing with meats, green beans, asparagus, strawberries, raspberries, and more. This family eats well. Why? Because there is enough water when needed. Why does this family live in plenty, with a well balanced diet, and others live on dry beans, powdered chile, and potatoes, which they buy in the stores? Water is the answer.

The portion of the waters of the San Juan which would be diverted into the Rio Grande would accomplish the following in our area:

1. Permit the storing of irrigation water during the flood season.
2. Assurance of enough water to properly irrigate, throughout the growing season, the acreage now under cultivation.
3. Reclaim 15,000 acres of potentially productive land, which now is in nonproductive sagebrush rangeland.
4. In allowing for storage of water for future use, it would prevent the overuse of early surplus water.
5. It would encourage market gardening, and so, in increasing the salable output from the farm, the income of the farmer would be increased by a considerable amount.

And so, I respectfully urge your favorable consideration for the bill before you, which would permit construction of the San Juan-Chama-trans mountain diversion project.

I thank you for your courtesy, and the opportunity to appear before you in behalf of this bill.

Mr. ASPINALL. I find on page 4 of your statement you state that if you could receive this supplemental water that you would then be

able to diversify your type of farming, and you could raise such other crops as beets, onions, strawberries, and so forth. Would you find a local market for those products, local within the Albuquerque and Santa Fe area?

Mr. CATER. Yes sir, we would. I might add that the soil and climate conditions are very good for high-altitude vegetables.

Mr. ASPINALL. You heard the questions by Mr. Saylor a few moments ago of Mr. Roybal. Do you follow the same size farming?

Mr. CATER. The conditions are very similar although the altitude is a little higher.

Mr. ASPINALL. What is the average size of your farm?

Mr. CATER. The average size is about 20 acres. We have some larger farms but on the overall, they are about 20 acres in the county.

Mr. SAYLOR. How would you get this water to your land?

Mr. CATER. That would be by storage being permitted on the local stream and being replaced in the lower Rio Grande through the transfer through the diversion.

Mr. SAYLOR. This is an exchange proposition as far as the people in your area are concerned?

Mr. CATER. Yes, sir.

Mr. SAYLOR. In other words, the requirements that your streams present to the Rio Grande Basin could be supplemented out of the river of the San Juan-Chama's: is that correct?

Mr. CATER. Yes, sir.

Mr. SAYLOR. In view of the short growing period you have up there in that area, could you store sufficient water to take care of this?

Mr. CATER. Yes, sir, we have a very large runoff area in the high mountains immediately behind the valleys there so the runoff in the spring is extremely high.

Mr. SAYLOR. You would then run it from a dam or reservoir through ditches down into your own area?

Mr. CATER. Yes, sir, and part of the project would be to rebuild the ditches and put in a better distribution system which is vitally needed by the people.

Mr. SAYLOR. I might say to you from experience on this committee that this project is authorized for the benefit of the people up there in the district and if they can do it themselves, they will be a lot better off than having the Bureau do it for them. Very frankly, the engineering charges that the Bureau throws at you are enough to break the backs of farmers in small areas like this.

Mr. ASPINALL. Are there any other questions of Mr. Cater?

Mr. MORRIS. Mr. Chairman, I want to welcome Mr. Cater and Mr. Martinez and Mr. Roybal before the committee and for their testimony. They are all personal friends of mine in New Mexico and I have known them many years, and I have known of their great interest in this project.

Mr. ASPINALL. You gentlemen may have wondered what I said to Mr. Saylor a moment ago, and that is that he should be glad there are some irrigation benefits here.

Mr. SAYLOR. I am glad to know we are getting water on land. It is a strange thing, but the Bureau does not believe in that anymore.

Mr. ASPINALL. Thank you very much, gentlemen.

The next witness is Mr. Frederick V. Kroeger, representing the La Plata Water Conservancy District of Colorado.

STATEMENT

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STATEMENT OF FREDERICK V. KROEGER, REPRESENTING THE  
LA PLATA WATER CONSERVANCY DISTRICT OF COLORADO

Mr. KROEGER. I appreciate the time and courtesy extended to me since I have been here in Washington.

Mr. ASPINALL. Do you wish to read your statement?

Mr. KROEGER. Yes, please.

My name is Frederick V. Kroeger. I am a resident of the city of Durango, in La Plata County, Colo. I make this statement for and in behalf of the La Plata Water Conservancy District, which will include those lands in Colorado receiving benefits from the proposed Animas-La Plata project.

The district and its board of directors is greatly concerned over the possible conflict between the water requirements for the Animas-La Plata project and for the San Juan-Chama and Navajo projects.

The Animas-La Plata project is presently under study by the Bureau of Reclamation with the report scheduled for completion in June of this year. This project would serve lands within both Colorado and New Mexico.

Although Animas River water would not be directly used by either the San Juan-Chama or the Navajo irrigation projects, a possible conflict arises because of the need to supply water to a large area of New Mexico land, principally Indian, below the junction of the Animas and San Juan Rivers. Other large uses are also envisioned by the officials of that State. With the runoff of the main-stem of the San Juan River obligated for use upstream, by the San Juan-Chama and Navajo irrigation projects and other uses, the flow of the Animas River becomes involved in the supply of present, committed, and future uses in New Mexico.

In the interest of having an equitable and proper use of the runoff of the San Juan River, the district desires an opportunity of reviewing the study of the use of Animas River water by the Animas-La Plata project and determining the effect of water use by the proposed San Juan-Chama and Navajo irrigation projects on the availability of water supply for use by the Animas-La Plata project. The district has been advised that in water supply studies of the San Juan-Chama and the Navajo irrigation projects, no allowance was made for use of water by the Animas-La Plata project. In this regard, the physical availability of water was used as the only measure of water supply for these two projects. Even disregarding the requirements of the Animas-La Plata project in Colorado, water supply studies of the two proposed New Mexico projects indicate that shortages of the magnitude of 50 percent will occur in at least 3 consecutive years.

It appears that proponents of the authorization of the two New Mexico projects recognize that shortages of water supply will exist as the legislation includes provisions for sharing shortages. The proponents fail, however, to inform the committee of the magnitude of the shortages, nor do they give the committee any information on the relationship and probably decrease in water supply resulting from the use of Animas River water by the Animas-La Plata project or the other use in the State of Colorado as permitted under the compact.

The district suggests that for the protection of the large Federal investment in these two projects, the committee could well require that

it be fully advised on water supply availability, project water supply operation of Navajo Reservoir, the effect of the sharing-of-shortage principle on the water supply as given in the legislation and the responsibility, if any, of the Animas River in providing water for downstream San Juan River users resulting from the construction of the two projects and operation of the Navajo Reservoir. The San Juan-Chama initial stage, the San Juan-Chama ultimate stage, the Navajo irrigation project, the Hammond project, the Animas-La Plata project, all to be built as Federal projects, and other proposed uses of the San Juan River in New Mexico and Colorado, are involved in a division of the available runoff of the San Juan River. The effects on each project should be determined and reported on to the committee as a fully integrated operation study of the water supply of the river.

Without this type of study, there is no way of ascertaining the true availability of water supply or of knowing whether the proposed project uses are in keeping with water allocated under compact.

Unless opportunity can be provided for a careful review of water availability information as outlined above, the La Plata Conservancy District requests the committee to amend the proposed legislation to exempt the Animas River from any responsibility to make up the intolerable water shortages which are bound to develop from the construction of the projects in the proposed legislation.

Mr. ASPINALL. Could you define for me the meaning of the phrase, "intolerable water shortages," as used in your statement?

Mr. KROEGER. I referred up to above to shortages of the magnitude for 50 percent for 3 consecutive years, and this came from the study that was made by the Colorado State Water Board. The work was done by the water board engineer, Guildersleeve, and district engineer, Ray Williams and the Southwest water engineer, Clifford Jacks, and those shortages occurred in the years 1954, 1955, and 1956.

Mr. ASPINALL. I think I can advise you before final decision is made on this legislation, the committee staff, and if necessary, some special assistants working with the committee staff, will make a study of these different charts and findings that we have placed in the record today. We will do our best to coordinate the findings of Mr. Rider, the New Mexico chart, the Colorado chart and perhaps the study that Mr. Hosmer will wish to have presented to us representing the position of California. In other words, we, too, wish to satisfy ourselves with the availability of water for at least the projects that you mentioned (with the exclusion of the ultimate division of the San Juan-Chama). As you heard stated a while ago, that is so far in the future it should not have any effect so far as these other projects are concerned.

The Chair recognizes his colleague, Mr. Saylor.

Mr. SAYLOR. Mr. Kroeger, the section of the bill which has been referred to calls for the sharing of losses. This is the provision in this bill that you are particularly opposed to, is that correct?

Mr. KROEGER. We are concerned about the sharing of shortages. That is the lack of runoff in certain years.

Mr. SAYLOR. How much of the La Plata Water Conservancy District do you represent?

Mr. KROEGER. made up of about present time I think

Mr. SAYLOR. I

Mr. KROEGER. the project does 65,000 of which

Mr. SAYLOR. I ect? How could

Mr. KROEGER. many unexplained compact, the act age on the San Juan irrigation year Is this on a continuing what is the operation we cannot find the we would ask the ages if some re-Chama and the

Mr. ASPINALL. to this bill any effect upon any river in the law of those States

Mr. KROEGER. interpret it to mean be protected in would protect the lems are made of

Mr. ASPINALL. tempt to determine place in the State you want all right nullifying the water

Mr. KROEGER. Mr. ASPINALL. we can do it that Are there any

Mr. MORRIS. enough water, is

Mr. KROEGER. Animas and the are the things that it is used in the proper points so proper water, but

Mr. MORRIS. generated in a manner you are presently

Mr. KROEGER. operating principle

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re final decision is if necessary, some, will make a study placed in the record lings of Mr. Rider, haps the study that presenting the posi- to satisfy ourselves jects that you men- n of the San Juan- so far in the future oth projects are

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onservancy District

Mr. KROEGER. The water conservancy district in Colorado will be made up of about 65,000 acres of land if this is completed. At the present time I think there are 30,000 acres in the district.

Mr. SAYLOR. Part of that land is in New Mexico?

Mr. KROEGER. All of the land I represent is in Colorado. However, the project does involve land in New Mexico, 185,000 acres of land, 65,000 of which are in Colorado.

Mr. SAYLOR. How would you exempt this Animas-La Plata project? How could you exempt that from this project?

Mr. KROEGER. The thought that we have in mind is that there are many unexplained things about this. The actual operation of the compact, the actual operation of the Navajo Dam, the regulatory storage on the San Juan has not been actually explained. What consists of an irrigation year? Where does delivery to New Mexico have to be? Is this on a continuous basis, a 10-year basis, a moving average, or just what is the operation principle involved? We do not know that and we cannot find the answer to that. Until we do have those answers, we would ask that the Animas be excluded from making up the shortages if some result on the proposed legislation for the San Juan-Chama and the Navajo irrigation projects.

Mr. ASPINALL. You would not ask Congress at this time to put in to this bill any amendment provision which would attempt to have any effect upon any water rights that have been determined along the Animas River in the States of New Mexico and Colorado under the water law of those States, would you, Mr. Kroeger?

Mr. KROEGER. I am not real sure of your question. I think I interpret it to mean that I would like for those present water rights to be protected in that manner. You do not relinquish rights. You would protect them by excluding the Animas until these other problems are made clear.

Mr. ASPINALL. You do not want the Federal Government to attempt to determine what will happen to existing water rights any place in the States of New Mexico or Colorado. I think I know what you want all right, but if we put an exemption in, would we not be nullifying the water rights responsibilities of the States?

Mr. KROEGER. I do not think so.

Mr. ASPINALL. I think I know what you want but I do not think we can do it that way.

Are there any other questions of Mr. Kroeger?

Mr. MORRIS. Mr. Kroeger, your concern is that there will not be enough water, is that correct?

Mr. KROEGER. We are not sure there will be enough water for the Animas and the La Plata, and how and where it will be used. Those are the things that concern us. We think there is adequate water if it is used in the proper places and if the diversions are made at the proper points so the return flows are at adequate points there will be proper water, but none of that is made clear to us at this point.

Mr. MORRIS. None of your concern is about the project being operated in a manner that would give you the right to use water that you are presently now using, is that correct?

Mr. KROEGER. No, sir; we think we should be advised as to the operating principles before the thing is authorized and built.

Mr. MORRIS. Then I take it that you are against the way the Bureau of Reclamation operates?

Mr. KROEGER. No, sir; but it seems a contract of this magnitude that those of us who farm in this La Plata area should know how those principles are going to be operated prior to the actual signing of these contracts and the awarding of these contracts.

Mr. MORRIS. Is that procedure carried out in all of their irrigation projects constructed by the Federal Government?

Mr. KROEGER. I am sure I do not know, but I would certainly hope so.

Mr. HOSMER. During the Upper Colorado hearings we tried to get the Bureau to do that. That legislation was passed 3 or 4 years ago and they still have not come up with a plan of operation that they can settle down on yet, so we are still in doubt on other parts of the program.

Mr. MORRIS. I know that with the land that I have that is under an irrigation project, I did not know the details of the operation of the project when I signed the contract. I do not know of any other project in the United States where a landowner is given a detailed operation of the project before the contract is signed. I think probably that there could be some improvements in the operation of irrigation projects, but I think on the whole, the record of the operation of the projects has been good. I want to assure you that as far as I am concerned, we are just as interested in the Animas-La Plata project, certainly the portion of it that is in New Mexico and the portion that is in Colorado as we are in this legislation that is pending before us.

The letter of November 1960, from the Secretary of the Interior to the chairman of this committee, to me, gives me assurance that there is enough water supply for this project and for the projects that we are speaking of today.

I understand also that the Bureau of Reclamation is now in the process of a detailed investigation on the Animas-La Plata project, and will probably come up with a report in the very near future. There is certainly no intention to seek authorization for the San Juan-Chama project or the Navajo project to deprive any water user in the State of New Mexico or in the State of Colorado their water rights.

Mr. ASPINALL. That is some assurance.

Mr. HOSMER. I presume that the fact that the State of New Mexico and the State of Colorado engaged in some fairly serious discussions about what would happen in the event of shortages and things were put in the bill regarding them is probably the basis of your concern, is it not?

Mr. KROEGER. That is right.

Mr. HOSMER. What you are asking is that a commonsense approach be applied, of doing a little calculation to see if this scheme is going to work, rather than build the project and then find out the horrible truth afterwards, is that right?

Mr. KROEGER. Yes, sir, that is what we ask.

Mr. HOSMER. You ask that there be a provision for you in the legislation if the study is not made. What do you want us to do if the study is made and it does, and it probably will, indicate these intolerable conditions? You still want to be protected, do you not?

Mr. KROEGER. Yes, some things that have to be logical conclusions.

Mr. HOSMER. We will table 5 minutes before your attitude in advance.

Mr. KROEGER. Yes, sir, for the La Plata Conservancy River should be exempt study is made and under.

Mr. HOSMER. I think every right to make such.

Mr. ASPINALL. Are you?

Mr. KING. If the figure is entitled to this water, using enough water, would.

Mr. KROEGER. No, sir, runoff on the San Juan.

Mr. KING. In other words, Mennen as far as the that is why you are concerned.

Mr. KROEGER. Yes, sir.

Mr. ASPINALL. The engineer, Middle Rio Grande.

#### STATEMENT OF HUBERT BALL RIO GRANDE CONSERVANCY

Mr. BALL. Mr. Chairman, My name is Hubert Ball, Rio Grande Conservancy, Second Street, Albuquerque. I am responsible for the administrative works for a district of the Rio Grande between White Mountain and the White Mountain life Refuge, a distance of 120,000 acres of agricultural works of the Middle Rio Grande with the cities of Albuquerque and numerous small villages of the district. I have appeared before this committee on the San Juan-Chama and Navajo Indian projects.

My primary interest is in the Rio Grande diversion project, which is being proposed for the lands of the Middle Rio Grande Conservancy. As you know, we are currently in the process of the Middle Rio Grande Conservancy and the Bureau of Reclamation. The condition of the project is such that it is recommended to provide sufficient water under contract with the Bureau of Reclamation for the Rio Grande.

Mr. KROEGER. Yes, sir, we still want to be protected. Those are the things that have to be known, and from there you can draw some logical conclusions.

Mr. HOSMER. We will probably have this study thrown on the table 5 minutes before this bill is up for action. I am trying to get your attitude in advance of that. Do you still want to be protected?

Mr. KROEGER. Yes, sir. I think in this statement that has been made for the La Plata Conservancy District, we do feel that the Animas River should be exempt from making up these shortages unless that study is made and understood.

Mr. HOSMER. I think you people in the State of Colorado have every right to make such a request.

Mr. ASPINALL. Are there any other questions?

Mr. KING. If the figures given earlier are correct that New Mexico is entitled to this water, then you would not be in any fear of not having enough water, would you?

Mr. KROEGER. No, sir. However, there have been years when the runoff on the San Juan and its tributaries was less than that amount.

Mr. KING. In other words, you do not take the assurances from Mr. Mennen as far as the water supplies. You are doubtful about it so that is why you are concerned?

Mr. KROEGER. Yes, sir.

Mr. ASPINALL. The next witness will be Mr. Hubert Ball, chief engineer, Middle Rio Grande Conservancy District.

#### STATEMENT OF HUBERT BALL, CHIEF ENGINEER, MIDDLE RIO GRANDE CONSERVANCY DISTRICT

Mr. BALL. Mr. Chairman and members of the committee.

My name is Hubert Ball and I am chief engineer of the Middle Rio Grande Conservancy District, with offices located at 1930 South Second Street, Albuquerque, N. Mex. In this capacity, I am responsible for the administration of irrigation, drainage, and flood control works for a district comprising about 300,000 acres along the Rio Grande between Whiterock Canyon and the Bosque del Apache Wildlife Refuge, a distance of about 155 miles. The area benefited by the works of the Middle Rio Grande Conservancy District contains about 120,000 acres of agricultural lands. Six Indian reservations, together with the cities of Albuquerque, Belen, Socorro, Bernalillo, Los Lunas, and numerous small villages and communities, lie within the boundaries of the district. I was instructed by those I represent to appear before this committee to support the authorization of the San Juan-Chama and Navajo Indian projects.

My primary interest is in the San Juan-Chama transmountain diversion project, which would make available supplemental water for the lands of the Middle Rio Grande Conservancy District. As you know, we are currently completing the rehabilitation of the Middle Rio Grande Conservancy District works under a contract with the Bureau of Reclamation. This work has greatly improved the condition of the project, but available water supplies must be supplemented to provide sufficient water in years of subnormal flow. The contract with the Bureau of Reclamation also provided for channelization of the Rio Grande throughout the conservancy district to

conserve available water supplies and to improve the flood and sediment transport capability of the Rio Grande. We are making every effort to provide an adequate water supply for the farmers of the Middle Rio Grande Conservancy District, and the supplemental supply that would be made available by the San Juan-Chama project will eliminate water shortages in most years.

Projects like this are frequently criticized on the grounds that the crops produced aggravate the surplus crop problem. This is not true of this project. Among the principal crops produced on our project lands are alfalfa, fruits, feed crops and vegetables. Practically all these products are consumed locally, either through direct sales to the consumer or by dairy farmers and cattle feeding lots. These dairy and cattle operations import large amounts of grain and hay into our valley each year and still we cannot meet the local demand for meat and dairy products. The minor amounts of small grains grown can hardly be credited with aggravating surplus crop problems.

There is approximately 2,500 acres of cotton grown each year in our Socorro division, but cotton is no longer a surplus crop. On October 2, 1969, as announced, the Nation's cotton supply is in balance. It is possible that cotton acreage allotments may even be increased within the near future.

Ninety percent of the lands of the Middle Rio Grande Conservancy District are held by individual owners in tracts of less than 20 acres. Small farms of this size and type common to our area are generally subsistence type operations and furnish a very small portion of the agricultural products consumed locally and, exports from the valley are practically nonexistent. As the population of the Middle Valley increases, the local markets for crops of this kind increase accordingly. It seems certain, therefore, that the local market will continue to absorb all of the agricultural products produced on this project. Due to geographic features of our area it would seem we are destined to forever be a buyer rather than a producer of agricultural produce and products.

The population of all of the cities within the conservancy district boundaries have increased spectacularly in the last two decades. Typical of this growth is that of the city of Albuquerque, which during that period has increased in population from 35,000 to over 200,000. The municipal and industrial demand for water is keeping pace with the population increases. Since the waters of the Rio Grande in the Middle Valley are fully appropriated, these increased uses must be supplied by imported water or existing agricultural water rights will be faced with drastic infringement. The San Juan-Chama project will make water available for these municipalities and industries, and the city of Albuquerque has indicated a willingness to pay for 57,000 acre-feet annually.

For many years, I have been familiar with the plight of the residents of the two northern counties of Taos and Rio Arriba. For as long as I can remember, these areas have been economically depressed with per capita incomes of \$500 to \$600 per year. The San Juan-Chama project would provide firm supplies of irrigation water for four small irrigation units known as Cerro, Taos, Llano, and Pojoaque, which are all located in this depressed rural area. I know of no better way to provide needed assistance to communities of this type,

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Although the Navajo Indian irrigation project lies outside the area of my district's responsibility, I would like to say a few words in support of this project. It is difficult for people who are not closely familiar with problems of the Indians to understand the need for a project such as this. Almost a century ago, our Nation consigned the entire population of the Navajo Tribe to a reservation in the northwest portion of New Mexico and northeast portion of Arizona. The reservation lands are, for the most part, unproductive because of the shortage of rainfall and it is impossible for the Navajos to produce sufficient food to support their growing population.

Unlike other Americans, they are very hesitant in moving to more productive areas in search of a livelihood because of tribal loyalties, customs, and their inborn love of the wide open spaces in the great Southwest, traits which I, for one, admire rather than condemn and censure. It is a national shame that the reservation lands, except for minor areas located in the valleys, are so poor as to be valued for no more than \$5 or \$10 per acre. It is small wonder that the cost of transforming such lands into productive agricultural lands is estimated at from \$1,000 to \$1,400 per acre; however, in my view, our Nation was morally obligated to provide this project at the time that we established this reservation in a desert wasteland. I urge that you authorize this construction.

I thank you for the privilege of appearing before this committee today, and for the opportunity to speak in behalf of the thousands of residents of the middle valley of the Rio Grande who urgently need the water from the San Juan-Chama project for their continued growth and well-being.

Mr. ASPINALL. Thank you very much, Mr. Ball.

Mr. HOSMER. Mr. Ball, on page 2 of your statement, you refer to farming. These are not commercial farms, are they?

Mr. BALL. No, sir; they are private homesites with small orchards and a few grapes, chile patches, and a few things like that.

Mr. ASPINALL. The Chair recognizes the gentleman from Pennsylvania.

Mr. SAYLOR. In the last page of your statement you say, "our Nation is morally obligated to provide the project at the time that we established this reservation in a desert wasteland."

Mr. BALL. I have traveled over the land and I am personally acquainted with the people. My first trip through that country was as early as 1931, and I can tell you right now, they picked out about the worst place they could find in the United States to herd the Navajo Indians onto at the time they picked it out. There is not the slightest possibility of any agricultural economy on their land until, and unless, somebody builds them an irrigation project.

Mr. SAYLOR. I concede that point. The Almighty has had a pretty good way of taking care of the Indians. We put them in Oklahoma and they had all the oil, and we put them up out in Arizona and they end up with most of the uranium land, but the thing that bothers me is how do we know the same pattern is not going to happen with these Indian lands that has happened in other places. These Navajos are not by nature farmers. They never have been. Putting

water on land is not going to make them farmers. We will put the water on the land they will rent it out to some white man. If I thought for one moment that the Indians were going to do this farming, I would be very much in favor of spending this money.

Downtown we have a little sign here that says, "The past is prologue; study the past;" and if we study the past in reclamation projects on Indian reservations, it has not been too favorable.

Mr. BALL. Mr. Congressman, the only answer I could make to that is that first, I doubt that the Navajo has ever had a fair chance to become a farmer or not, to decide whether he did or did not like to farm.

There are some very small areas on the Navajo Reservation which are being farmed by Navajos and they seem to be very successful, according to testimony presented here by Mr. McCabe.

Secondly, there are a great many Navajos each year who go to Colorado, California, come down in our district and work in the fields. They seem to be adapted to that kind of work. Although that is not within my area, I have lived among the Indians for many years, and I think they are entitled to work vegetable farms, beet fields, and things on their own reservation, if it is at all humanly possible, rather than live in the shacks and the places that you would not believe it possible for people to exist in, as I have seen them over the past years working in fields throughout the West. They are down on their hands and knees weeding carrots, lettuce, and so on. I see it every year.

Mr. SAYLOR. That is what we do on our own farms.

Mr. BALL. A man can do a lot on his own land and enjoy it. I have done a considerable amount of vegetable farming in my lifetime, and I certainly enjoy farming more on my own land than I do working for a pittance on somebody else's land.

Mr. HOSMER. Can you give us any assurance that there are 1,100 Navajo Indians on a reservation who want to go and operate farms?

Mr. BALL. That is something they will have to decide. They started that training school.

Mr. HOSMER. But they still want to spend \$135 million to make a farm without knowing if you have 1,100 people out of the reservation who want a farm. That is going to be real swell to have all that property out there with nobody to farm it if that turns out to be the case.

Mr. ASPINALL. Are there any further questions of Mr. Ball?

At the end of tomorrow's full committee meeting, we will take statements from Mr. Murphy, Mr. Munoz, Mr. Sparks, Mr. Weeks, and Mr. William Welch.

The committee stands in recess.

(Whereupon, at 3:50 p.m., the subcommittee recessed to reconvene Wednesday, April 26, 1961, at 9:45 a.m.)

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