CLOSED BASIN DIVISION, SAN LUIS VALLEY PROJECT, COLORADO

HEARING

BEFORE THE

SUBCOMMITTEE ON WATER AND POWER RESOURCES

OF THE

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS UNITED STATES SENATE

NINETY-SECOND CONGRESS

SECOND SESSION

ON

S. 520

A BILL TO AUTHORIZE THE CONSTRUCTION, OPERATION, AND MAINTENANCE OF THE CLOSED BASIN DIVISION, SAN LUIS VALLEY PROJECT, COLORADO, AND FOR OTHER PURPOSES

JUNE 26, 1972

Printed for the use of the Committee on Interior and Insular Affairs

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CLOSED BASIN DIVISION, SAN LUIS VALLEY PROJECT, COLORADO

MONDAY, JUNE 26, 1972

U.S. SENATE,
SUBCOMMITTEE ON WATER AND POWER RESOURCES OF THE
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D.C.

The subcommittee met pursuant to notice at 10 a.m. in room 3110, New Senate Office Building, Hon Clinton P. Anderson presiding.

Present: Senator Anderson (presiding), Allott, and Jordan of Idaho.

Also present: Jerry T. Verkler, staff director; William J. Van Ness, chief counsel; Daniel A. Dreyfus, professional staff member; and Charles Cook, minority counsel.

Senator ANDERSON. Let's start the hearing.

The purpose of this hearing before the Subcommittee on Water and Power Resources this morning is to take testimony on S. 520, introduced by the Senators from Colorado, to authorize the construction, operation, and maintenance of the Closed Basin division, San Luis Valley project, Colorado.

The proposed Closed Basin division is a multipurpose water resource development in southeastern Colorado. By means of shallow wells and conveyance facilities, the project would collect groundwater which presently is wasted in the Closed Basin area and deliver it to the Rio Grande River for beneficial use. The project would assist in fulfilling Colorado's obligation under the Rio Grande Compact to deliver water at the Colorado-New Mexico State line and in fulfilling the U.S. treaty obligation to deliver water to Mexico. Water supplies would also be made available to the existing Alamosa National Wildlife Refuge and a new refuge would be established by the proposed legislation.

The total construction cost of the Closed Basin division is estimated to be $17,030,000 based on October 1970 price levels.

The text of S. 520, and the legislative reports of the Department of the Interior and the Office of Management and Budget will be inserted in the record at this point.

(Text of S. 520, and legislative reports follow:)

92D CONGRESS
1ST SESSION

S. 520

IN THE SENATE OF THE UNITED STATES

FEBRUARY 2 (legislative day, JANUARY 26), 1971

Mr. ALLOTT (for himself and Mr. DOMINICK) introduced the following bill; which was read twice and referred to the Committee on Interior and Insular Affairs

A BILL

To authorize the construction, operation, and maintenance of the closed basin division, San Luis Valley project, Colorado, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That (a) the Secretary of the Interior is authorized to construct, operate, and maintain the closed basin division, San Luis Valley project, Colorado, including channel rectification of the Rio Grande between the uppermost point of discharge into the river of waters salvaged by the project, and the Colorado-New Mexico State line, so as to provide for

the carriage of water so salvaged without flooding of surrounding lands, to minimize losses of waters through evaporation, transpiration, and seepage, and to provide a conduit for the reception of waters salvaged by drainage projects undertaken in the San Luis Valley below Alamosa, Colorado, in accordance with the Federal reclamation laws (Act of June 17, 1902, 32 Stat. 388, and Acts amendatory thereof or supplementary thereto), and as otherwise provided in this Act, for the principal purposes of salvaging, regulating, and furnishing water from the closed basin area of Colorado; transporting such water into the Rio Grande; making water available for fulfilling the United States obligation to the United States of Mexico in accordance with the treaty dated May 21, 1906 (34 Stat. 2953); furnishing irrigation water, industrial water, and municipal water supplies to water deficient areas of Colorado, New Mexico, and Texas through direct diversion and exchange of water; furnishing a water supply for the establishment and operation of the Mishak Lakes National Wildlife Refuge and the operation of the Alamosa National Wildlife Refuge and for conservation and development of other fish and wildlife resources; providing outdoor recreational opportunities; augmenting the flow of the Rio Grande; and other useful purposes, in substantial accordance with the engineering plans set out in the report of the Secretary of the Interior on this project: *Provided,*

That no wells of the project, other than observation wells, shall be permitted to penetrate the aquiclude, or first confining clay layer.

(b) Construction of the project may be undertaken in such units or stages as in the determination of the Secretary will best serve project requirements and meet water needs: *Provided,* That construction of each of the successive units or stages after stage 1 of said project shall be undertaken only with the consent of the Colorado Water Conservation Board and the Rio Grande Water Conservation District of the State of Colorado.

SEC. 2. (a) Prior to commencement of construction of any part of the project, except channel rectification, there shall be incorporated into the project plans a control system of observation wells, which shall be designed to provide positive identification of any fluctuations in the water table of the area surrounding the project attributable to operation of the project or any part thereof. Such control system, or so much thereof as is necessary to provide such positive identification with respect to any stage of the project, shall be installed concurrently with such stage of the project.

(b) The Secretary shall operate project facilities in a manner that will not cause the water table available for any irrigation or domestic wells in existence prior to the construction of the project to drop more than two feet,

and in a manner that will not cause reduction of artesian flows in existence prior to the construction of the project.

SEC. 3. (a) As the waters to be salvaged by means of this project are waters which arise in the closed basin as defined in article I(d) of the Rio Grande compact (53 Stat. 785), the rights of the United States and the States of New Mexico and Texas shall be subordinate to the needs within the basin of origin, and no right to demand continuation of exportation of ground water from the closed basin to the Rio Grande shall accrue to the United States or to the States of New Mexico or Texas to the detriment of water users in Colorado.

(b) There is hereby established an operating committee consisting of one member appointed by the Secretary, one member appointed by the Colorado Water Conservation Board, and one member appointed by the Rio Grande Water Conservation District, which is authorized to determine from time to time whether the requirements of section 2 of this Act are being complied with. The committee shall inform the Secretary if the operation of the project fails to meet the requirements of section 2 or adversely affects the beneficial use of water in the Rio Grande Basin in Colorado as defined in article I(c) of the Rio Grande compact (52 Stat. 785). Upon receipt of such information, the Secretary shall modify, curtail, or suspend operation of

the project to the extent necessary to comply with such requirements or eliminate such adverse effect.

SEC. 4. (a) Except as hereinafter provided, project costs shall be nonreimbursable.

(b) After the project or any phase thereof has been constructed and is operational, the Secretary shall make water available in the following listed order of priority:

(1) To assist in making the annual delivery of water at the gaging station on the Rio Grande near Lobatos, Colorado, as required by article III of the Rio Grande compact: *Provided*, That the total amount of water delivered for this purpose shall not exceed an aggregate of six hundred thousand acre-feet for any period of ten consecutive years reckoned in continuing progressive series beginning with the 1st day of January next succeeding the year in which the Secretary determines that the project authorized by this Act is operational.

(2) To apply to the reduction and elimination of any accumulated deficit in deliveries by Colorado as is determined to exist by the Rio Grande Compact Commission under article VI of the Rio Grande compact at the end of the compact water year in which the Secretary first determines the project to be operational.

(3) For irrigation or other beneficial uses in Colorado: *Provided*, That no water shall be delivered until agreements

between the United States and water users in Colorado, or the Rio Grande Water Conservation District acting for them, have been executed providing for the repayment of such costs as in the opinion of the Secretary are appropriate and within the ability of the users to pay.

(4) To maintain the Alamosa National Wildlife Refuge.

SEC. 5. Construction of the project shall not be started until the State of Colorado agrees that it will, as its participation in the project, convey to the United States easements and rights-of-way over lands owned by the State that are needed for wells, channels, laterals, and wildlife refuge areas, as identified in the project plan. Acquisition of privately owned land shall, where possible and consistent with the development of the project, be restricted to easements and rights-of-way in order to minimize the removal of land from local tax rolls.

SEC. 6. Conservation and development of the fish and wildlife resources and the enhancement of recreation opportunities in connection with the closed basin division of the San Luis Valley project works authorized by this Act shall be in accordance with the provisions of the Federal Water Project Recreation Act (79 Stat. 213).

SEC. 7. The Secretary is authorized to transfer to the State of Colorado or to any qualified agency or political subdivision of the State, or to a water users' organization, responsibility for the care, operation, and maintenance of the

project works, or any part thereof. The agency or organization assuming such obligation shall obligate itself to operate the project works in accordance with regulations prescribed by the Secretary.

SEC. 8. Pursuant to the authority of the Reclamation Act of June 17, 1902 (32 Stat. 388), and Acts amendatory thereof or supplementary thereto, and the Water Resources Planning Act of July 22, 1965 (79 Stat. 244), as amended, with respect to the coordination of studies and investigations, the Secretary shall conduct full and complete feasibility investigations for the purpose of developing a general plan for the improvement of the channel of the Rio Grande above the uppermost point of discharge into the river of waters salvaged by the project, the improvement of the channels of the Conejos, San Antonio, La Jara, and Alamosa Rivers, and Rock Creek, and construction of Wagon Wheel Gap Dam and Reservoir for flood control and other purposes, and other projects designed for the conservation and salvage of waters which may be made available for the purposes set out in section 4(b) of this Act.

SEC. 9. Nothing contained in this Act shall be construed to abrogate, amend, modify, or be in conflict with any provisions of the Rio Grande compact.

SEC. 10. There is hereby authorized to be appropriated for construction of the closed basin division of the San Luis

Valley project the sum of $15,400,000 (January 1969 prices), plus or minus such amounts, if any, as may be justified by reason of ordinary fluctuation in construction costs as indicated by engineering cost indexes applicable to the types of construction involved herein, and such additional sums as may be required for operation and maintenance of the project.

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

MAY 19 1972

Dear Mr. Chairman:

This responds to your request for the views of this Department on S. 520, a bill "To authorize the construction, operation and maintenance of the closed basin division, San Luis Valley project, Colorado, and for other purposes."

We recommend that the bill be enacted only if it is amended to make all costs of the project reimbursable under the provisions of reclamation and other applicable laws.

The proposed Federal expenditure in this case is not justified as a satisfaction of a national obligation to Mexico under the Rio Grande Convention of 1906. The United States, for example, has already constructed Elephant Butte Reservoir, New Mexico, which includes facilities for storing and regulating the quantity of water to which Mexico is entitled under the Convention. Nor can the project be justified to aid Colorado in meeting its voluntarily assumed obligations under an interstate water compact, the Rio Grande Compact of 1939, a matter of State rather than Federal concern. We would prefer that Colorado meet its obligations through limitations on its internal water uses, an experience shown to be practical in the past several years.

We also view as an acceptable alternative to water withdrawal limitations a project authorized and repayable under reclamation law. We believe that the State of Colorado and its Rio Grande water users would receive a substantial benefit from installation of the closed basin project including the expansion of its consumptive use of Rio Grande water. Sound policy requires that the bill be amended to require repayment of all costs of the closed basin division except that part of those costs allocated to fish and wildlife and recreation that would be nonreimbursable under the provisions of the Federal Water Project Recreation Act (Public Law 89-72).

The Project Contemplated by the Bill

The project would salvage an estimated average of 100,800 acre-feet of water annually in the closed basin, of which 95,500 acre-feet would be delivered to the Rio Grande to cover past and current obligations of the United States to Mexico under

the Rio Grande Convention of 1906. Waters salvaged in excess of amounts needed for such treaty obligations would, under the bill, be available for irrigation and other beneficial uses in Colorado and to maintain the Alamosa National Wildlife Refuge. The principal works, to be installed in five stages, would consist of a system of some 136 wells and related facilities needed to deliver the salvaged flows into the Rio Grande and to serve irrigation and other project purposes.

The plan contemplates development of the Mishak National Wildlife Refuge, which would comprise about 13,800 acres, consisting of 7,000 acres of acquired private land, 2,300 acres of public land, and 4,500 acres of land in the division. Water from a separately developed system, rather than the salvaged water referred to above, would be used for the Mishak National Wildlife Refuge under the plan. The existing Alamosa National Wildlife Refuge, consisting of some 10,358 acres of ponds, wetlands, and feed areas along the Rio Grande at the lower end of the division area, would be provided with about 5,300 acre-feet of salvaged water annually to maintain the ponds, wetlands, and feed crops.

Costs and Benefits

The estimated total construction cost of the closed basin division as contemplated by the bill is $17,030,000 based on October 1970 prices. This cost is tentatively allocated to water salvage ($15,220,000), fish and wildlife enhancement ($930,000) and recreation ($880,000).

Total annual operation, maintenance, and replacements costs are estimated at $340,000 and are tentatively allocated to water salvage ($273,000), fish and wildlife enhancement ($17,000), and recreation ($50,000).

The total annual benefits of the proposed development, based on a 100-year period of analysis, and an interest rate of 4-7/8 percent, are evaluated to be $2,123,000 from water salvage ($1,870,000), fish and wildlife enhancement ($69,000), recreation ($104,000), and area redevelopment ($80,000). The annual equivalent costs are computed to be $1,038,000. This results in a ratio of total benefits to costs of 2.04 to 1. The ratio of direct benefits to costs is 1.29 to 1.

Of the $1,810,000 construction cost allocated to recreation and fish and wildlife enhancement, $302,000, which represents one-half of the separable costs, plus $8,000 interest during

construction and all of the separable annual operation, maintenance and replacement cost ($46,000) allocated to those functions would be a non-Federal cost. As required by section 2(a) of the Federal Water Project Recreation Act, the State of Colorado has indicated by letter dated May 19, 1966, its intent to agree to administer the land and water areas of the division for recreation and fish and wildlife enhancement and to bear one-half of the separable costs of the division allocated to those two functions and all of the separable costs of operation, maintenance and replacement incurred therefor. The remaining costs ($1,508,000) and operation, maintenance, and replacement costs of joint facilities ($21,000) allocated to recreation and fish and wildlife enhancement would be nonreimbursable Federal costs as provided by law.

Water Uses Contemplated by the Bill

The surface waters of the Rio Grande are apportioned among the States of Colorado, New Mexico and Texas in accordance with the Rio Grande Compact of 1939. Under the Compact, Colorado agreed to provide New Mexico with substantial quantities of water in the Rio Grande at the State line. New Mexico agreed to supply specified amounts of water similarly to Texas, which amounts are used to meet the United States water obligation under the Rio Grande Convention. Beginning in 1951 Colorado found itself in a deficit position with regard to its Compact obligations and its accumulated deficit is presently about 830,400 acre-feet of water. During the years from 1951 through year end 1970, Colorado's average position was a deficit of 855,400 acre-feet. Distributed over this 20-year period, the annual average deficit would be about 42,800 acre-feet annually. If averaged over the entire life of the Rio Grande Compact, the deficit would be less than 28,000 acre-feet annually. Under the Rio Grande Convention of 1906 the United States is obliged to furnish 60,000 acre-feet of water per year to Mexico, subject to certain exceptions.

The bill provides that the first and second priorities on water made available by the project would be--

(1) to deliver into the Rio Grande 60,000 acre-feet of water per year based on a 10-year moving average (roughly equivalent to the annual treaty obligation), and

(2) to deliver water to meet Colorado's past Compact deficits.

Since costs attributable to meeting these first two priorities would be borne by the Federal Government, the bill in effect provides that the Federal Government will underwrite the cost of furnishing water to the Rio Grande to the extent of the past and future United States treaty obligations arising after the effectiveness of the Rio Grande Compact.

Discussion

S. 520 would authorize the closed basin division as a multi-purpose water resource development in the San Luis Valley; it would be constructed substantially in accordance with our report on this project (House Document 91-369), but would differ significantly in overall purpose. The plan considered in H.D. 91-369 consisted of a nonreimbursable water salvage project to assist Colorado in meeting its obligations under the Rio Grande Compact.

The project contemplated by the bill, however, is to provide 95,500 acre-feet of water annually to the Rio Grande which would in effect be attributed to past and current obligations of the United States to Mexico under the Rio Grande Convention of 1906. Waters salvaged in excess of amounts attributable to such treaty obligations would, under the bill, be available for irrigation and other beneficial uses in Colorado and to maintain the Alamosa National Wildlife Refuge.

The bill also provides that the costs of the project allocable to the Rio Grande treaty would be nonreimbursable to the United States. Irrigation costs would be reimbursable in accordance with the usual provisions governing reclamation projects. However, if the project is developed as contemplated by the bill, it is not anticipated that any costs will be allocated to irrigation for some years because the claims on the salvaged water relating to the Compact or to treaty obligations are prior to irrigation uses and will take substantial time to satisfy.

As stated above, the bill should be amended to require payment of all costs of the closed basin division except those costs allocated to fish and wildlife and recreation. We recommend that section 4(a) of the bill be amended by substituting the word "reimbursable" for the word "nonreimbursable" in line 4 on page 5.

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Section 1(a) of the bill would authorize channel rectification of the Rio Grande between the uppermost point of discharge into the river of water salvaged by the division and the Colorado-New Mexico State line, a distance of about 12 miles. Our feasibility report does not include this as a feature of the division and it has not been adequately studied. We therefore recommend the deletion of all that language beginning on page 1, line 5, with the word "including" through the word "Colorado," on page 2,line 5. Rectification of this reach of the stream should, however, be studied. Consequently on page 7, all of line 13 and line 14 through the word "project" should be deleted and the words "Colorado-New Mexico State line" should be added. As a conforming amendment, on page 3, line 13, the words "except channel rectification" should be deleted.

The project plan contemplates establishment of the Mishak National Wildlife Refuge, as well as furnishing water to it, and to make this clear we recommend that the words "establishment of and" be inserted in line 17, page 2, prior to the word "furnishing."

Because features of the project may affect the Blanca waterfowl area now being developed, as well as the proposed Mishak and existing Alamosa National Wildlife Refuges, we would also recommend that provision be made for protection of such areas through the addition of a new section (c) as follows:

> (c) Project works shall be designed and constructed in a manner compatible with the purposes served by the Mishak National Wildlife Refuge, the Blanca Wildlife Habitat area and the Alamosa National Wildlife Refuge. Advanced planning and operation of the closed basin division and of the Blanca Wildlife Habitat area shall be coordinated so as to insure most efficient use of available water and related facilities.

Section 2(b) of the bill requires the Secretary to operate project facilities so as not to reduce artesian flows in existence prior to the construction of the project. To protect artesian flows which may be developed, subsequent to construction of the project for waterfowl and other fish, wildlife and recreation purposes, we believe the provisions of section 2(b) should be amended by striking the period in line 2, page 4, and adding the following:

or of artesian flows developed subsequent to construction of the project for waterfowl and other fish, wildlife, and recreational purposes.

In addition, we favor providing that making water available to the Alamosa National Wildlife Refuge to mitigate adverse effects on fish, wildlife and recreational values will be a first priority for the project, rather than last priority as the bill now provides, and we believe that water should also be provided on the same basis to the Mishak National Wildlife Refuge, which is also designed for mitigation of such effects, as well as enhancement of fish, wildlife, and recreational values. We therefore recommend that section 4 of the bill be amended by deleting sections 4(b)(2) and (4), renumbering section 4(b)(3) as section 4(b)(2) and inserting a new section 4(b)(1) as follows:

4(b)(1) To maintain the Alamosa National Wildlife Refuge and the Mishak National Wildlife Refuge.

Finally, as technical matters, the word "Lakes" should be deleted in line 19, page 2 of the bill and the amount authorized to be appropriated as shown in line 1, page 8, should be increased from "$15,400,000 (January 1969 prices)" to "$17,030,000 (October 1970 prices)".

Environmental Impact

In completing the feasibility report, the impact of the division on the environment was considered pursuant to the National Environmental Policy Act of 1969 and as required by the Act, an environmental statement dated June 1970 was sent to the Council on Environmental Quality on July 14, 1970. A copy of the statement as revised in May 1971 is enclosed.

In addition to the beneficial effects on the wildlife refuge and the waterfowl area previously mentioned, we note that with full development the plan contemplates the salvage of water into the Rio Grande at a nearly constant rate of 100 cubic feet per second throughout the entire year. The Rio Grande below the point of discharge into the river is now a unit of the National Wild and Scenic Rivers System administered by this Department. At times there is little or no flow in this and other reaches of the river. The additional water delivery proposed by the plan would cause

the Rio Grande to become a continuous live stream, thus enhancing the values for which the Rio Grande Gorge was added to the National Wild and Scenic Rivers System. The water which will be delivered to the Rio Grande is of high quality and well within the limits of Public Health Service drinking water standards. Project water releases would be monitored to guard against adverse changes in temperature and quality.

Other

Enclosed is a statement concerning the estimated employment and expenditures attributable to the project as required by 5 U.S.C. 2953 (Public Law 84-801, 70 Stat. 652).

The Office of Management and Budget has advised that there is no objection to the presentation of this report from the standpoint of the Administration's program.

Sincerely yours,

Assistant Secretary of the Interior

Hon. Henry M. Jackson
Chairman, Committee on
Interior and Insular Affairs
United States Senate
Washington, D.C. 20510

Enclosures

April 1971

DEPARTMENT OF THE INTERIOR

SUBJECT MATTER: BILL TO AUTHORIZE CONSTRUCTION OF THE CLOSED BASIN DIVISION, SAN LUIS VALLEY PROJECT, COLORADO

Estimated additional man-years of civilian employment and expenditures for the first 5 years of proposed new or expanded program:

	1st Year	2nd Year	3rd Year	4th Year	5th Year
Estimated additional man-years of civilian employment:					
Executive Direction					
Executive. . . .		1	1	1	1
Stenographic . .		1	1	1	1
Total, Executive Direction. . .		2	2	2	2
Administrative Services and Support					
Clerical. . . .	1	3	4	4	4
Property Management		1	1	1	1
Total, Administrative Services and Support	1	4	5	5	5
Substantive(Program)					
Engineering Aids.	2	6	10	10	10
Engineers. . . .	2	4	6	6	6
Total,Substantive	4	10	16	16	16
Total estimated additional man-years of civilian employment.	5	14	23	23	23
Estimated additional expenditures					
Personal Services.	$65,000	190,000	320,000	325,000	330,000
All other.	35,000	1,910,000	2,180,000	2,275,000	2,470,000
Total Estimated Additional Expenditures.	$100,000	$2,100,000	$2,500,000	$2,600,000	$2,800,000

Environmental Statement on Proposed Closed Basin Division, San Luis Valley Project, Colorado, Submitted in Conformance with Section 102(2)(C) of the National Environmental Policy Act of 1969

Nature of Activity

The investigation and formulation of the plan for this proposed water and related land resources development were completed prior to the enactment of the National Environmental Policy Act of 1969 (Public Law 91-190). However, before recommending authorization of the proposal, the Secretary's proposed feasibility report was coordinated with the affected States and interested Federal agencies as required by law and Presidential instructions. No adverse comments relating to the impact of the proposal on the environment were received.

These coordination procedures are similar to those set forth in Public Law 91-190 for improvement and coordination of Federal plans. In addition, the procedures for formulating and evaluating Federal water resource projects result in multiple-objective considerations relating to the environment. A statement on impact of the Closed Basin Division on the quality of the human environment reflecting the views and recommendations of those Federal and State agencies which participated directly in formulating the recommended plan of development or indirectly through the review process is made part of the Secretary's feasibility report. Our findings in that respect follow:

The proposed Closed Basin Division is a multiple-purpose water resource development in southeastern Colorado. Through installation of shallow wells, pumps, and a collection and conveyance system, the proposed development would salvage water now being lost by evaporation or consumed by salt grass, rabbit brush, greasewood, and other vegetation. The Secretary's report on the Division was transmitted to the Congress for its information and consideration on July 17, 1970. It was ordered printed as House Document No. 91-369.

Status of Legislative Action

Bills to authorize the Secretary of the Interior to construct, operate, and maintain the Closed Basin Division were introduced in both the Senate and House of Representatives of the 91st

Congress. Hearings were held on H.R. 17067 on August 6 and 7, 1970. Bills have been introduced in the 92nd Congress. The Department of the Interior's report on S. 520 has been requested.

Environmental Setting

The San Luis Valley has a drainage area of about 8,000 square miles. The floor of the valley, which lies at a general elevation of about 7,500 feet above mean sea level, is an almost treeless plain. The San Juan Mountains and the Continental Divide form the west boundary of the valley and the Sangre de Cristo Range forms the east boundary. Many streams flow from the mountainous areas into or across the valley. The Rio Grande and the Conejos River are the largest of these streams. The lands of the valley floor are largely devoted to irrigated agriculture. Those not used for irrigation, excluding extensive sand dune areas, are covered with saltgrass, greasewood, rabbitbrush, and other vegetation and are used for livestock grazing.

Accounts by early explorers in the valley described the area as a vast expanse of native vegetation supporting many kinds of wildlife such as deer and elk. With the advent of irrigation in the latter part of the nineteenth and early twentieth centuries, the water table in the lower part of the valley north of the Rio Grande began to rise. As the water table neared the land surface, accumulations of salts began to appear. These salts gradually killed the native vegetation and left many barren areas or salt flats, while in other places the native vegetation was replaced by salt-tolerant plants such as saltgrass, greasewood, and rabbitbrush. With the exception of swampy areas which have attracted waterfowl, the Closed Basin area presently supports little wildlife.

If the proposed project is not constructed, the Closed Basin area is expected to progressively become saltier. As more salts accumulate, even the salt-tolerant vegetation will tend to die out, leaving large bare areas of salt-encrusted earth susceptible to wind erosion. Potholes and swampy areas will become saltier and more barren and unattractive for waterfowl.

The San Luis Valley is one of the most important waterfowl production areas in Colorado and contains valuable migration and wintering habitat. Because of these factors, the valley is of importance in the national migratory bird management program.

About 100,000 acres of wetland habitat occurs within the project area. During wet years, the brushland areas from Russell Lakes southeast to San Luis Lake contain hundreds of small potholes. Seepage and runoff from irrigation and artesian wells create entensive marshy areas.

Habitat of the project area is an important segment of the waterfowl habitat within the Central Flyway. Many ducks use the area annually for nesting and during fall and spring migrations. The major nesting species is the mallard, followed by smaller populations of gadwall, pintail, cinnamon teal, green-winged teal, blue-winged teal, shoveler, and baldpate. A few coots and shorebirds also nest in the area.

Brushlands contain suitable habitat for cottontails and mourning doves and ample hunting exists for those who desire this type of hunting. Although beaver and muskrats are common, little interest is shown at present in trapping these animals for their pelts.

Purposes and Description of the Proposed Development

The Closed Basin Division would salvage an average of about 100,800 acre-feet of water annually, primarily by lowering the ground-water level by pumping throughout an extensive area of the Closed Basin. This, in turn, would result in reducing wetland areas and saving of water through reduction of nonbeneficial surface evaporation and evapotranspiration. About 5,300 acre-feet of the salvaged water would be supplied to the existing Alamosa National Wildlife Refuge. The remaining 95,000 acre-feet would be delivered to the Rio Grande. The proposed development also would provide for outdoor recreation opportunities and fish and wildlife conservation and development. Benefits would accrue to area redevelopment from construction of the Division as well as from the operation and maintenance activities that would follow.

The principal works, to be installed in five stages, would ultimately consist of a system of some 136 wells and pumping plants located in selected areas, necessary electric transmission facilities including 110 miles of transmission lines, well field laterals, and 55 miles of conveyance channels to collect and deliver the salvaged flows into the Rio Grande. The salvaged area would encompass an area of 108,600 acres.

The plan contemplates establishment of the Mishak National Wildlife Refuge of about 13,800 acres. The existing Alamosa National Wildlife Refuge would be provided with water to maintain the ponds, wetlands, and feed crops.

The estimated total construction cost of the Closed Basin Division is $17,030,000 (rounded), based on October 1970 prices. Total annual benefits, based on a 100-year period of analysis, are evaluated to be $2,123,000. The ratio of total benefits to costs is 2.04 to 1 and the ratio of direct benefits to costs is 1.29 to 1.

Impact of the Proposed Development on the Environment

If the proposed plan is constructed, the water table will be lowered a minimum of about 8 to 10 feet over an area encompassing 108,600 acres. Salt accumulation will begin to decrease. Normal precipitation will begin to leach the accumulated salt from the earth, thereby reversing the trend for the land to become sterile. As the land becomes less salty and starts to regain productivity, native vegetation should begin to reestablish itself.

As determined by the Bureau of Sport Fisheries and Wildlife, construction of the project would have an adverse effect on wildlife cover and waterfowl by draining some of the wetlands. To offset these adverse effects, the plan provides for the establishment of the Mishak National Wildlife Refuge. This refuge will not only offset these adverse effects but would provide additional benefits for wildlife and waterfowl. It would comprise about 13,800 acres consisting of 7,000 acres of acquired private land, 2,300 acres of public land, and 4,500 acres of land in the Division, and would include construction of necessary fencing, access roads, dikes, water structures, wells, and a refuge headquarters.

The existing Alamosa National Wildlife Refuge,consisting of some 10,358 acres of ponds, wetlands, and feed areas along the Rio Grande at the lower end of the Division area as recommended by the Bureau of Sport Fisheries and Wildlife, would be provided with about 5,300 acre-feet of the water to assure a total supply of 14,000 acre-feet annually to maintain the ponds, wetlands, and feed crops.

San Luis Lake is located within the proposed project area. At the present time there is very little recreation use at the lake due to lack of facilities and water level fluctuation. The lake, which has varied considerably during droughts, will be stabilized with a maximum fluctuation in elevation of about 2 feet. This will provide the valley with a much-needed recreation area and provide a good cold-water fishery near the center of population. Funds are included in the project cost to build basic recreation facilities at the lake.

Temperature of pumped ground water has been tested at 52° F. Cold nights throughout the year will prevent appreciable warming of the salvaged water, and it is estimated that maximum temperatures in the main channel will be about 62° F. Ponded or impounded water in San Luis Lake probably will reach a maximum of 72° F., on a few days each year.

Streamflow records show that at times there is little or no flow in certain reaches of the Rio Grande. The proposed plan contemplates salvage of water at a nearly constant rate of 100 cubic feet per second throughout the entire year. The Rio Grande below the drain outlet is now a unit of the National Wild and Scenic Rivers System administered by the Bureau of Land Management of this Department. The proposed development will not invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area on the date of approval of that Act, October 2, 1968. The additional water delivery as proposed by this project would cause the Rio Grande to become a continuous live stream throughout the Rio Grande Gorge. This would enhance the values for which this river area was added to the National Wild and Scenic Rivers System. The quality of water which will be delivered to the Rio Grande is well within the limits of Public Health Service drinking water standards. It is believed that all functions of the proposed development would be in compliance with quality regulations established by Executive Order No. 11507. Project water releases will be monitored to guard against adverse changes in temperature and quality.

The Bureau of Sport Fisheries and Wildlife determined that the additional water would transform the first 24 miles of the Rio Grande in New Mexico into a good quality trout stream. As a result, fishing will increase on this section of the river. The remaining 52 miles of river probably will be a slightly better

trout stream than at present. The main conveyance channel will be stocked for cold-water fishing on a put-and-take basis.

Inasmuch as the sump area and its series of lakes and swamps is known to have archeological import, the National Park Service, as requested, will be advised prior to construction of the proposed water salvage channel and other project features, so that appropriate investigations, and salvage if indicated, can be undertaken.

Also, prior to construction, the State Liaison Officer, State Historical Society, will be consulted regarding the presence of any historic sites of State of local significance.

There will be approximately 55 miles of conveyance channels and 110 miles of transmission lines in the division. Some roads will be constructed along the banks for public access. Channel locations will be selected to provide a reasonable balance between cut and fill.

The project area would encompass about 109,000 acres to be acquired by the Bureau of Reclamation. The area would include lands now held in Federal, State, and private ownerships. It is expected that as the salt begins to leach from the lands and they are again capable of supporting higher types of vegetation, selected grasses will be planted. These grasses would be grown until the soil could again support native vegetation. The possibility exists that as Colorado's debit status under the Rio Grande Compact decreases, these lands could be irrigated again--possibly using sprinkler systems--to accelerate leaching and return fertility to the soil at a faster rate. The project would furnish an excellent opportunity to establish an experimental program to determine the best use for this reclaimed land from an ecological standpoint.

Adverse Environmental Effects

As discussed above, the drainage of existing wetlands interspersed in the project area would involve loss or drastic reduction of over 100,000 acres of waterfowl habitat. A reduction in the quality of nesting habitat for mourning doves will result in a slight loss.

Alternatives to the proposed action

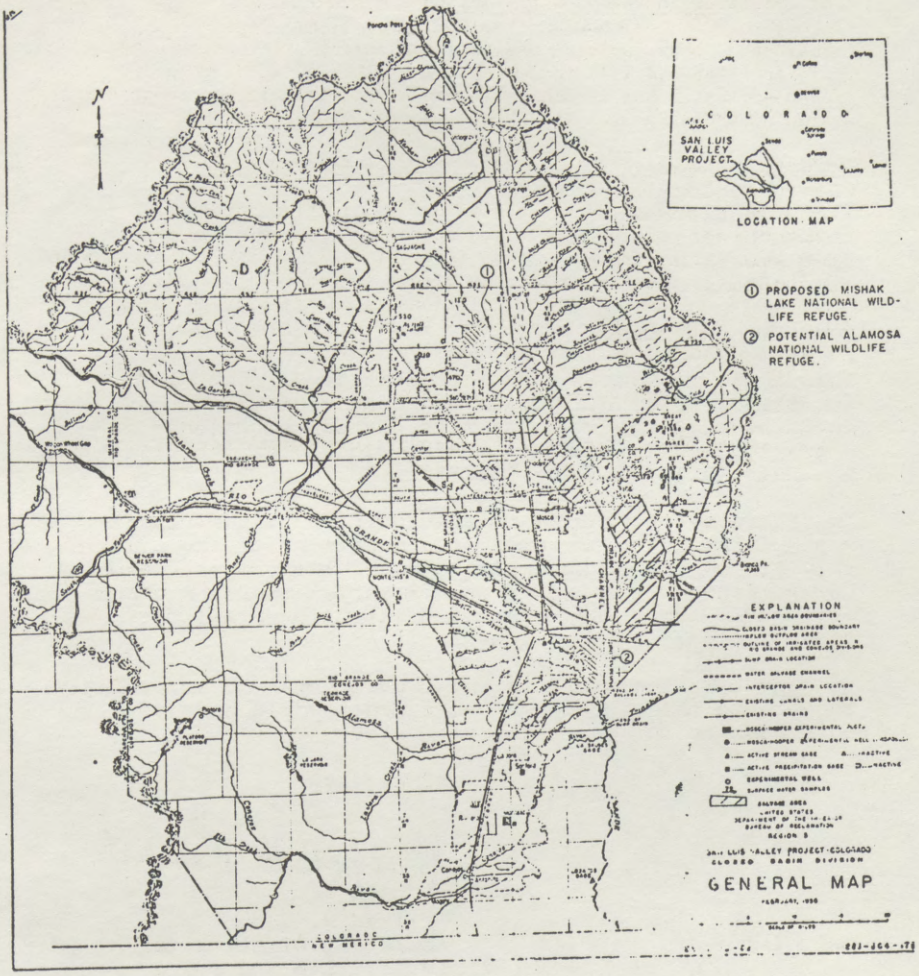
There are no unresolved conflicts concerning alternative uses of the water and land resources. The alternative of forgoing development in the Closed Basin would result in further degradation of the area from its natural state.

Relationship of short-term uses versus long-term needs

The plan provides for stage development of the water salvage features and observation during operation to provide assurance to San Luis Valley irrigators and interests that pumping of the shallow ground water does not adversely affect ground-water conditions in the valley. Thus, a common relationship exists between local short-term use of the water and related land resources and the need to maintain their long-term productivity.

Irreversible commitment of resources

None of the resources would be irreversibly committed.


COLORADO
SAN LUIS VALLEY PROJECT
LOCATION MAP
① PROPOSED MISHAK LAKE NATIONAL WILDLIFE REFUGE.
② POTENTIAL ALAMOSA NATIONAL WILDLIFE REFUGE.
EXPLANATION
SAN LUIS VALLEY PROJECT-COLORADO
CLOSED BASIN DIVISION
GENERAL MAP
COLORADO
NEW MEXICO

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

May 25, 1972

Honorable Henry M. Jackson
Chairman, Committee on Interior
and Insular Affairs
United States Senate
3106 New Senate Office Building
Washington, D. C. 20510

Dear Mr. Chairman:

This is in response to your request of March 2, 1971, for the views of the Office of Management and Budget on S. 520, a bill "To authorize the construction, operation and maintenance of the closed basin division, San Luis Valley project, Colorado."

In its report to your Committee on S. 520, the Department of the Interior recommends enactment of the bill only if amended to make all costs of the project reimbursable under the provisions of reclamation and other applicable law. The report indicates in detail the reasons for this recommendation.

We concur in the views of the Department and, accordingly, subject to the recommended amendment, would have no objection to the enactment of S. 520.

Sincerely,

Wilfred H. Rommel

Wilfred H. Rommel
Assistant Director for
Legislative Reference

Senator ANDERSON. Senator Allott.

STATEMENT OF HON. GORDON ALLOTT, A U.S. SENATOR FROM THE STATE OF COLORADO

Senator ALLOTT. Mr. Chairman, I want to thank you for scheduling these hearings on S. 520, a bill introduced by Senator Dominick and me, which would authorize the Secretary of the Interior to construct the Closed Basin division of the San Luis Valley project, in Colorado. As you know, this project is a water salvage project and its principal works consist of approximately 136 wells and a conveyance canal to discharge such salvaged waters into the Rio Grande River.

This project will benefit not only Colorado, but real benefits in the form of additional water, will be available to the downstream States—New Mexico and Texas. There are, also, many environmental benefits to be achieved by this project.

First, it will put water to a beneficial use where that water is presently being lost to evaporation.

Second, it will prevent the further accumulation of salts in an area important to waterfowl. The vegetation in this area will tend to die out leaving large bare areas of salt encrusted earth susceptible to wind erosion if this project is not constructed and operated.

Third, the project will provide water for the establishment of the Mishak Lakes National Wildlife Refuge and will furnish a more stable water supply for the existing Alamosa Wildlife Refuge.

Fourth, the conveyance canal will provide fishing on a put and take basis.

Fifth, the proposed plan contemplates salvaging of water at a nearly constant rate of 100 cubic feet per second throughout the entire year. The Rio Grande River below the drain outlet has been designated as a unit of the National Wild and Scenic Rivers system, but at certain times of the year, the river is quite low with very little flow. The Bureau of Sport Fisheries and Wildlife determined that the additional water would transform the first 24 miles of the Rio Grande in New Mexico into a good quality trout stream, and the remaining 52 miles of river will probably be slightly better as a trout stream than at present.

Sixth, San Luis Lake, which is located in the area of the proposed project and near the city of Alamosa has had very little recreation use due to the lack of facilities and the great fluctuation in the water level. The project will stabilize the lake and limit fluctuation to about 2 feet. Funds are included in the project cost to build basic recreation facilities at the lake, and this will provide the valley with a much needed recreation area and a good cold water fishery.

Mr. Chairman, as you know, there has been some delay in the transmittal of the Department's report on this legislation. However, it has been received, and it is favorable. While I am the first to admit that the report is not all that is to be desired some of the suggested amendments are well taken. The testimony we are to receive this morning may suggest other amendments which would be beneficial to the project, and which the committee may wish to consider.

I believe some comment is appropriate at this point concerning the national and international character of the Rio Grande River. As re-

cently as May 25, the Senate confirmed its recognition of the Rio Grande as a national and international water course when it passed S. 1295, a bill to authorize the establishment of the Amistad National Recreation Area in Texas. That bill authorized the appropriation of slightly more than $20 million for the Amistad Recreation Area. In the committee's report on S. 1295 the national as well as international significance of the Rio Grande River was recognized. I believe it would be helpful to quote two paragraphs from that report which are as follows:

> The headwaters of the Rio Grande River are in the Rocky Mountains of Colorado, and many communities, in Colorado, New Mexico and Texas depend upon its waters for survival. In 1906 a treaty was entered into between the United States and Mexico to divide the waters of the Rio Grande. The delivery of water to Mexico under the 1906 treaty is an obligation of the Nation, and this was confirmed in the authorization and construction of the Elephant Butte Reservoir to aid in the deliveries.
>
> The fact that the Rio Grande River has been the subject of several treaties makes its development, protection, enhancement and augmentation a national concern and obligation. The obligation is not diminished because a majority of the users of the Amistad National Recreation Area are Texans, just as the national interest in the proposed Gateway National Recreation Area is not diminished simply because the vast majority of the users will be New Yorkers. To the contrary, the international character of the river adds to national interest, especially since international treaties have imposed additional burdens upon three States and their citizens without compensatory setoff or other consideration.

The Department's report in its second paragraph recommends that:

> * * * the bill be enacted only if it is amended to make all costs of the project reimbursable under the provisions of reclamation and other applicable laws.

Later in the report where fish and wildlife benefits are discussed, the following statement appears:

> The remaining costs ($1,508,000) and operation, maintenance, and replacement costs of joint facilties ($21,000) allocated to recreation and fish and wildlife enhancement would be nonreimbursable Federal costs as provided by law.

So, obviosly, all costs are not to be reimbursable and certainly the costs for providing a water supply for Federal wildlife refuge should likewise not be reimbursable. The requirement for reimbursement is necessarily based upon the ability and opportunity to identify the individual beneficiaries. This is true in the case of irrigation water as well as municipal and industrial water. The repayment made by irrigators is based upon their ability to pay, and this in turn is based upon an analysis of the increase in net farm income attributable to the expanded water supply from the project works. The repayment capacity of irrigators is that portion of the increased net farm income available to meet water charges after allowances have been made for returns for farm investment and to family labor and management or family living. The difficulty here is that the water will be discharged into the main stem of the Rio Grande River and allowed to flow downstream, which may benefit individuuals hundreds of miles away, but whose specific benefit it would be impossible to calculate. On this point, I believe it is appropriate to quote from the project report of the Bureau of Reclamation submitted by Commissioner Floyd E. Dominy to Secretary Stewart L. Udall, and approved by the Former Secretary of the Interior on November 25, 1964. The first paragraph on page 80 of that report reads as follows:

> As discussed in the preceding section the costs allocated to recreation and fish and wildlife are nonreimbursable Federal costs which would not be returned to

the United States through direct payments by beneficiaries of those functions. Also it is considered that costs allocated to area redevelopment would be nonreimbursable. *It is considered that the costs allocated to water salvage for construction, and operation and maintenance of water salvage features, should be nonreimbursable Federal expenses, since the individual beneficiaries cannot be reasonably identified.* It is also recognized that the proposed delivery of salvaged water to the Rio Grande to improve Colorado's debit condition under the Rio Grande Compact would be of benefit to all Rio Grande Compact States and to the Nation.

Consequently, while the Departmental report, in which the heavy hand of OMB is clearly evident, suggests reimbursability for this water salvage project, the Bureau of Reclamation, whose responsibility it is to try to identify individual beneficiaries, came to the conclusion that the beneficiaries are so widespread and that the benefits are so varied and do not necessarily include any direct economic benefit, as to require a recommendation of nonreimbursability due to lack of identifiable individual beneficiaries. In other words, the negotiation of repayment contracts was simply impractical.

This in no way diminishes the real benefits to the compact States and to the Nation. As Congressman Lujan observed during the August 1970 hearings in the House of Representatives on a similar measure:

> Mr. Chairman, I have made some inquiries as to the general costs of water projects, and I am advised that this is one of the best water investment possibilities in the entire Southwest. That there is no other project in the Southwest producing this much water for this amount of money.
>
> I urge favorable consideration of this bill, Mr. Chairman, because I feel that it is a tragedy, that with the great need for water in my State, we sit and watch that precious commodity evaporate.

As I noted earlier the project yields many substantial environmental benefits, sufficient in the opinion of some to justify its construction on that basis alone.

In order that the record will be complete, I ask that the 1906 Treaty with Mexico and the 1939 Rio Grande Compact be included in the hearing record.

I look forward to hearing the testimony to be presented this morning, and I am confident that we will hear many fine statements in support of this project.

(The 1906 Treaty with Mexico follows:)

[Convention—Mexico. May 21, 1906]

Convention between the United States and Mexico providing for the equitable distribution of the waters of the Rio Grande for irrigation purposes. Signed at Washington, May 21, 1906; ratification advised by the Senate, June 26, 1906; ratified by the President, December 26, 1906; ratified by Mexico, January 5, 1907; ratifications exchanged at Washington, January 16, 1907; proclaimed, January 16, 1907

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

Whereas a Convention between the United States of America and the United States of Mexico, providing for the equitable distribution of the waters of the Rio Grande for irrigation purposes, and to remove all causes of controversy between them in respect thereto was concluded and signed by their respective Plenipotentiaries at Washington on the twenty-first day of May, one thousand nine hundred and six, the original of which Convention, being in the English and Spanish language is word for word as follows:

The United States of America and the United States of Mexico being desirous to provide for the equitable distribution of the waters of the Rio Grande for

irrigation purposes, and to remove all causes of controversy between them in respect thereto, and being moved by considerations of international comity, have resolved to conclude a Convention for these purposes and have named as their Plenipotentiaries:

The President of the United States of America, Elihu Root, Secretary of State of the United States; and

The President of the United States of Mexico, His Excellency Señor Don Joaquín D. Casasús, Ambassador Extraordinary and Plenipotentiary of the United States of Mexico at Washington;

Who, after having exhibited their respective full powers, which were found to be in good and due form, have agreed upon the following articles:

ARTICLE I

After the completion of the proposed storage dam near Engle, New Mexico, and the distributing system auxiliary thereto, and as soon as water shall be available in said system for the purpose, the United States shall deliver to Mexico a total of 60,000 acre-feet of water annually, in the bed of the Rio Grande at the point where the head works of the Acequia Madre, known as the Old Mexican Canal, now exist above the city of Juarez, Mexico.

ARTICLE II

The delivery of the said amount of water shall be assured by the United States and shall be distributed through the year in the same proprotions as the water supply proposed to be furnished from the said irrigation system to lands in the United States in the vicinity of El Paso, Texas, according to the following schedule, as nearly as may be possible:

	Acre-feet per month	Corresponding cubic feet of water
January	0	0
February	1,090	47,480,400
March	5,460	237,837,600
April	12,000	522,720,000
May	12,000	522,720,000
June	12,000	522,720,000
July	8,180	356,320,800
August	4,370	190,357,200
September	3,270	142,441,200
October	1,090	47,480,400
November	540	23,522,400
December	0	0
Total for the year	60,000	2,613,600,000

In case, however, of extraordinary drought or serious accident to the irrigation system in the United States, the amount delivered to the Mexican Canal shall be diminished in the same proportion as the water delivered to lands under said irrigation system in the United States.

ARTICLE III

The said delivery shall be made without cost to Mexico, and the United States agrees to pay the whole cost of storing the said quantity of water to be delivered to Mexico, of conveying the same to the international line, of measuring the said water, and of delivering it in the river bed above the head of the Mexican Canal. It is understood that the United States assumes no obligation beyond the delivering of the water in the bed of the river above the head of the Mexican Canal.

ARTICLE IV

The delivery of water as herein provided is not to be construed as a recognition by the United States of any claim on the part of Mexico to the said waters; and it is agreed that in consideration of such delivery of water, Mexico waives any and all claims to the waters of the Rio Grande for any purpose whatever between the head of the present Mexican Canal and Fort Quitman, Texas, and also declares fully settled and disposed of, and hereby waives, all claims heretofore asserted

or existing, or that may hereafter arise, or be asserted, against the United States on account of any damages alleged to have been sustained by the owners of land in Mexico, by reason of the diversion by citizens of the United States of waters of the Rio Grande.

ARTICLE V

The United States, in entering into this treaty, does not thereby concede, expressly or by implication, any legal basis for any claims heretofore asserted or which may be hereafter asserted by reason of any losses incurred by the owners of land in Mexico due or alleged to be due to the diversion of the waters of the Rio Grande within the United States; nor does the United States in any way concede the establishment of any general principle or precedent by the concluding of this treaty. The understanding of both parties is that the arrangement contemplated by this treaty extends only to the portion of the Rio Grande which forms the international boundary, from the head of the Mexican Canal down to Fort Quitman, Texas, and in no other case.

ARTICLE VI

The present Convention shall be ratified by both contracting parties in accordance with their constitutional procedure, and the ratifications shall be exchanged at Washington as soon as possible.

In witness whereof, the respective Plenipotentiaries have signed the Convention both in the English and Spanish languages and have thereunto affixed their seals.

Done in duplicate at the City of Washington, this 21st day of May, one thousand nine hundred and six.

And whereas the said Convention has been duly ratified on both parts, and the ratifications of the two governments wer exchanged in the City of Washington, on the sixteenth day of January, one thousand nine hundred and seven;

Now, therefore, be it known that I, Theodore Roosevelt, President of the United States of America, have caused the said Convention to be made public, to the end that the same and every article and clause thereof may be observed and fulfilled with good faith by the United States and the citizens thereof.

In testimony whereof, I have hereunto set my hand and caused the seal of the United States of America to be affixed.

Done at the City of Washington, this sixteenth day of January, in the year of our Lord one thousand nine hundred and seven, and of the Independence [SEAL.] of the United States of America the one hundred and thirty-first.

THEODORE ROOSEVELT.

By the President:
ELIHU ROOT
Secretary of State.

RIO GRANDE COMPACT

[An act giving the consent and approval of Congress to the Rio Grande compact signed at Santa Fe, New Mexico, on March 18, 1938. (Act of May 31, 1939, ch. 155, 53 Stat. 785)]

[Consent of Congress granted.]—The consent and approval of Congress is hereby given to the compact signed by the commissioners for the States of Colorado, New Mexico, and Texas at Santa Fe, New Mexico on March 18, 1938, and thereafter approved by the legislatures of the States of Colorado, New Mexico, and Texas, which compact reads as follows:

RIO GRANDE COMPACT

The State of Colorado, the State of New Mexico, and the State of Texas, desiring to remove all causes of present and future controversy among these States and between citizens of one of these States and citizens of another State with respect to the use of the waters of the Rio Grande above Fort Quitman, Texas, and being moved by considerations of interstate comity, and for the purpose of effecting an equitable apportionment of such waters, have resolved to conclude a Compact for the attainment of these purposes, and to that end, through their respective Governors, have named as their respective Commissioners:

For the State of Colorado—M. C. Hinderlider

For the State of New Mexico—Thomas M. McClure
For the State of Texas—Frank B. Clayton
who, after negotiations participated in by S. O. Harper, appointed by the President as the representative of the United States of America, have agreed upon the following articles to-wit:

ARTICLE I

(a) The State of Colorado, the State of New Mexico, the State of Texas, and the United States of America, are hereinafter designated "Colorado," "New Mexico," "Texas," and the "United States," respectively.
(b) "The Commission" means the agency created by this Compact for the administration thereof.
(c) The term "Rio Grande Basin" means all the territory drained by the Rio Grande and its tributaries in Colorado, in New Mexico, and in Texas above Fort Quitman, including the Closed Basin in Colorado.
(d) The "Closed Basin" means that part of the Rio Grande Basin in Colorado where the streams drain into the San Luis Lakes and adjacent territory, and do not normally contribute to the flow of the Rio Grande.
(e) The term "tributary" means any stream which naturally contributes to the flow of the Rio Grande.
(f) "Transmountain Diversion" is water imported into the drainage basin of the Rio Grande from any stream system outside of the Rio Grande Basin, exclusive of the Closed Basin.
(g) "Annual Debits" are the amounts by which actual deliveries in any calendar year fall below scheduled deliveries.
(h) "Annual Credits" are the amounts by which actual deliveries in any calendar year exceed scheduled deliveries.
(i) "Accrued Debits" are the amounts by which the sum of all annual debits exceeds the sum of all annual credits over any common period of time.
(j) "Accrued Credits" are the amountss by which the sum of all annual credits exceeds the sum of all annual debits over any common period of time.
(k) "Project Storage" is the combined capacity of Elephant Butte Reservoir and all other reservoirs actually available for the storage of usable water below Elephant Butte and above the first diversion to lands of the Rio Grande Project, but not more than a total of 2,638,860 acre-feet.
(l) "Usable Water" is all water, exclusive of credit water, which is in project storage and which is available for release in accordance with irrigation demands, including deliveries to Mexico.
(m) "Credit Water" is that amount of water in project storage which is equal to the accrued credit of Colorado, or New Mexico, or both.
(n) "Unfilled Capacity" is the difference between the total physical capacity of project storage and the amount of usable water then in storage.
(o) "Actual Release" is the amount of usable water released in any calendar year from the lowest reservoir comprising project storage.
(p) "Actual Spill" is all water which is actually spilled from Elephant Butte Reservoir, or is released therefrom for flood control, in excess of the current demand on project storage and which does not become usable water by storage in another reservoir; provided, that actual spill of usable water cannot occur until all credit water shall have been spilled.
(q) "Hypothetical Spill" is the time in any year at which usable water would have spilled from project storage if 790,000 acre-feet had been released therefrom at rates proportional to the actual release in every year from the starting date to the end of the year in which hypothetical spill occurs; in computing hypothetical spill the initial condition shall be the amount of usable water in project storage at the beginning of the calendar year following the effective date of this Compact, and thereafter the initial condition shall be the amount of usable water in project storage at the beginning of the calendar year following each actual spill.

ARTICLE II

The Commission shall cause to be maintained and operated a stream gaging station equipped with an automatic water stage recorder at each of the following points, to wit:
(a) On the Rio Grande near Del Norte above the principal points of diversion to the San Luis Valley;
(b) On the Conejos River near Mogote;
(c) On the Los Pinos River near Ortiz;

(d) On the San Antonio River at Ortiz;
(e) On the Conejos River at its mouths near Los Sauces;
(f) On the Rio Grande near Lobatos;
(g) On the Rio Chama below El Vado Reservoir;
(h) On the Rio Grande at Otowi Bridge near San Ildefonso;
(i) On the Rio Grande near San Acacia;
(j) On the Rio Grande at San Marcial;
(k) On the Rio Grande below Elephant Butte Reservoir;
(l) On the Rio Grande below Gaballo Reservoir.

Similar gaging stations shall be maintained and operated below any other reservoir constructed after 1929, and at such other points as may be necessary for the securing of records required for the carrying out of the Compact; and automatic wate stage recorders shall be maintatined and operated on each of the reservoirs mentioned, and on all others constructed after 1929.

Such gaging stations shall be equipped, maintained, and operated by the Commission directly or in cooperation with an appropriate Federal or State agency, and the equipment, method and frequency of measurement at such stations shall be such as to produce reliable records at all times.

ARTICLE III

The obligation of Colorado to deliver water in the Rio Grande at the Colorado-New Mexico State Line, measured at or near Lobatos, in each calendar year, shall be ten thousand acre feet less than the sum of those quantities set forth in the two following tabulations of relationship, which correspond to the quantities at the upper index stations:

Discharge of Conejos River

[Quantities in thousands of acre-feet]

Conejos index supply (1):	Conejos River at mouths (2)	Conejos index supply (1)—Con.	Conejos River at mouths (2)
100	0	450	232
150	20	500	278
200	45	550	326
250	75	600	376
300	109	650	426
350	147	700	476
400	188		

Intermediate quantities shall be computed by proportional parts.

(1) Conejos Index Supply is the natural flow of Conejos River at the U.S.G.S. gaging station near Mogote during the calendar year, plus the natural flow of Los Pintos River at the U.S.G.S. gaging station near Ortiz and the natural flow of San Antonio River at the U.S.G.S. gaging station at Ortiz, both during the months of April to October, inclusive.

(2) Conejos River at Mouths is the combined discharge of branches of this river at the U.S.G.S. gaging stations near Los Sauces during the calender year.

Discharge of Rio Grande exclusive of Conejos River

[Quantities in thousands of acre-feet]

Rio Grande at Del Norte (3):	Rio Grande at Lobatos less Conejos at mouths (4)	Rio Grande at Del Norte (3)—Con.	Rio Grande at Lobatos less Conejos at mouths (4)
200	60	750	229
250	65	800	257
300	75	850	292
350	86	900	335
400	98	950	380
450	112	1,000	430
500	127	1,100	540
550	144	1,200	640
600	162	1,300	740
650	182	1,400	840
700	204		

Intermediate quantities shall be computed by proportional parts.

(3) Rio Grande at Del Norte is the recorded flow of the Rio Grande at the U.S.G.S. gaging station near Del Norte during the calendar year (measured above all principal points of diversion to San Luis Valley) corrected for the operation of reservoirs constructed after 1937.

(4) Rio Grande at Lobatos less Conejos at Mouths is the total flow of the Rio Grande at the U.S.G.S. gaging stations near Lobatos, less the discharge of Conejos River at its Mouths, during the calendar year.

The application of those schedules shall be subject to the provisions hereinafter set forth and appropriate adjustments shall be made for (a) any change in location of gaging stations; (b) any new or increased depletion of the run-off above inflow index gaging stations; and (c) any transmountain diversions into the drainage basin of the Rio Grande above Lobatos.

In the event any works are constructed after 1937 for the purpose of delivering water into the Rio Grande from the Closed Basin, Colorado shall not be credited with the amount of such water delivered, unless the proportion of sodium ions shall be less than forty-five percent of the total positive ions in that water when the total dissolved solids in such water exceeds three hundred fifty parts per million.

ARTICLE IV

The obligation of New Mexico to deliver water in the Rio Grande at San Marcial, during each calendar year, exclusive of the months of July, August, and September, shall be that quantity set forth in the following tabulation of relationship, which corresponds to the quantity at the upper index station:

Discharge of Rio Grande at Otowi Bridge and at San Marcial exclusive of July, August, and September

[Quantities in thousands of acre-feet]

Otowi index supply (5):	*San Marcial index supply (6)*	Otowi index supply (5):	*San Marcial index supply (6)*
100	0	1,300	1,042
200	65	1,400	1,148
300	141	1,500	1,257
400	219	1,600	1,370
500	300	1,700	1,489
600	383	1,800	1,608
700	469	1,900	1,730
800	557	2,000	1,856
900	648	2,100	1,985
1,000	742	2,200	2,117
1,100	839	2,300	2,253
1,200	939		

Intermediate quantities shall be computed by proportional parts.

(5) The Otowi Index Supply is the recorded flow of the Rio Grande at the U.S.G.S. gaging station at Otowi Bridge near San Idelfonso (formerly station near Buckman) during the calendar year, exclusive of the flow during the months of July, August, and September, corrected for the operation of reservoirs constructed after 1929 in the drainage basin of the Rio Grande between Lobatos and Otowi Bridge.

(6) San Marcial Index Supply is the recorded flow of the Rio Grande at the gaging station at San Marcial during the calendar year exclusive of the flow during the months of July, August, and September.

The application of this schedule shall be subject to the provisions hereinafter set forth and appropriate adjustments shall be made for (a) any change in location of gaging stations; (b) depletion after 1929 in New Mexico at any time of the year of the natural run-off at Otowi Bridge; (c) depletion of the run-off during July, August, and September of tributaries between Otowi Bridge and San Marcial, by works constructed after 1937; and (d) any transmountain diversions into the Rio Grande between Lobatos and San Marcial.

Concurrent records shall be kept of the flow of the Rio Grande at San Marcial, near San Acacia, and of the release from Elephant Butte Reservoir, to the end that the records of these three stations may be correlated.

ARTICLE V

If at any time it should be the unanimous finding and determination of the Commission that because of changed physical conditions, or for any other reason, reliable records are not obtainable or cannot be obtained, at any of the stream-gaging stations herein referred to, such stations may, with the unanimous approval of the Commission, be abandoned, and with such approval another station, or other stations, shall be established and any new measurements shall be substituted which, in the unanimous opinion of the Commission, will result in substantially the same results, so far a the rights and obligations to deliver water are concerned, as would have existed if such substitution of stations and measurements had not been so made.

ARTICLE VI

Commencing with the year following the effective date of this Compact, all credits and debits of Colorado and New Mexico shall be computed for each calendar year; provided, that in a year of actual spill no annual credits nor annual debits shall be computed for that year.

In the case of Colorado, no annual debit nor accrued debit shall exceed 100,000 acre-feet, except as either or both may be caused by hold-over storage of water in reservoirs contsructed after 1937 in the drainage basin of the Rio Grande above Lobatos. Within the physical limitations of storage capacity in such reservoirs, Colorado shall retain water in storage at all times to the extent of its accrued debit.

In the case of New Mexico, the accrued debit shall not exceed 200,000 acre-feet at any time, except as such debit may be caused by hold-over storage of water in reservoirs constructed after 1929 in the drainage basin of the Rio Grande between Lobatos and San Marcial. Within the physical limitations of storage capacity in such reservoirs, New Mexico shall retain water in storage at all times to the extent of its accrued debt. In computing the magnitude of accrued credits or debits, New Mexico shall not be charged with any greater debit in any one year than the sum of 150,000 acre-feet and all gains in the quantity of water in storage in such year.

The Commission by unanimous action may authorize the release from storage of any amount of water which is then being held in storage by reason of accrued debits of Colorado or New Mexico; provided, that such water shall be replaced at the first opportunity thereafter.

In computing the amount of accrued credits and accrued debits of Colorado or New Mexico, any annual credits in excess of 150,000 acre-feet shall be taken as equal to that amount.

In any year in which actual spills occurs, the accrued credits of Colorado, or New Mexico, or both, at the beginning of the year shall be reduced in proportion to their respective credits by the amount of such actual spill; provided, that the amount of actual spill shall be deemed to be increased by the aggregate gain in the amount of water in storage, prior to the time of spill, in reservoirs above San Marcial constructed after 1929; provided, further, that if the Commissioners for the States having accrued credits authorize the release of part, or all, of such credits in advance of spill, the amount so released shall be deemed to constitute actual spill.

In any year in which there is actual spill of usable water, or at the time of hypothetical spill thereof, all accrued debits of Colorado, or New Mexico, or both, at the beginning of the year shall be cancelled.

In any year in which the aggregate of accrued debits of Colorado and New Mexico exceeds the minimum unfilled capacity of project storage, such debits shall be reduced proportionally to an aggregate amount equal to such minimum unfilled capacity.

To the extent that accrued credits are impounded in reservoirs between San Marcial and Courchesne, and to the extent that accrued debits are impounded in reservoirs above San Marcial, such credits and debits shall be reduced annually to compensate for evaporation losses in the proportion that such credits or debits bore to the total amount of water in such reservoirs during the year.

ARTICLE VII

Neither Colorado nor New Mexico shall increase the amount of water in storage in reservoirs constructed after 1929 whenever there is less than 400,000

acre-feet of usable water in project storage; provided, that if the actual releases of usable water from the beginning of the calendar year following the effective date of this Compact, or from the beginning of the calendar year following actual spill, have aggregated more than an average of 790,000 acre-feet per annum, the time at which such minimum stage is reached shall be adjusted to compensate for the difference between the total actual release and releases at such average rate; provided, further, that Colorado or New Mexico, or both, may relinquish accrued credits at any time, and Texas may accept such relinquished water, and in such event the state, or states, so relinquishing shall be entitled to store water in the amount of the water so relinquished.

ARTICLE VIII

During the month of January of any year the Commissioner for Texas may demand of Colorado and New Mexico, and the Commissioner for New Mexico may demand of Colorado, the release of water from storage reservoirs constructed after 1929 to the amount of the accrued debits of Colorado and New Mexico, respectively, and such releases shall be made by each at the greatest rate practicable under the conditions then prevailing, and in production to the total debit of each, and in amounts, limited by their accrued debits, sufficient to bring the quantity of usable water in project storage to 600,000 acre-feet by March first and to maintain this quantity in storage until April thirtieth, to the end that a normal release of 790,000 acre-feet may be made from project storage in that year.

ARTICLE IX

Colorado agrees with New Mexico that in event the United States or the State of New Mexico decides to construct the necessary works for diverting the waters of the San Juan River, or any of its tributaries, into the Rio Grande, Colorado hereby consents to the construction of said works and the diversion of waters from the San Juan River, or the tributaries thereof, into the Rio Grande in New Mexico, provided the present and prospective uses of water in Colorado by other diversions from the San Juan River, or its tributaries, are protected.

ARTICLE X

In the event water from another drainage basin shall be imported into the Rio Grande Basin by the United States or Colorado or New Mexico, or any of them jointly, the State having the right to the use of such water shall be given proper credit therefor in the application of the schedules.

ARTICLE XI

New Mexico and Texas agree that upon the effective date of this Compact all controversies between said States relative to the quantity or quality of the water of the Rio Grande are composed and settled; however, nothing herein shall be interpreted to prevent recourse by a signatory state to the Supreme Court of the United States for redress should the character or quality of the water, at the point of delivery, be changed hereafter by one signatory state to the injury of another. Nothing herein shall be construed as an admission by any signatory state that the use of water for irrigation causes increase of salinity for which the user is responsible in law.

ARTICLE XII

To administer the provisions of this Compact there shall be constituted a Commission composed of one representative from each state, to be known as the Rio Grande Compact Commission. The State Engineer of Colorado shall be ex officio the Rio Grande Compact Commissioner for Colorado. The State Engineer of New Mexico shall be ex officio the Rio Grande Compact Commissioner for New Mexico. The Rio Grande Compact Commissioner for Texas shall be appointed by the Governor of Texas. The President of the United States shall be requested to designate a representative of the United States to sit with such Commission, and such representative of the United States if so designated by the President shall act as Chairman of the Commission without vote.

The salaries and personal expenses of the Rio Grande Compact Commissioners for the three States shall be paid by their respective States, and all other expenses incident to the administration of this Compact, not borne by the United States, shall be borne by the three States.

In addition to the powers aid duties hereinbefore specifically conferred upon such Commission, and the members thereof, the jurisdiction of such Commission shall extend only to the collection, correlation, and presentation of factual data and the maintenance of records having a bearing upon the administration of this Compact, and, by unanimous action, to the making of recommendations to the respective States upon matters connected with the administration of this Compact. In connection therewith, the Commission may employ such engineering and clerical aid as may be reasonably necessary within the limits of funds provided for that purpose by the respective States. Annual reports compiled for each calendar year shall be made by the Commission and transmitted to the Governors of the signatory States on or before March first followiig the year covered by the report. The Commission may, by unanimous action, adopt rules and regulations consistent with the provisions of this Compact to govern their proceedings.

The findings of the Commission shall not be conclusive in any court or tribunal which may be called upon to interpret or enforce this Compact.

ARTICLE XIII

At the expiration of every five-year period after the effective date of this Compact, the Commission may, by unanimous consent, review any provisions hereof which are not substantive in character and which do not affect the basic principles upon which the Compact is founded, and shall meet for the consideration of such questions on the request of any member of the Commission; provided, however, that the provisions hereof shall remain in full force and effect until changed and amended within the intent of the Compact by unanimous action of the Commissioners and until any changes in this Compact are ratified by the legislatures of the respective states and consented to by the Congress, in the same manner as this Compact is required to be ratified to become effective.

ARTICLE XIV

The schedules herein contained and the quantities of water herein allocated shall never be increased nor diminished by reason of any increases or diminution in the delivery or loss of water to Mexico.

ARTICLE XV

The physical and other conditions characteristic of the Rio Grande and peculiar to the territory drained and served thereby, and to the development thereof, have actuated this Compact and none of the signatory states admits that any provisions herein contained establishes any general principle or precedent applicable to other interstate streams.

ARTICLE XVI

Nothing in this Compact shall be construed as affecting the obligations of the United States of America to Mexico under existing treaties or to the Indian tribes, or as impairing the rights of the Indian tribes.

ARTICLE XVII

This Compact shall become effective when ratified by the legislatures of each of the signatory States and consented to by the Congress of the United States. Notice of ratification shall be given by the Governor of each State to the Governors of the other States and to the President of the United States, and the President of the United States is requested to give notice to the Governors of each of the signatory States of the consent of the Congress of the United States.

IN WITNESS WHEREOF, the Commissioners have signed this Compact in quadruplicate original, one of which shall be deposited in the archives of the Department of State of the United States of America and shall be deemed the authoritative original, and of which a duly certified copy shall be forwarded to the Governor of each of the signatory States.

Done at the City of Santa Fe, in the State of New Mexico, on the 18th day of March, in the year of our Lord, One Thousand Nine Hundred and Thirty-eight.

M. C. HINDERLIDER,
THOMAS M. MCCLURE,
FRANK B. CLAYTON.

Approved:
S. O. HARPER.

EXPLANATORY NOTES

Not Codified. This Act is not codfied in the U.S. Code.

Consent to Negotiate Compact. The Act of March 2, 1929, 45 Stat. 1502, granted the consent of Congress to the negotiation of a compact between the States of Colorado, New Mexico and Texas with respect to the waters of the Rio Grande River.

Cross Reference, Temporary Rio Grande Compact. The Act of June 17, 1930, 46 Stat. 767, granted the consent of Congress to a temporary compact between the States of Colorado, New Mexico and Texas with respect to the waters of the Rio Grande River above Fort Quitman, Texas, The 1930 Act, including the text of the temporary compact, appears herein in chronological order.

Legislative Histroy. H.R. 4997, Public Law 96 in the 76th Congress. H.R. Rept. No. 525, S. Rept. No. 445.

NOTES OF OPINIONS

Rio Grande Project 1
United States as party 2

1. Rio Grande project

An analysis of the Rio Grande Compact shows convincingly that the water of the river belonging to Texas is definitely committed to the service of the Rio Grande reclamation project. *El Paso County Water Improvement District No. 1*, 133 F. Supp. 894, 907 (W.D. 1955), *affirmed on other grounds*, 243 F. 2d 927 (5th Cir. 1957), *cert. denied* 355 U.S. 820 (1957).

2. United States as party

A complaint by Texas against New Mexico involving the Rio Grande was dismissed because of the absence of the United States as an indispensable party. *Texas* v. *New Mexico*, 352 U.S. 991 (1957) (memorandum).

Mr. Chairman, I ask that a statement by my colleague, Senator Dominick, who cannot be here at this moment, be inserted in the record at this point.

Senator ANDERSON. Without objection, it will be done.

(Statement of Senator Dominick follows:)

STATEMENT OF HON. PETER H. DOMINICK, A U.S. SENATOR FROM THE STATE OF COLORADO

Senator DOMINICK. Mr. Chairman: As a cosponsor of S. 520 with my colleague from Colorado, Senator Gordon Allott, I urge favorable action regarding this bill. The bill authorizes a water salvage project in the San Luis Valley in Colorado known as the Closed Basin project. The project would salvage shallow ground water not being beneficially used and deliver this water which would be otherwise wasted into the Rio Grande River. This would make additional waters available thereby allowing the United States of America to fulfill its obligations to the United States of Mexico under a treaty dated May 21, 1906. The United States is in arrears approximately 250,000 acre-feet under the treaty requirements because the flow of the Rio Grande has been less than anticipated since 1950. As a result of the 1906 treaty the Federal Government constructed Elephant Butte Reservoir on the Rio Grande. This reservoir was designed to guarantee the water promised to Mexico under the treaty. Inasmuch as the United States is now in arrears

to Mexico, the Closed Basin project would substantially assist our country in meeting its obligations. Accordingly the project should be funded by the Federal Government.

There is a law suit presently pending in the United States Supreme Court in which New Mexico and Texas have sued Colorado claiming that Colorado is 840,000 acre-feet in arrears to those States under the Rio Grande compact which is an interstate compact entered into by the three States in 1929.

The Supreme Court is holding the suit in abeyance as long as Colorado meets its current delivery obligations under the compact. Meeting these obligations works an economic hardship on the San Luis Valley particularly in dry years.

The Closed Basin division would require the development of approximately 136 wells throughout the entire salvage area. Water salvaged through these wells would be delivered to the Rio Grande River. The area is located north and east of Alamosa, Colo. and northeast of the Rio Grande River, Saguache and Alamosa Counties, Colo. Estimated cost of the project is in excess of $17 million.

It is important to note that there would be no dams constructed on the Rio Grande or any of its tributaries. Section 8 of the bill provides that the Secretary of the Interior shall conduct certain feasibility studies regarding the improvement of existing channels and possible construction of Wagon Wheel Gap Dam and Reservoir.

However, information available at this time indicates that such construction is not required. The consensus among local residents is that the feasibility studies provided for in section 8 are not necessary.

There are many benefits to the environment of the area as a result of this project. I urge favorable and expeditious action by the committee.

Thank you.

Senator ANDERSON. Commissioner Armstrong.

STATEMENT OF ELLIS ARMSTRONG, COMMISSIONER, BUREAU OF RECLAMATION

Mr. ARMSTRONG. Mr. Chairman, I have with me Mr. Dan McCarthy, chief of our planning division, Mr. Rowland Fife, the area engineer from Albuquerque, N. Mex., and as a further backup, Mr. Lee Buettner, who is our regional hydrologist in the region in which this project is located. We are appearing today to testify on the legislation to authorize the construction of the proposed Closed Basin division of the San Luis Valley project in Colorado. We favor enactment of S. 520 if it is amended to require the repayment of all costs allocated to the water salvage function.

The surface waters of the Rio Grande are appropriated among the States of Colorado, New Mexico, and Texas in accordance with the Rio Grande compact, which was ratified by the States, consented to by the Congress, and approved by the President in 1939.

Accounting of water under the terms of the compact began on January 1, 1940. The credits for New Mexico and Colorado were canceled in 1942 by the spill of usable water from project storage at Elephant Butte and Caballo Reservoirs.

From 1943 through 1949, Colorado gradually accrued a credit of 144,700 acre-feet. Subsequent to 1949, there has been a continuous trend toward the accrual of debits with Colorado's accrued debit amounting to about 927,000 acre-feet at the end of 1966. Since that time, Colorado has decreased its debit to about 793,700 acre-feet at the end of 1971.

The amount of underdeliveries have averaged about 38,000 acre-feet per year since 1952. Litigation is pending against Colorado by the States of New Mexico and Texas. As long as Colorado continues to meet its annual obligation under the compact, we understand that the litigation will remain in a pending status.

Numerous investigations directed toward further development of the land and water resources of the San Luis Valley have been made. The early investigations culminated in the authorization of the San Luis Valley project. The San Luis Valley project as described in House Document 693, 79th Congress, was authorized under a secretarial finding of feasibility, dated April 10, 1940. in conformity with the provisions of section 9 of the Reclamation Project Act of 1939.

The San Luis Valley project consists of the Conejos, Rio Grande, Weminuche Pass, and Closed Basin divisions. In practical effect only the Conejos division, consisting of the Platoro Dam and Reservoir, which were completed in 1951, can be considered as authorized.

A supplemental report on the Rio Grande and Weminuche Pass divisions was completed in 1958, and transmitted to the affected States and Federal agencies for review.

The 1940 report found that construction of a Closed Basin drain should be contingent upon a conclusive finding of justification on the basis of cost, quantity and quality of water to be secured, and adequate arrangements for maintenance of the drain.

By resolution of February 20, 1964, the Rio Grande Compact Commission requested that the Secretary's justification report on the Closed Basin division be completed as quickly as possible and be submitted to the affected States for review as provided by law.

The necessary feasibility investigations were completed and the report was submitted to the States for review and comment on December 2, 1964.

Since that time there have been changes in criteria and policies used in project plan formulation and economic evaluation. A reevaluation of the division was made in May 1970 using current guidelines.

The Secretary's report, along with the reevaluation was transmitted to Congress on July 17, 1970, and ordered to be printed as House Document 91–369.

The works proposed for the division would salvage shallow ground water now nonbeneficially consumed in the Closed Basin which is on the northeast side of the Rio Grande in Saguache and Alamosa Counties in south-central Colorado. The proposed development would salvage an average of about 100,800 acre-feet annually of good quality water which is being lost by evaporation or consumed by salt grass, rabbit brush, greasewood, and other nonbeneficial vegetation.

Development of the division would permit delivery of additional Rio Grande flows to the States of New Mexico and Texas in accordance with the provisions of the Rio Grande compact, provide for the establishment of a national wildlife refuge and firm up the water supply of a second national wildlife refuge for preservation and

propagation of wildlife, and provide additional fishing and recreational opportunities and area redevelopment benefits.

The Closed Basin division water salvage facilities to be installed in five stages, would ultimately consist of a system of some 136 wells located in selected areas within the water salvage area of some 108,600 acres. To the extent practical, the wells would be located so as to permit pumping directly into conveyance channels.

Where this is impractical, small lateral canals would collect the discharges of several wells and deliver the combined flows to conveyance channels, A main conveyance channel about 44 miles long, as indicated on the map, would deliver the collected flows to the Rio Grande.

Adequate access roads and channel crossings would be provided to permit efficient access to pumping installations and to electric transmission facilities.

The plan contemplates establishment of the Mishak National Wildlike Refuge which would consist of about 13,800 acres. The existing Alamosa National Wildlife Refuge, consisting of some 10,358 acres of ponds, wetlands, and feed areas along the Rio Grande would be provided with about 5,300 acre-feet of salvaged water to assure a total supply of 14,000 acre-feet annually.

San Luis Lake would be connected to the conveyance channel with a side channel about one-half mile long to permit salvaged water to be diverted into the lake for temporary storage, and to provide for minimum fluctuations of the water surface of the lake. Basic recreation facilities would be provided at San Luis Lake at Federal expense, as recommended by the National Park Service.

The basic recreation plan contemplates facilities for camping and improved picnic facilities, including appropriate sanitation facilities, planting, fencing, parking areas, and boat-launching facilities. Accessory recreation facilities would be constructed with non-Federal funds.

San Luis Lake was privately developed for recreation use in the 1940's and was very popular, especially for fishing. However, a drought cycle starting in the 1950's caused the lake to dry up on two different occasions, and the lake level is and has been relatively low most of the time since. Consequently, recreation use has been so reduced that the existing private facilities are now abandoned and in disrepair. With the desirable water levels maintained in San Luis Lake, it would again become a popular recreation area with outstanding visitation and public use.

The remaining 95,500 acre-feet of salvaged water not required for wildlife purposes would be delivered to the Rio Grande and would contribute substantially to the alleviation of the critical water shortages in the Rio Grande Basin which chronically prevail.

It would enable the State of Colorado to meet its commitments to the States of New Mexico and Texas for water delivery under the Rio Grande compact.

The Rio Grande is one of the most critical water short river basins of the country. It also is one of the most remote insofar as water augmentation facilities are concerned. To bring water to the Rio Grande from outside sources would be extremely expensive. Salvage of over

100,000 acre-feet of water now wasted in the closed basin constitutes by far the lowest cost source of new water supply for the Rio Grande.

In the interests of prudent water management in a water short area the water now being nonbeneficially wasted and consumed in the closed basin should be salvaged.

Our May 19, 1972, report on the bill indicated that the annual benefits anticipated from development of the closed basin division total $2,123,000 of which $1,343,000 are direct benefits.

The construction cost of the division was estimated to be just over $17 million based on October 1970 prices. The ratio of total benefits to costs was found to be 2 to 1 and the ratio of direct benefits to costs was 1.3 to 1 based on a 100-year period of analysis at 4⅞ percent interest, which was the prevailing interest rate at the time the feasibility report was transmitted to Congress.

In order to provide you with more current data we have updated the cost estimate to reflect April 1972 price levels. On that basis the estimated construction cost is $18.2 million. Annual operation, maintenance, and replacement costs are estimated to be $355,000. The annual benefits would remain at the levels cited earlier. That is $2,123,000 and $1,343,000 for total and direct benefits, respectively. The annual equivalent costs for a 100-year period of analysis at 4⅞ percent interest are computed to be $1,119,000. The ratio of total benefits to costs plus is 1.9 to 1 and the ratio of direct benefits to costs is 1.2 to 1.

The total construction costs have been allocated to the functions of the division as follows: water salvage, $16,391,000; fish and wildlife enhancement, $939,000; and recreation, $916,000.

The construction costs of $16,391,000 and annual operation, maintenance and repair costs of $287,000 allocated to the water salvage function would be nonreimbursable under the provisions of S. 520.

However, we believe that Colorado should repay the costs allocated to this function since the State would be benefitted substantially.

Assuming the salvaged water would be used for irrigation, 50 equal annual payments of $327,820 would be required to repay the construction costs allocated to water salvage. An additional $287,000 would be required annually to pay the operation, maintenance, and replacement costs bringing the total annual obligation to $614,820.

The State of Colorado has indicated in writing its intent to agree to administer the land and water areas of the division for the purpose of recreation and fish and wildlife enhancement and to bear the associated reimbursable costs allocated to the two functions, as required by the Federal Water Project Recreation Act.

In accordance therewith the reimbursable costs allocated to recreation and fish and wildlife enhancement amount to $334,000 for construction, $9,500 for interest during construction, and $47,000 for annual operation, maintenance, and replacement.

The remaining construction costs of $1,521,000 allocated to recreation and fish and wildlife enhancement, and remaining annual operation, maintenance, and replacement costs of $21,000 would be nonreimbursable as provided by law.

The impact of construction and operation of the Closed Basin division upon the human environment has been examined pursuant to

the National Environmental Policy Act of 1969. Our studies show that the division would have a very favorable impact on both the social and economic environment of the area.

In addition to the beneficial effects on the wildlife refuge and the waterfowl area previously mentioned, the plan contemplates the salvage of water into the Rio Grande at a nearly constant rate of 100 cubic feet per second throughout the entire year.

The Rio Grande below the point of discharge into the river is now of the National Wild and Scenic Rivers System administered by this Department. At times there is little or no flow in this and other reaches of the river.

The additional water delivery proposed by the plan would cause the Rio Grande to become a continuous live stream, thus enhancing the values for which the Rio Grande Gorge was added to the National Wild and Scenic Rivers System. The water which will be delivered to the Rio Grande is of high quality and well within the limits of Public Health Service drinking water standards. Project water releases would be monitored to guard against adverse changes in temperature and quality, if they should occur.

In the absence of any indication of willingness on the part of Colorado or local interests to repay any portion of the costs of the Closed Basin division, other than those related to recreation and fish and wildlife, the Department's feasibility report on the Closed Basin division refrains from recommending authorization of the plan presented.

We recognize that there have been cases where construction of water salvage facilities were undertaken at Federal expense; and that such works have assisted States in meeting interstate compact commitments.

We do not feel that it is proper for the Federal Government, as a general premise, to assume the obligation of a State deriving from its voluntary participation in an interstate water compact. This would be one of the principal results of enactment of S. 520 as now constituted.

We would much prefer that Colorado meet its Rio Grande Compact obligations through limitations on its internal water uses, as experience of the past 5 years indicates may be practical.

Also, we believe it would be equitable if Colorado, desiring to expand its consumptive use of Rio Grande waters, would agree to repay the costs of the Closed Basin division, under the provisions of Reclamation law. This could be accomplished by the assessment of a San Luis Valley-wide ad valorem tax. This would levy the charges on the primary beneficiaries because the salvaged water would make possible increased use of water within the San Luis Valley in Colorado.

And that, Mr. Chairman, is our statement.

Senator ALLOTT. Thank you, Mr. Armstrong, for your statement. And, of course, I understand, as does the committee, the cast of the statement in the light of the position of the Office of Management and Budget.

I am going to read from page 80 of the Bureau's project report: "It is considered that costs allocated to water salvage for construction, operation, and maintenance of water salvage features, should be nonreimbursable Federal expenses, since the individual beneficiaries cannot be reasonably identified."

Now, have there been any changes since that project report was sent to Congress to make the individual beneficiaries any more readily identifiable?

Mr. ARMSTRONG. I don't believe so. I think that is still the case, Senator.

Senator ALLOTT. Well, that ties, Mr. Commissioner, into one thing in your statement which causes me some considerable difficulty. You said that this could be accomplished by the assessment of a San Luis Valley-wide ad valorem tax. Now, personally, and I will ask some of our people from Colorado this question later, but it occurs to me that the only way that this could be done would be through the establishment of a valleywide conservation district or irrigation district, or utilizing one of the statutory methods that Colorado has created to deal with its particular water problems. I just can't quite see how you can establish a countywide or a valleywide, San Luis Valley-wide ad valorem tax. Did you have anything particular in mind in that respect?

Mr. ARMSTRONG. I think, Senator, we could say that these direct beneficiaries of the Closed Basin division in Colorado would be the water users in the Rio Grande Basin in Colorado. And, as I mentioned, about the only way to allocate costs to them would be with some type of ad valorem tax or some type of an organization, as you suggest. It would be extremely difficult if not impossible to identify the individual beneficiaries in the area. The beneficiaries would not always benefit uniformly and would benefit to different degrees each year depending on the volume of runoff.

And, of course, the benefits would vary in inverse proportion to the seniority of the water right of that particular beneficiary. So, as a group, these are the folks that will receive the benefits so it is the position of the administration that they should bear the costs.

Senator ALLOTT. I have in my hand an article which I don't intend to question you about but an article in the Washington Post, by George C. Wilson and Haynes Johnson, on September 19, 1971, datelined Center, Colo. Center is just about the middle of the San Luis Valley, as you know.

Mr. ARMSTRONG. Yes.

Senator ALLOTT. It points out the extreme poverty in that area, the fact that the Army has had to go in and help out the people in that area, and I will ask, without commenting further on it, but I will ask that this be inserted in the record at this point, Mr. Chairman.

Senator ANDERSON. Very well.

(Clipping from Washington Post follows:)

[From the Washington Post, Sept. 19, 1971]

CIVIC ACTION: ARMY'S NEW BATTLEFIELD

(By George C. Wilson and Haynes Johnson)

CENTER, COLO.—It was a relief, after seeing the ravages of Vietnam, to look down from the gunner's seat of a Huey helicopter and this time see soft yellow farm fields unscarred by bomb craters.

ARMY IN ANGUISH

Spread out below on the floor of the San Luis Valley, surrounded by the awesome Colorado mountain, was the farm town of Center, population 1,460. Sixty per cent of the people are Chicanos. Most of them are poor. Center, long

ignored by the rest of the world, is now the battleground for a new type of war being fought by the U.S. Army.

This time, though, the war has a constructive—if not altogether uncontroversial—purpose. There are no guns, no search-and-destroy missions and no body counts.

If the Army wins this new war, Secretary of the Army Robert F. Froehlke and other leaders believe, better days are coming for the institution.

The Army is calling its new war "domestic action." The idea is to use Army resources to help impoverished communities to help themselves. Here the troops involved are the 52d Engineers based at Ft. Carson, Colo.; in North Carolina, the Green Berets are involved with health care and other sociological activities near their home base at Ft. Bragg. Their activities, although conducted quietly, are widening as the Army looks for something constructive to do in peacetime.

Antimilitarists, some politicians and many other recoil at the idea of the Army intruding into civil affairs, however good its intentions. To some, domestic action sounds like pacification all over again—despite the bitter experience with it in Vietnam.

The Army leadership knows all this. It feels, however that such criticism can be answered successfully if the critics will only look at domestic action dispassionately and not through eyes blurred by Vietnam.

Center is one of the places the Army invites its critics to inspect. Froehlke himself went to the town and commented enthusiastically on what he saw. He wants the Army to do more of it.

The beauty of domestic action, Froehlke says, is that the soldiers can perform the training they would have to undergo anyhow and yet they can do it where they can see positive results.

The young people in today's Army, the secretary says, "are far more idealistic, far better motivated than my contemporaries back in World War II. They want to feel as though they're contributing to the overall good.

"Now, if we can explain the peacekeeping mission of the Army, that's one step" toward convincing young Americans that the Army is not just "a war machine. It's a machine prepared to wage war in order to keep the peace. Now that is not just semantics; that's vital if we're going to get these young people in the Army."

Froehlke, who only took office on July 1, concedes that public relations considerations are part of the appeal of domestic action. Such projects explain "to the public generally that we have human beings in the Army that have the same human motivation, the same desires as anybody else. And they want to help a guy who is down and out, a community who is down and out."

Center—part of it, anyhow—is indeed down and out. From the helicopter, it looks like a grid of low adobe structures plopped amid yellow and green farm fields running up to the mountains. Up close, the Chicano sections are slums: abandoned cars in the alleys, wood piles to burn for heat, outside privies, no running water. Some children get sick on the poisoned water coming from backyard surface wells.

The residents, living off widely spaced harvest checks, cannot afford to pay for paved streets or running water. The surrounding beauty of the Colorado countryside mocks the pain of many of the people here.

The Army—in the form of 15 men with trucks, a bulldozer and a frontend loader—came into Center early this year. The first invitation was issued, ironically enough, by Terry Marshall, a conscientious objector who directs the federal government's Head Start program here, when he asked the Army to truck in some surplus government equipment.

Maj. Gen. John C. Bennett, commander of Ft. Carson, told a local citizens group that the Army could do more. Much of the work Center needs to have done would provide useful training for the soldiers, he said. Bennett stressed that the Army could provide only the manpower and equipment, not the money or material. Also, he said, the town itself must decide what it wanted from the Army. And it would have to submit a request.

From then on, amazing things began to happen in Center, recalls Marshall, who says that—although it is his home town—the townspeople consider him and anything else connected to federal welfare as radical, if not communistic.

"The Army," said Marshall, "gave me credibility. The old attitude around here was, 'If it has to come from OEO (Office of Economic Opportunity), we don't want it whether we need it or not.' But the people around here trust the Army. So when they saw us working together, I was able to get someplace."

Besides that, the town realized it had to organize itself to obtain benefits from the Army. This gave birth to the Planning Commission where, as the citizens tell it, for the first time in years Anglos and Chicanos sat around the same table and jointly decided what center needed most that the Army could provide.

The decision could have hardly delighted Pentagon imager makers, bruised as they are from past revelations about the American role in Vietnam's "tiger cages." For the town of Center decided that what must be built first was a town jail.

That is what the Army engineers are working on now. It brings to mind the World War II novel, "A Bell for Adano," in which the Italian villagers explain to the U.S. army major that what their town needs most is a bell.

"You wouldn't want to put anybody you knew in that place," said a policeman of the jail being replaced. "We have to send our juveniles and any women to another town if they get arrested," said a Center housewife. "The jail we have now is a disgrace," said a civic leader here.

So every morning and every afternoon, the people of Center see a group of Army GIs dressed in fatigues and armed with hammers and saws building their new jail alongside the town hall.

At night, the officers retire to makeshift quarters in the white cement building still sporting the name Long Horn Cafe. The enlisted men sleep in the basement of Center's Catholic church.

One of the sergeants supervising the work at the jail is Linfred Davis, a veteran of 20 years service and, as a part Sioux, a man who has lived on an Indian reservation. "I hope," he said, "that the Army after this goes in and helps those people on Indian reservations. Nobody else will. It would really be a good thing."

Other soldiers interviewed had similar comments. Their theme was that if Army machines and men have to be kept busy anyway, why not use them where they can do some good, rather than keep them tied to a base with make-work duties?

Lt. Juan Gomez is the closest thing to a field commander for the Army effort at Center. Only 24, he is credited by local citizens with sensitivity and understanding far beyond his years. A Chicano himself, he knows what discrimination feels like.

"My teacher paddled me in front of the class once because I spoke Spanish, not English," he recalls.

Gomez found Army life miserable—until he got this chance to help his own people. Yet he realizes that if he, as a representative of the Army, offends one people here, the whole domestic action program will suffer. To walk with him around the little town of Center is like walking with a politician with a sure feel for his constituency.

To a fellow Chicano asking about whether the Army intends to pave the streets and put in water, Gomez speaks Spanish; to the mayor of Center, he speaks plain English, and to the commanders who come through the town occasionally to check up, he uses military terminology. Gomez attends meetings of the town council, planning commission, school board. All are places that may want to ask what the Army can do.

"It's good for the Army," said Gomez of domestic action work, "because it gives the soldier some sense of accomplishment, some usefulness. And it is very productive training."

The townspeople find it benefits them, too. "The Army has been real good for our town," says Mayor Keith H. Edwards. "We haven't had any real trouble. I haven't had a single complaint about them. The thing of it is, we don't have any funds to do what they're doing for us."

Further testimony to the long-term poverty of Center is the town hall built by President Franklin D. Roosevelt's Works Progress Administration in 1937. Now the town fathers are asking the Army to modernize it; they still do not have enough money to pay for the labor required.

At a trailer-sized clinic the Army helped build for Center, the director talked of the unifying force of this military presence in what is supposed to be an anti-military era in the United States.

"I don't think we could have accomplished anything without the Army bringing the community together," Jerry Archuleta said. Each time I think the Army is going away, I shudder."

Townspeople, the local newspaper editor, civil leaders, policemen—all had praise for the Army's activities. This does not mean there is no resentment, but the prevailing view is positive. Social worker Marshall says he now regards the Army "as another resource to be drawn upon." He would like to see the Army go beyond construction and accept some of Center's young people into its training schools to learn marketable skills.

One negative comment came from Dr. Anthony John Sliwkowski, the dentist at Center's new clinic. "I was a little resentful of the Army coming in here and finishing the clinic," he said. He feared the people would come to lean on the Army as the Eskimos relied on the white traders, only to be abandoned.

Back in Washington, at the Pentagon, there also are some reservations about the Army's getting into community action programs. Brig. Gen. Robert G. Gard Jr., for one, wrote in the magazine Foreign Affairs that "it would be wrong to use military units to engage in civic action projects in American cities, for this would thrust the armed services into sensitive activities for which they are unqualified. Poor performance in these projects, or even controversy over selection of priorities, could lead to further resentment of the military establishment . . .

Defense Secretary Melvin R. Laird, like Robert S. McNamara before him, is well aware of the political explosiveness of domestic action. But he believes it is a risk worth taking. Froehlke, taking his cue from Laird, intends to increase the Army's domestic action program.

"We must do more, much more," Froehlke said. "As long as we limit it to something that will help the soldier in his training mission; as long as we can accomplish our other goals without adding more men or more dollars, I see no limitation.

"I don't see the politicans objecting," he said, "because we don't take over the leadership."

Some Army strategists argue that the time is coming when killing people will be an unacceptable form of warfare. Killing would be done only as a last resort, they theorize, just as dropping the H-bomb is looked upon as the last resort nowadays. But winning over uncommitted peoples through dramatic improvements in their surrounding may indeed be the battleground for contending world powers. If so, they reason, domestic action may turn out to be the most critical military training of all.

Froehlke believes that day is still far off, "but I think, and hope, we're heading in that direction. And as we get closer to that time, domestic action has to become more and more important."

Senator ANDERSON. Did he say that there was a problem in that area?

Senator ALLOTT. In answer to my question, he says that the people of the San Luis Valley, all of them, will be beneficiaries and therefore there should be an ad valorem tax assessed upon the entire valley. Which, incidentally, would include—if you did it with the whole valley, it would include Saguache County, Alamosa County, Conejos, Mineral, Rio Grande, and Costilla—but only three of these are directly involved in this. And in addition to that, on the basis of our usual reimbursable concept you can't really—as you said, your original statement was valid—since individual beneficiaries cannot be reasonably identified.

Mr. ARMSTRONG. Yes.

Senator ALLOTT. And you still think that's true? Individual beneficiaries cannot be reasonably identified?

Mr. ARMSTRONG. It would be most difficult. I am not sure just how you would proceed to identify them, Senator.

Senator ALLOTT. I don't, either. Now, your statement on page 10 states that repayment of project costs by ad valorem would be appropriate because a new water supply would be made available by the project. Now, aside from the national wildlife refuges, how much

water would be provided by the project for use in Colorado within the first few decades after the project is completed?

Dr. ARMSTRONG. For use in Colorado?

Senator ALLOTT. Yes.

Mr. ARMSTRONG. The salvage water——

Senator ALLOTT. Aside from the wildlife refuges. Mishak and those.

Mr. ARMSTRONG. None of the salvaged water would be used directly in Colorado but would be used to satisfy the downstream requirements in the interstate compact, you see. And water from the Rio Grande or ground sources could be utilized in Colorado by exchange. The amount of such water would be approximately 95,000 acre-feet as I mentioned. Of course, a primary objective under S. 520 would be for Colorado to meet its deficit that now exists.

Senator ALLOTT. Mr. Commissioner, I wish you would provide for the record a summary of those water control projects which have been authorized or constructed with provisions for nonreimbursable Federal funding to assist in carrying out national treaty obligations. I am not sure whether you have a list of those.

Mr. ARMSTRONG. I do have. There have been quite a number of them. They all haven't been quite the same as the Closed Basin. There are some differences.

Senator ALLOTT. All right. I have a few here, and I will ask that this entire list that I have be placed in the record, as well as the list that he has, Mr. Chairman.

Mr. ARMSTRONG. Yes; I have a list of 10.

(The material referred to follows:)

PRECEDENTS FOR NONREIMBURSABLE FEDERAL ASSISTANCE TO MEETING WATER DELIVERIES REQUIRED BY TREATIES AND INTERSTATE COMPACTS

(List submitted by Senator Allott)

Salvage measures that aid in meeting international treaty obligations

1.	Colorado River channelization	$55,300,000
2.	Senator Wash Reservoir	8,600,000
3.	Ground Water Recovery, Colorado River	13,400,000

Control structures that aid in meeting international treaty obligations

1.	Elephant Butte	$ 1,000,000
2.	Amistad Dam and Reservoir	72,200,000
3.	Falcon Dam and Reservoir	36,800,000
4.	Wellton-Mohawk Bypass	11,000,000

Salvage measures that aid in meeting interstate compacts

1.	Channel Rectification—Middle Rio Grande	$17,100,000
2.	Pecos River phreatophyte control	5,000,000

Declaration of treaties as national obligation

1. Colorado River Basin Project Act of 1968

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SUBMITTED BY THE BUREAU OF RECLAMATION

Following are descriptions of works constructed or authorized to be constructed by the Federal Government on a non-reimbursable basis involving the salvage or control of water and having a direct or indirect relationship to an interstate water compact or an international treaty. Included also is reference

to the policy established in the Colorado River Basin Project Act of 1968 recognizing that discharge of the Mexican Treaty water delivery obligation on the Colorado River is a national obligation.

CHANNEL RECTIFICATION—MIDDLE RIO GRANDE PROJECT, N. MEX.

The economic stability of the Middle Rio Grande Valley was being threatened by a progressive aggradation of the river channel which had caused, and was continuing to cause a general rise in the water table resulting in abandonment of productive lands and reduction in crop yields on the remaining affected lands, a progressive increase in flood damages, inability on the part of New Mexico to deliver water required under the Rio Grande Compact, and a generally low level of farm income. The continuing aggravation of these conditions would soon make it physically impossible for the United States to meet its water delivery obligation to Mexico.

The comprehensive plan approved by the Congress in the Flood Control Act of 1948 proposed the construction and maintenance of works which would lower the ground water level. The channelization program was started in 1951. By 1956, New Mexico's accrue debit was 529,000 acre-feet. By the end of 1969 the debit status had been reduced to 182,400 acre-feet. New Mexico has in most years been able to meet compact requirements since 1956 and has been able to deliver some credit water.

Through June 30, 1970, the Bureau's cost for channel rectification amounted to about $17,091,000 which includes $967,215 contributed by the State of New Mexico. Through this same period the OM&R costs have amounted to about $5,337,000. All of these costs are nonreimbursable.

AMISTAD AND FALCON DAMS AND RESERVOIRS

In the 1944 Water Treaty between the United States and Mexico, the two Governments agreed "to construct jointly, through their respective section of the International Boundary and Water Commission, the dams in the main channel of the Rio Grande required for the conservation, storage, and regulation of the greatest quantity of the annual flow of the river below Fort Quitman in a way to insure the continuation of existing uses and the development of the greatest number of feasible projects, within the limits imposed by the water allotments specified" in the treaty.

Falcon Dam and Reservoir, placed in operation in 1953 was the first of the major international storage dams contemplated by the Water Treaty of 1944 between the United States and Mexico. The reservoir has a maximum capacity of 4,151,000 acre-feet, of which 300,000 acre-feet, 1,710,000 acre-feet, and 2,140,000 acre-feet are for silt storage, flood control, and conservation storage, respectively. The conservation capacity is divided between the two countries in the proportion of 58.6 percent to the United States and 41.4 percent to Mexico. A hydroelectric powerplant was provided at the dam as part of the project. The U.S. share of the cost of this project amounted to $36.8 million which is nonreimbursable, except to the extent of revenues from power sales, which to date have been insignificant.

Amistad Dam and Reservoir was completed in 1968, to provide, in combination with Falcon Reservoir, optimum feasible control of floods and conservation and regulation of waters belonging to each country above Falcon Dam. The reservoir has a total capacity of 5,586,000 acre-feet, of which 1,745,000 acre-feet are for flood control, 3,505,000 acre-feet are for conservation, and 336,000 acre-feet are for surcharge storage. The conservation capacity is divided between the two countries in the proportion of 56.2 percent to the United States and 43.8 to Mexico. The U.S. share of the cost of this project amounted to $72.2 million all of which is nonreimbursable.

Both of these projects store and regulate the waters of the Rio Grande for the benefit of water users in Mexico and the United States.

DELIVERY OF WATER TO MEXICO

In the fall of 1961, the Mexican Ambassador protested to the Department of State that the waters delivered to Mexico under the 1944 treaty were not usable because of increased salinity allegedly caused by drainage water from irrigation projects in the United States. As a result of the Mexican protests the Presidents of the United States and Mexico issued a joint communique which called for a permanent solution to be reached at the earliest possible time. The problem was

studied by a panel appointed by the President of the United States; by a Committee of 14 consisting of two members each appointed by the governors of the seven Colorado River basin states; by the Bureau of Reclamation; and by the International Boundary and Water Commission; and developments were followed closely by many other organizations and individuals.

Briefly the overall ultimate plan for alleviating the peak salt concentrations in water delivered to Mexico is based on selective pumping in the Wellton-Mohawk, South Gila Valley, and Yuma Valley areas. Project facilities include new well installations and related collection and electrical facilities, installation of tile drainage, five wasteways, remodeling of drainage conveyance channels, levee, and floodway works in the Wellton-Mohawk area, reconstruction of the existing Gila River pilot channel in the South Gila Valley; and remedial measures to reduce gate leakage at Imperial Dam. They also include a bypass channel to convey drainage water from the Wellton-Mohawk area to a point below Morelos Dam without mixing this water with Colorado River water.

As of June 30, 1969, the total cost for construction of facilities for delivery of water to Mexico totaled $11,000,000, all nonreimbursable.

ELEPHANT BUTTE

Elephant Butte Dam and Reservoir, a facility of the Rio Grande Project located on the Rio Grande 125 miles north of El Paso, Texas, was authorized for construction by the Congress on February 25, 1905, and on March 4, 1906, $1,000,000 of nonreimbursable funds were appropriated as the State Department's share of the cost of providing 60,000 acre-feet of water to Mexico in accord with the treaty. Construction of the dam proper began in 1912 and was completed in 1916.

COLORADO RIVER BASIN PROJECT ACT (P.L. 90–537)

The need to salvage 100,000 acre-feet of water annually was substantiated to assure the availability of water for the Central Arizona Project under its Colorado River Compact entitlements during future periods of low flow in the Colorado River.

Section 306 of the Colorado River Basin Project Act (P.L. 90–537) states that, "The Secretary shall undertake programs for water salvage and ground water recovery along and adjacent to the main stream of the Colorado River. Such programs shall be consistent with maintenance of a reasonable degree of undisturbed habitat for fish and wildlife in the area, as determined by the Secretary."

The initial cost of this water salvage and recovery program is estimated at $42,450,000 and the annual operation, maintenance, and replacement cost is estimated to be $1,000,000 all of which is nonreimbursable.

Section 202 of the Act, as stated in House of Representatives Conference Report No. 1861, 90th Congress, 2nd Session, is a congressional declaration that satisfaction of the water requirements of the Mexican Water Treaty constitutes a National obligation which shall be the first charge against any augmentation project. It relieves both the upper basin and lower basin from the Colorado River compact requirement covering deliveries of water to Mexico at such time as the Secretary of the Interior determines that means are available and in operation for delivering annually into the Colorado River system sufficient water to satisfy the Mexican Treaty water requirements. The cost of providing such water will be nonreimbursable within limits established by the Act.

PECOS RIVER BASIN WATER SALVAGE PROJECT, NEW MEXICO-TEXAS

The project was authorized by Public Law 88–594, 88th Congress, S.J. Res. 49, dated September 12, 1964. The plan consists of selective eradication of phreatophytes along the Pecos River from its headwaters in New Mexico to Girvin, Texas.

It is partially complete and will salvage an estimated 152,000 acre-feet of water annually at a construction cost of $5,000,000 all of which will be nonreimbursable.

LOWER COLORADO RIVER BASIN WATER SALVAGE

River channelization

The first water recovery program in the Lower Colorado River Basin began with river channelization by dredging in the Topock-Big Bend Area in 1949.

The river channelization plan was authorized under the provisions of Public Law 469 (H.R. 5674), approved June 28, 1946. The plan is being implemented under the annual appropriations of operation and maintenance funds to the Colorado River Front Work and Levee System.

The Colorado River management program salvages water by reducing the exposed evaporative water surface and lowering the ground water table. The estimated amount of water to be salvaged annually through this program is 190,000 acre-feet. Salvage accomplished to date is about 85,000 acre-feet annually. Salvage of the additional 171,000 acre-feet annually is programed.

The cost of this salvage program including fish and wildlife mitigation measures is estimated at $55,300,000 and is nonreimbursable.

Senator Wash Reservoir

This facility was authorized for construction by the same act as the river channelization program. The reservoir, which permits off-stream storage, permits the salvage of water that would be excessive to scheduled water deliveries to Mexico by pumping into the reservoir. Senator Wash Reservoir was completed in 1966 and is expected to salvage about 170,000 acre-feet of water annually. It will assist in the delivery of water to irrigate farms in the United States and to Mexico under the terms of the Mexican Water Treaty of 1944. The cost of this facility was $8,620,000 and is nonreimbursable.

Ground-water recovery and river regulation

Ground-water recovery involves pumping wells to lower ground-water levels that are detrimental to irrigated lands. The program in the Yuma Valley and on the Yuma Mesa which will provide an additional source of water for use in the Yuma area and for serving the Mexican Treaty. The estimated cost of the program is about $13.4 million and is nonreimbursable.

Senator ALLOTT. I just happen to have 10 myself. So we balance up. Let's run through these.

Colorado River channelization, $55,300,000, project. Where did that channelization go?

Mr. ARMSTRONG. It's in the lower Colorado primarily that section that is the boundary between Arizona and California.

Senator ALLOTT. And that was nonreimbursable?

Mr. ARMSTRONG. Yes, sir.

Senator ALLOTT. Now other than the Mexican water treaty, what international problems could that solve? It was basically an attempt to solve Arizona-California problems, was it not?

Mr. ARMSTRONG. Yes, and to meet the obligations of the treaty to Mexico. The difference here is the treaty with Mexico was negotiated and signed by the United States after the Colorado River Compact, whereas on the Rio Grande, the treaty was entered into in 1906, and the interstate compact dividing up the water between the three States didn't come about until 1939.

Senator ALLOTT. And when was the Elephant Butte Reservoir built?

Mr. ARMSTRONG. Elephant Butte was completed in 1916.

Senator ALLOTT. Now I have the Senator Wash Reservoir, $8,600,000.

Mr. ARMSTRONG. Yes, that's an offstream control reservoir in the lower Colorado River Basin.

Senator ALLOTT. And then the ground water recovery—$13,400,000. Where is that?

Mr. ARMSTRONG. That's in the lower Colorado area.

Senator ALLOTT. Then here are some that are control structures, Elephant Butte, $1 million——

Mr. ARMSTRONG. Part of the storage of Elephant Butte was recognized as an obligation of the United States to assist in meeting the 1906 treaty requirement of delivery of water to Mexico.

Senator ALLOTT. How do you separate the water, Mr. Armstrong? How can you say that it is less necessary to control water in the headflow's upper reaches of the river than it is at the lower point? Doesn't each contribute toward fulfilling the Mexican treaty thing?

Mr. ARMSTRONG. Yes. This is the water in the lower reaches of the river, and, of course, as you know, about 50 percent of the water of the Rio Grande originates in Colorado. But you see, in the 1939 compact, the three States divided up the water and made an agreement concerning the amount of water that would be furnished to each of the States.

Senator ALLOTT. And since that time Colorado has sustained almost a 900,000 acre-foot debt?

Mr. ARMSTRONG. Yes.

Senator ALLOTT. And as a result of that debt, New Mexico and Texas have sued Colorado, which suit is pending in the Supreme Court of the United States, and is only being temporarily deferred probably pending the outcome of this particular legislation.

Mr. ARMSTRONG. Yes. From 1928–1937 which was the period on which the Rio Grande Compact was based, the flow of the Rio Grande at Del Norte, averaged about 600,000 acre-feet per year. From 1940 to 1950, the flow increased. It averaged about 700,000 acre-feet during this 10-year period. From 1950 to 1960, was a period of low flow. The flow at Del Norte averaged 500,000 acre-feet which was about 100,000 acre-feet less than the average for the period on which the compact was based. From 1960 to 1970, the average flow increased to 580,000 acre-feet per year.

This lower flow of the 1950's was one of the factors that created the present situation.

Senator ALLOTT. Well, you have in addition control structures in meeting international treaty obligations. You have the Amistad Dam and Reservoir, $72 million. Falcon Dam and Reservoir, $36,800,000. Welton-Mohawk Bypass, $11 million. That's in the lower Colorado and became very prominent into discussion about a week ago when the President of Mexico paid us a visit here.

Then you do have one channel rectification in the middle Rio Grande to aid in meeting interstate compacts of $17,100,000. And the Pecos River phraetophyte control, $5 million. And the Colorado River Basin Act of 1968, in which the interstate obligations played a very prominent part, but also the obligations as to the Mexican Government and the Mexican Water Treaty, under the treaty with Mexico, also played a very prominent part.

Mr. ARMSTRONG. Well, I think Senator, that we should consider that there are at least two significant differences in the situation relative to the treaties on the Colorado and the Rio Grande.

As I mentioned, the treaty with Mexico on the Colorado in 1944, was executed subsequent to the Colorado River Compact of 1922, while the Rio Grande Treaty with Mexico in 1906 preceded the Rio Grande Compact, which was essentially negotiated in 1938. Thus the States entered into the Rio Grande Compact with full knowledge of the Mexican Treaty obligation, while the opposite was true in the case of the Colorado River Compact.

And then second, the Rio Grande States, in 1929 when Congress acted on the interim Rio Grande Compact, and again in 1939 when

it approved the final compact, proposed that the measures for salvaging water from the closed basin be undertaken by the Federal Government without expense to the States. In neither case did the Congress act favorably and the 1938 compact contains no such provisions.

Senator ALLOTT. I don't mean to contend for a moment, Mr. Armstrong, I think the Rio Grande Compact was an unfortunate compact, as far as Colorado was concerned. With respect to your remarks, didn't the Federal moratorium on water structure on the Rio Grande play a part in causing the States to make the compact itself?

Mr. ARMSTRONG. Yes, I would expect so.

Senator ALLOTT. The United States did prohibit the reservoir construction on the Rio Grande, did they not? Because of the dispute with Mexico?

Mr. ARMSTRONG. Yes. For a period.

Senator ALLOTT. On September 23, 1935, the Presidential order approving projects on the Rio Grande without prior approval of the National Resources Committee, and an immediate effect was to block the proposed Colorado projects, I think, and I would not say at all that I am not completely in the advocacy of my own client which happens to be the State of Colorado at this time, but I think any position other than the one that Senator Dominick and I have taken by the introduction of this measure, puts Colorado in a position of having to maintain the Mexican Treaty on the Rio Grande, with some slight help below on Elephant Butte, which does not help us. It helps New Mexico and Texas. And I don't mind that. I just want to get Colorado some help.

Mr. ARMSTRONG. Yes. And a very simplistic explanation of the problem, I think, Senator is what happened after the compact. Colorado controlled the allocation of additional rights to surface flows, but then during the low flow period in the fifties, additional wells were put down to supplement inadequate surface flows. Of course, ultimately the ground water has some connection with the surface flow and further contributed to the reduced flow in the river.

Senator ALLOTT. I think there is a question whether or not the States knew of the treaty obligation and I was glancing at some law, and some Attorney General's opinions as well as the treaty itself a moment ago. They do physically lose treaty water for a Federal purpose. All three States, don't they?

Mr. ARMSTRONG. Yes. I would say so.

Senator ALLOTT. I think that's all I have at the present time. Thank you very much, Mr. Armstrong.

Senator ANDERSON. Thank you.

Senator JORDAN. Mr. Commissioner, I am entering this case cold, and so I will ask some questions to kind of give me a little bit of background on it. In the first place, what is the amount of the Federal treaty commitment to Mexico out of the Rio Grande River?

Mr. ARMSTRONG. 60,000 acre-feet at El Paso, Tex.

Senator JORDAN. Per year?

Mr. ARMSTRONG. Yes.

Senator JORDAN. And if it isn't supplied in 1 year, is it a cumulative deficit to be made up in successive years?

Mr. ARMSTRONG. Let me pass that to our hydrologist.

Mr. BUETTNER. No, it is not cumulative. The treaty provides that if there is a shortage below Elephant Butte Dam, Mexico and the United States will share the shortage equally.

Senator JORDAN. This puzzles me all the more then. How does a deficit operate against the one State, a cumulative deficit of about 800,000 acre-feet, as I understood your testimony?

Mr. ARMSTRONG. Senator, this is in accordance with the provisions of the interstate compact.

Senator JORDAN. I see.

Mr. ARMSTRONG. As I pointed out, this was negotiated at the time that the requirement for delivery of 60,000 acre-feet to Mexico was in effect.

Senator JORDAN. Well, does this deficit arise by reason of overuse in Colorado or of a short fall in supply?

Mr. ARMSTRONG. As I mentioned, there have been periods of time since the compact was agreed to that the amount of water produced was less than that produced during the period on which the compact was based. And that was one reason for the plus and minus account for each of the States. Also, ground water use in Colorado increased markedly since the compact was approved.

Senator JORDAN. Well you say here you much prefer that Colorado meet its Rio Grande compact obligations through limitations on its own internal water uses.

Mr. ARMSTRONG. Yes, sir.

Senator JORDAN. Do you think they are wasting water in the San Luis Valley?

Mr. ARMSTRONG. No, not at all. As I mentioned, after the compact provisions, I believe they stopped granting any additional surface water rights. But they did go ahead with additional ground water wells. And the amount of ground water during the 40-year period, as I recall, was somewhere around 50,000 acre-feet. During the 1950–70 period, ground water use averaged somewhere around 340,000 acre-feet per year. That has contributed to a lower flow in the river itself.

Senator JORDAN. All right. How, then, does that reconcile with your statement—you say: "Also we believe it would be equitable if Colorado, desiring to expand its consumptive use of Rio Grande waters"—now where are they going to get the water to expand their use?

Mr. ARMSTRONG. Well, after they catch up with the deficit, there would be additional water that could be used in Colorado on the present lands, and perhaps some expansion.

Senator ANDERSON. May I ask a question there? You said to catch up. Are they catching up or losing? Are they catching up?

Mr. ARMSTRONG. Yes. In the last few years they have made some inroads and reduced their deficit by about a little better than 100,000 acre-feet. They did that by restricting—putting very tight controls on the use of the water.

Senator JORDAN. Well, what would happen to this 100,000 acre-feet if it is not pumped from these 136 wells and exported out of Colorado?

Mr. ARMSTRONG. It evaporates, Senator. By evaporation and evapotranspiration and so on.

Senator JORDAN. But a nonconsumptive use?

Mr. ARMSTRONG. It would be consumptive use through evaporation. It would be nonbeneficial.

Senator JORDAN. Nonbeneficial consumptive use because it does diminish the water supply.

Mr. ARMSTRONG. This is true. And it creates a problem. It leaves salt on the surface when it evaporates.

Senator JORDAN. By drilling these 136 wells, that would lower the water table, would it not, throughout the valley?

Mr. ARMSTRONG. Yes, sir. Lower it so that you wouldn't get this surface evaporation that you now get, and you wouldn't get continual accumulation of salts.

Senator JORDAN. Would that not be beneficial to the present owners of that land?

Mr. ARMSTRONG. It would improve the quality of the land. The land is now largely in Federal, State, and private ownership, the project would enhance the value of the land.

Senator JORDAN. Most of the land that is affected here is under Federal ownership?

Mr. ARMSTRONG. Most of it is in State and private ownership at the present time. The State has agreed to transfer ownership to the Federal Government for the project.

Senator JORDAN. I see. There is none of the irrigated lands that are involved in the pumping, in the area to be pumped?

Mr. ARMSTRONG. Not in the area in which it would be pumped. And it is good quality water. The total dissolved solids will average about 160 parts per million, which is high class water. Much better water than is in the river at Alamosa.

Senator JORDAN. Will someone stand up and show me on the map where the irrigated lands are?

Mr. ARMSTRONG. Mr. Fife will point them out.

Mr. FIFE. They are in this area, between the Rio Grande and the Closed Basin. Actually, the lands lie along the northeast side of the Rio Grande.

Senator JORDAN. And they are on a bench above the valley floor?

Mr. FIFE. They are higher than this portion of the valley where the wells would be, Senator.

Senator JORDAN. I see. And it's salt grass, alkali flat area, is that right?

Mr. FIFE. Yes.

Senator JORDAN. Is the San Luis Lake a natural lake or an irrigation reservoir?

Mr. FIFE. It's a natural lake, in the lower part of the Closed Basin.

Senator JORDAN. Thank you. I won't take up any more time.

Senator ALLOTT. Just one thing. In response to a question by Senator Jordan, and I think it was the way he asked the question, you perhaps did not catch the way it was asked. He asked if the diversion of this water would lower the water table in the entire valley, the San Luis Valley. And I think to get this thing straight for his purposes, and he is very knowledgeable in this area, we should point out to him that what is shown on the map here is only a relatively small part of the entire San Luis Valley, and would you point out to him the rough

areas of what is called the Closed Basin? Because it is actually a closed basin, is it not, Mr. Armstrong?

Mr. ARMSTRONG. Yes; that is true. And the area that would have the lower water table is the approximately 100,000 acres that is outlined by the red line as shown on the map and labeled the water salvage area.

Senator JORDAN. There is no outflow from that Closed Basin?

Mr. ARMSTRONG. No, sir.

Senator JORDAN. Well, I was interested then in the question that Senator Allott asked you. It is certainly not the total responsibility of the State of Colorado to meet the treaty obligations with Mexico.

Mr. ARMSTRONG. Well, Senator, the Rio Grande Compact was negotiated and agreed to 20 years, 30 years after the treaty with Mexico was consummated.

Senator JORDAN. I live in a headwater State. We either overestimate the supply, which we frequently do, or there is some tendency to overuse the available supply, and a shortage has developed downstream. I have always taken the position the upstream States shouldn't be the whole guarantor, to keep everybody well supplied with water downstream just because you happen to have the watershed, the main watersheds of the river.

Mr. ARMSTRONG. Yes, sir this is a very real problem. The Rio Grande basin is a water-short area, as I mentioned, probably the most water-short river basin in the Nation. Sixty percent of the water in the Rio Grande originates in Colorado.

Senator ALLOTT. I don't have a question but I want to make it very clear that in discussing the development of the Closed Basin project, we are not and would not be diminishing the supply of water to the Rio Grande or the rest of the valley. They would only be utilizing water out of the Closed Basin and it has been established as an underground closed basin. Water which would otherwise go to evaporation and be wasted.

Mr. ARMSTRONG. This is true, Senator.

Senator ALLOTT. I just want to make that picture clear. We are not in any way diminishing any of the supply of water available to the Rio Grande River.

Mr. ARMSTRONG. Yes, we agree.

Senator ALLOTT. I believe that's all I have, Mr. Chairman.

Senator ANDERSON. Thank you, Mr. Armstrong.

Mr. Sparks?

STATEMENT OF FELIX L. SPARKS, DIRECTOR, COLORADO WATER CONSERVATION BOARD

Mr. SPARKS. I am Felix L. Sparks, director and secretary of the Colorado Water Conservation Board. I appear here today as the official representative of that board and also as Governor Love's personal representative.

The Colorado Water Conservation Board is the official agency of the State of Colorado charged with the responsibility of protecting, developing and conserving the water resources of the State of Colorado. In that connection the board has long advocated the construction of the Closed Basin project. It has expended considerable sums of money in developing the project plans and analyzing the project effect.

The first permanent irrigation project in Colorado was initiated in the San Luis Valley on the Rio Grande River. A conveyance canal known as the "People's Ditch" was constructed by early Spanish settlers and has been used continuously since its completion. It's decreed priority date of 1852 makes it the earliest decreed water right in the State of Colorado.

By 1900, a stable agricultural economy had developed in the valley which continues to this day. The amount of land under cultivation has been almost stable for the past 30 years. However, changing crop patterns and more intensive farming methods in Colorado, New Mexico, and Texas, together with population increases, have increased the demands on the Rio Grande River.

In 1906 the United States entered into a treaty with the Republic of Mexico by which the United States granted 60,000 acre-feet of water annually to Mexico from the Rio Grande. The stated purpose of the treaty was to remove causes of international controversy on the waters of the Rio Grande arising above Fort Quitman, Tex. By a later treaty of 1944, the United States conceded additional rights from the Rio Grande to the Republic of Mexico from that portion of the river below Fort Quitman.

While the treaty of 1906 became a national obligation, the burden of delivery fell upon the States of Colorado, New Mexico, and Texas, and particularly upon the State of Colorado. Delivery to Mexico is made from the river above El Paso, at which point most of the river flow originates from the State of Colorado.

Now, a brief note in departing from my prepared text, with what the Commission had to state. The treaty of 1938 was entered into with full knowledge, of course, of the 1906 treaty, but also upon the assumption that the Closed Basin drain would be built. That was our assumption when we agreed to the 1938 treaty, as I shall point out here.

Senator ALLOTT. You mean the 1938 treaty?

Mr. SPARKS. The 1938 compact. It was entered into on the assumption that the Closed Basin would be at the Government's expense, to discharge the Mexican Treaty obligation.

Senator ALLOTT. Mr. Sparks, as long as we have gotten into this, Mr. Chairman—you have been in this particular area for many, many years. You are a lawyer. It might be wise at this time to point out that a State cannot enter into a binding compact with another State until that compact has been confirmed by Congress and made a part of the Federal body of laws. Is that right?

Mr. SPARKS. That is right.

Senator ALLOTT. So the compact that was entered into at that time has now been, many years ago, approved by Congress, and is, in fact, a part of the laws of the United States now.

Mr. SPARKS. This is correct. And the 1938 compact recognized the fact specifically, that the State of Colorado would probably deliver water from the Closed Basin—and provisions in the 1938 compact providing that Colorado shall be credited under the compact with water delivered from the Closed Basin with a provision that the quality must be of a certain magnitude.

Senator ALLOTT. I wonder if you could provide us, for the record, not now, but for this point in the record that particular portion of the compact, would you do that?

Mr. JORDAN. May I ask a question? Is there anything in those minutes or in the written record about who should pay for the development of water from a Closed Basin for delivery to the Rio Grande?

Mr. SPARKS. Senator, the negotiations among the States started in 1920. In 1929, as I point out here in my testimony, the three States had a provision, or in a provision, a temporary compact, stating that the Mexican Treaty was an international obligation, and that the satisfaction of the treaty should fall upon the United States. Now, that was during the twenties. Now subsequently the Federal Government investigated the Closed Basin project, and in the thirties, long before the compact was entered into, it was contemplated that the Closed Basin would be drained at Federal expense. And at the time of the contract negotiations, when they were concluded in 1938, the Bureau of Reclamation was working in the San Luis Valley and was about to render a report and did render a report in 1940 saying that the Closed Basin should be made a Reclamation project. Unfortunately 1940, you may recall, was the year of the mobilization of our Armed Forces. Subsequently, then, nothing was done.

Now, we would not get the matter moving again until 1964, when the Secretary, as we had been long promised, stated that the United States would construct this project at Federal expense. This bore out the long negotiations and our understanding of the 1938 compact. Because we were certain, almost certain, that in 1938—we signed this compact—that the Closed Basin project would be built at Federal expense and the compact so provided that we would be given credit for the water if it were of sufficient quality.

In 1929, a temporary compact governing the use of the Rio Grande waters was concluded between the States of Colorado, New Mexico, and Texas. This was not the same compact now in effect between the same States as is quoted here only for the purpose of historical background.

The United States has created an international obligation and it should be at U.S. expense to correct it, or to bear the burden.

Article II of the temporary compact of 1929 states in part as follows:

(c) That with respect to the Rio Grande, the United States, without obligation imposed by international law and "being moved by consideration of international comity", entered into a treaty dated May 21, 1906 (24 Stat. 2953) with the United States of Mexico which obligated to the United States of America to deliver from the Rio Grande to the United States of Mexico, sixty thousand acre-feet of water annually and forever, whereby in order to fulfill that promise the United States of America, in effect, drew upon the States of Colorado, New Mexico and Texas a draft worth to them many millions of dollars, and thereby there was cast upon them an obligation which should be borne by the nation;

(d) That for the economic development and conservation of the waters of the Rio Grande Basin and for the fullest realization of the purposes recited in the preamble to this compact, it is of primary importance that the area in Colorado known as the Closed Basin be drained, and the water thus recovered be added to the flow of the river, and that a reservoir be constructed in Colorado upon the river, at or near the site generally described as the State Line Reservoir site. The installation of the drain will materially augment the flow of the river, and the construction of the reservoir will so regulate the flow as to remove forever the principal causes of the difficulties between the states signatory hereto;

(e) That in alleviation of the heavy burden so placed upon them, it is the earnest conviction of these states that, without cost to them, the United States should construct the Closed Basin drain and the State Line Reservoir described in (d).

In the minutes of the Rio Grande Compact Commission there is a reference to the fact that somewhere around the year 1935 a Federal appropriation of $900,000 was made available to commence construction of the Closed Basin drain. Apparently there were fears that the type of drain proposed at that time would create unacceptable salinity conditions, and construction was not started.

In a report to the Colorado Water Conservation Board under the title of "San Luis Valley Project," dated March 1939, prepared by R. J. Tipton, consulting engineer, the construction of the Closed Basin Drain was again recommended.

I might add parenthetically here this was the engineering advisor at the time the compact was entered into.

This report was included in a report to the Congress by the Department of the Interior entitled "Reservoirs on the San Luis Valley Project, Colorado," and subsequently published as House Document No. 693, 76th Congress, 3d Session.

The Congress subsequently authorized the construction of the San Luis Valley project by the Interior Department Appropriation Act of 1941. However, the report and authorization made the construction of the Closed Basin Drain contingent upon a finding of justification for the drain on the basis of cost and the quality and quantity of water to be obtained. During the subsequent period of World War II and the Korean War almost nothing was done concerning the project.

During the past 12 years, with some financial assistance from the State of Colorado, the Bureau of Reclamation undertook the task of satisfying the contingency requirements set forth in the 1941 authorization. All previous plans concerning the Closed Basin Drain involved the construction of open drains from the Basin into the river. It became apparent that, if open drains were constructed, it would be most difficult, if not impossible, to control the quality of water which would be discharged into the river. In particular, the final Rio Grande Compact of 1938 now in effect provides in article III(4)—now this was the section that I was referring to, Senator.

Senator ALLOTT. Right.

Mr. SPARKS. "In event any works are constructed after 1937 for the purpose of delivering water into the Rio Grande from the Closed Basin, Colorado shall not be credited with the amount of such water delivered, unless the proportion of sodium ions shall be less than 45 percent of the total positive ions in that water when the total dissolved solids in such water exceeds 350 parts per million."

As a result of a rather exhaustive engineering and geologic investigation, it was determined that by the substitution of selective pumping and controlled mixing in lieu of an open drain that the desired quality of the composite flows could be easily maintained. It was on this basis that the final plan was developed and submitted to the Congress 2 years ago.

In 1938 the States of Colorado, New Mexico, and Texas entered into the Rio Grande River Compact now in effect. The purpose of the compact was to allocate waters among the States, which waters for the most part originate in Colorado. The compact was based upon two faulty premises, namely: that the precompact recorded flow of the river would repeat itself in sequence and that historic diversions of water were all that were required to sustain the existing agricultural

economy. Problems under the compact began to surface within a few years.

Approximately 20 years ago the State of Texas initiated a suit against New Mexico in the U.S. Supreme Court in which it was alleged that New Mexico was not living up to its compact agreement. The United States intervened as an indispensable party but withheld its consent to be sued. The suit was dismissed. Subsequently New Mexico, with considerable Federal assistance, improved its delivery capability through extensive channel rectification measures on the lower Rio Grande.

In more recent years the States of Texas and New Mexico have instituted proceedings against the State of Colorado in the Supreme Court alleging that Colorado is in violation of the terms of the Rio Grande River Compact. By order dated February 13, 1967, the Supreme Court invited the Solicitor General to submit the views of the United States on the pending action. In his reply to the court, the Solicitor General made this recommandation:

> We suggest, therefore, that the Court stay any further action in this case for 6 months, until October 16, 1967. That would afford a reasonable time for the interested parties to demonstrate the feasibility and imminence of an equitable administrative solution. In the meantime the United States will explore the matter of an administrative solution in conjunction with the three States. If at the end of this period it appears that the matter can be resolved only by litigation, we shall then inform the Court whether the United States will intervene.

The Court adopted the recommendation of the Solicitor General and stayed further proceedings pending a determination that an administrative remedy could be found. A stipulation was also executed by the parties, in the belief that the Closed Basin project would subsequently become a reality.

In an attempt to meet compact deliveries, the Colorado State engineer has severely reduced Colorado diversions during the past several years. This reduction has created serious economic hardships in the valley. These reductions were never contemplated by the 1939 compact, since they involve water rights which were legally acquired long before the compact became effective.

Recognizing that the pending litigation would affect all of the people of the San Luis Valley, the Colorado legislature in 1967 authorized the creation of the Rio Grande Water Conservation District with the authority to levy ad valorem taxes.

This district has been created and its representatives are here today. This district, along with two smaller districts—the San Luis Valley Water Conservancy District and the Conejos Water Conservancy District—have with their limited finances undertaken a program of water salvage in the valley.

In the past 2 years drainage and channel improvement projects have been completed at a total cost of about $300,000, which included direct assistance of over $100,000 from the State of Colorado.

Senator ALLOTT. Now, could I interrupt you at that point? How many counties in the San Luis Valley are in the conservancy district?

Mr. SPARKS. All of the counties are in it, Senator, with the exception of Costilla County.

Senator ALLOTT. Does it include Mineral?

Mr. SPARKS. That part of Mineral which would end at the Rio Grande drainage. Part of Mineral County is in the Rio Grande drainage area, Senator Allott.

Senator ALLOTT. The southerly portion?

Mr. SPARKS. Yes, the Creed area. Now, other similar projects are in the planning stage and will be constructed with State and local funds. These projects indicate the tremendous desire of the valley's citizens to improve the water situation of the Rio Grande to the full extent of their financial capability. The salvage projects already constructed and those planned will make more water available. However, by themselves they will not answer the total problem. The Closed Basin project offers the only ultimate solution. The project would be reclamation in its truest sense.

It would salvage water from a trap created by nature which now consumes approximately 500,000 acre-feet of water annually through evapo-transpiration.

There have been fears that the proposed project would adversely affect existing irrigation practices in the valley. We do not believe these fears are well grounded. The Closed Basin project has been exhaustively studied and reviewed. In 1966, the State of Colorado employed the nationally recognized engineering firm of Woodward-Clyde-Sherard and Associates to again evaluate the project. The report of that firm on the project was most favorable. In the opinion of that firm the only ultimate solution to the problems of the Rio Grande River was the construction of the Closed Basin project.

At about the same time, the State of Colorado entered into a contract with the U.S. Geological Survey, under the terms of which the State agreed to contribute approximately $250,000 for an exhaustive survey of the ground water resources of the area and the construction of an electric analog model.

We believe that we can now accurately predict the future operation of the projected Closed Basin project and that such operation will not affect existing water rights, except to improve upon them. However, to eliminate any suspected adverse effect, special safeguards have been written into the pending legislation which are vital to the residents of the valley and which we urge be retained as now set forth.

The project report indicates that it might take a period in excess of 40 years after the project becomes operational for Colorado to achieve a debit-free status under the compact. The report also contemplates that Colorado will accumulate further debits in future years. This projected method of operating the project was objectionable to the States of New Mexico and Texas.

In order that the project would have more favorable benefits for the States of New Mexico and Texas, the State of Colorado has proposed the priorities and limitations set forth in section 4 of the pending legislation.

Under our projected operation of the project pursuant to section 4, a reasonable prediction of the time required to eliminate the accumulated debit would be a period of time from 10 to 15 years after the project becomes operational. Under our assumption, we would not be permitted to accumulate any further debits. Based upon this major modification of the proposed project operation, it is our understand-

ing now that the States of New Mexico and Texas fully support the authorizing legislation.

The projected operation of the project which we propose is based upon the assumption that the project will furnish an average of 60,000 acre-feet of water annually for the discharge of the Mexican Treaty obligation. It is also based on the assumption that Colorado will not be permitted to accrue further debits and that in some years existing water uses in Colorado will have to be curtailed in order to meet the compact delivery requirements.

For our study we used the historic sequence of events from 1943 through 1966. This is a more unfavorable period to the State of Colorado than the 1936-66 period used by the Bureau of Reclamation. As can be seen from that study, a debit-free status could be achieved at the end of the 11th year with a repetition of the historic sequence portrayed therein. The study is attached to this statement.

We have reviewed the report of the Department of the Interior on the pending legislation as submitted to the chairman of the full committee under date of May 19, 1972. This report recommends certain amendments to the legislation. We have no objection to most of the recommended amendments. We take considerable exception, however, to the language contained in the first page of the report which attempts to convert an obligation assumed by international treaty into an obligation assumed by the State of Colorado under interstate compact.

The required delivery from Colorado under the terms of the Rio Grande compact was based in part upon the requirements of the Mexican treaty. It was always recognized that Elephant Butte Dam would have to rely to a large extent on waters released from the State of Colorado. We do not object to the storage of water in the Elephant Butte reservoir for release to the Republic of Mexico, but we do object to any implication that this national obligation should be transferred to the State of Colorado.

It is most obvious that the Mexican treaty obligation imposed a delivery requirement of 60,000 acre-feet annually from the Rio Grande River. The major part of this burden falls upon the State of Colorado, where the principal flows of the upper river originate. I repeat again, that this is a burden which was assumed as a national obligation and not one which the State of Colorado assumed by voluntary interstate compact.

We believe that simple equity demands that this national obligation be fulfilled at national expense. Both New Mexico and Texas have received substantial assistance in connection with the national obligations assumed by the treaties of both 1906 and 1944. On the other hand, the State of Colorado, upon which the principal burden of the 1906 treaty falls, has received no assistance.

The legislation provides that, after the satisfaction of the annual Mexican treaty obligation and the debit increased thereby, any additional water shall be paid for by water users in Colorado under reclamation law. We are willing to enter into contractual arrangements for the use of any water in excess of the treaty requirements.

To the extent of our financial ability, we have agreed to participate in both the construction and operation of the project. Of the total lands involved for project purposes, about 61,000 acres are owned by the

State of Colorado, or approximately 55 percent of the total. By the terms of the legislation, the State-owned lands must be made available as part of the project without cost to the Federal Government. The project will also enhance the existing Alamosa National Wildlife Refuge and provide for the establishment of the Mishak National Wildlife Refuge. We believe that these two national wildlife areas are properly a part of the project, even though they occupy lands and consume water which we could well use for other purposes.

Colorado finds itself in a position today that almost 50 percent of its total surface water supplies have been allocated to other States by Federal court decisions, interstate compacts and international treaties. No other State of this Union bears such a burden in connection with its native water, with the possible exception of Wyoming. Eighteen other States and the Republic of Mexico share the use of water which originates within our State. We do not believe that either justice or logic dictate that Colorado should bear the full expense of a national and international problem.

We urge this committee to report favorable on the pending legislation prepared and sponsored by our distinguished Colorado Senators, Mr. Allott and Mr. Dominick. Recognizing that this is another year which has been and will continue to be most trying to the Members of the Senate, I wish to express the appreciation of Governor Love and myself for the valuable time which this committee has afforded our State at this time.

(The attachment referred to follows:)

CLOSED BASIN PROJECT OPERATION PURSUANT TO SEC. 4, S. 520 AND H.R. 5337, BASED ON HISTORIC CONDITIONS OF 1943-66

[Units are 1,000 acre-feet]

Number of years	Year	Project supply (1)	Historic delivery deficiency (2)	Supply used for annual delivery (3)	Cumulative 10-year total of col. 3 (4)	Supply applied to accumulated debit (5)	Delivery of nonproject water (6)	Accumulated debit (7)
								[1] 793.7
1	1943	80.4	28.7	28.7		51.7		742.0
2	1944	91.5	0	0		91.5	112.2	[2] 592.0
3	1945	94.0	4.7	4.7		89.3		502.7
4	1946	74.4	24.5	24.5		49.9		452.8
5	1947	90.4	51.2	51.2		39.2		413.6
6	1948	98.7	0	0		98.7	148.9	[2] 263.6
7	1949	98.9	0	0		98.9	32.0	132.7
8	1950	81.0	36.7	36.7		44.3		88.4
9	1951	63.8	18.7	18.7		45.1		43.3
10	1952	85.2	154.0	85.2	249.7	0	68.8	43.3
11	1953	86.8	18.1	1.81	239.1	43.3		0
12	1954	64.0	60.5	60.5	299.6			0
13	1955	78.2	55.5	55.5	350.4			0
14	1956	62.9	62.9	62.9	388.8			0
15	1957	109.8	156.2	109.8	447.4		46.4	0
16	1958	108.8	0	0	447.4		13.1	[3] (13.1)
17	1959	86.0	20.8	20.8	468.2			(13.1)
18	1960	79.8	59.1	59.1	490.6			(13.1)
19	1961	84.6	54.7	54.7	526.6			(13.1)
20	1962	80.5	86.9	80.5	521.9			(6.7)
21	1963	75.4	21.9	21.9	525.7			(6.7)
22	1964	69.6	76.3	69.6	534.8			0
23	1965	100.9	129.6	100.9	580.2		28.7	0
24	1966	93.1	0	0	517.3		14.2	(14.2)

[1] As of Dec. 31, 1971.
[2] Credit reduced to 150,000 acre-feet as per compact art. VI.
[3] Parentheses in col. 7 indicate accumulated credit.

Senator ALLOTT. Thank you, Mr. Sparks, for a very clear statement of the situation, and particularly of the legal and historical background. For purposes of clarifying the record, would you explain—do you have the bill before you?

Mr. SPARKS. Yes, sir.

Senator ALLOTT. Would you explain the purposes of section 3(a) of the bill, at the top of page 4.

Mr. SPARKS. That is a provision which was inserted at the request of the residents of the San Luis Valley. They were afraid that this project as constructed might constitute an additional demand on the Rio Grande River above the combine. Now, our legal people, staff people, do not believe that this is the case.

It was put there to make it perfectly clear that we in Colorado would, in any event, be limited, its obligation would be limited pursuant to the terms of the compact, and the exportation of water from Closed Basin would not create any additional demand against Colorado.

Senator ALLOTT. The Department has objected to the priority to receive project water provided for in section 4(b). What would be the State's attitude toward changing it so that the Alamosa National Wildlife Refuge would be elevated to first priority?

Mr. SPARKS. Senator, we believe that there is an ample water supply here to take care of both the Alamosa Wildlife Refuge and to discharge the Mexican Treaty requirements. Actually, I think the number one priority should go to satisfaction of the Mexican Treaty requirements as set forth as number one now. It seems like an international treaty supercedes the operation of a wildlife refuge. So I think the proper wording would be to leave the Mexican Treaty as the number one operation, and then number two, the Alamosa National Wildlife Refuge. But it is not worth quarreling about, because we think there is an ample water supply in any event.

Senator ALLOTT. Section 8 provides for a complete feasibility study of the Rio Grande above the point of discharge, including the feasibility of the Wagon Wheel Gap Dam. As you know, that had really actually been authorized. Would there be any bad effect in deleting this section in its entirety?

Mr. SPARKS. I realize that section is troublesome, Senator. It was never a policy of the statewide board to include this section in the bill in the first place. We are convinced, however, that there is a section of the Rio Grande River immediately below the point of discharge of this project that will require some channel rectification. There is about a 12-mile stretch from where the map shows the red line projects, water empties into the Rio Grande, until a point below where Conejos comes in, where the channels are in very bad shape. Now that's provided for in this bill. But other than that, we see no necessity of these other provisions. So in answer to your question, if it's anything critical, such a need could be eliminated entirely.

Senator ALLOTT. Thank you. That's all I have. It is a very fine statement, Mr. Sparks, and I am very appreciative.

Senator JORDAN. That is a good statement. But I am a little confused now by section 3(a) of the bill under which—even though it's paid for by Federal money—the State of Colorado would not subordinate any

future consumptive use as they might find for that water in order to meet any treaty commitments or compact commitments downstream?

Mr. SPARKS. We wanted to insure that there would be no additional demands created under the compact against the State of Colorado. There have been some fears, and our staff thinks these fears are not well grounded. We think the compact clearly contemplates that we will receive credit for any water delivered from the Closed Basin, but there has been a lot of talk in the Valley itself that if we started this project that it might create an additional demand above the Rio Grande River in Colorado not contemplated by the 1938 compact.

Senator JORDAN. It seems to me that in this section, you are laying the groundwork for additional demands against the water that will be salvaged by the Federal pumping project in order to meet downstream commitments to Mexico and to the compact States downstream.

Mr. SPARKS. The only fear here Senator, by building this project that perhaps in the future, at perhaps some future time, somebody in Texas or New Mexico would claim that they were entitled to this water in addition to waters already allocated to them under the compact. Now, understand that all of this water will go to Texas and New Mexico. This water is not usable in Colorado, but it becomes then below our point of use. But there was this fear that perhaps at some future time, Texas and New Mexico says we are entitled to the compact amount plus what is being produced from the Closed Basin.

Now, we don't think Texas and New Mexico—our legal staff—are ever going to make such a claim. But it is one of those things. It has been a real fear in the valley that this might constitute an additional allocation of water to Texas and New Mexico on top of what we have already agreed to deliver to them under the compact.

Senator JORDAN. Do you know how much the virgin flow of the river back in 1906, Colorado supplied for meeting the Mexican commitment? What percent of the Mexican commitment was made out of waters originating in the Colorado watershed?

Mr. SPARKS. I can't recall the figure. I think it was about 50 percent, somewhere in there.

Senator JORDAN. What percent is Colorado now supplying to meet the commitment? The treaty commitment.

Mr. SPARKS. It would be approximately the same. This is based upon the entire production of the Rio Grande system above the Mexican diversion, so it's about 50 percent that originates in Colorado. I think a little more than 50 percent.

Senator JORDAN. Has the treaty commitment been met every year or have we had years when we were in arrears on our delivery to Mexico?

Mr. SPARKS. It has not been met in every year. As a matter of fact, it has hardly ever been met.

Senator JORDAN. What percent has been met?

Mr. SPARKS. I would say on the average—the meeting of the commitment—on the average of not more than two-thirds of the total commitment.

Senator JORDAN. Do I understand you correctly that Mexico's entitlement is not cumulative?

Mr. SPARKS. This is correct.

Senator JORDAN. But the downstream flow to Texas and New Mexico are cumulative?

Mr. SPARKS. That's right.
Senator ANDERSON. Thank you, sir.
Mr. Reynolds? It's nice to see you again, sir.
Senator ALLOTT. Yes, nice to see you.

STATEMENT OF S. E. REYNOLDS, STATE ENGINEER, STATE OF NEW MEXICO

Mr. REYNOLDS. Thank you. My name is S. E. Reynolds, I am State engineer, and ex officio, Rio Grande Compact Commissioner for the State of New Mexico.

Senator ANDERSON. We are going to have to make a live quorum. We will go over that and then return.

(Brief recess taken.)

Mr. REYNOLDS. May I proceed.

Senator ALLOTT. Yes, please go on.

Mr. REYNOLDS. The Rio Grande Compact Commission at each of its last two meetings has adopted a resolution supporting enactment of S. 520. This resolution is printed in the May 16, 1972, issue of the Congressional Record, at p. S. 7877.

Pursuant to the Flood Control Act of 1944, the State of New Mexico reviewed and commented favorably on the Commissioner of Reclamation's November 1964, report on the Closed Basin Division of the San Luis Valley Project. New Mexico continues to support the authorization, construction and operation of the Closed Basin project in general accordance with that report.

The Rio Grande Compact provides that no accrued debit of the State of Colorado shall exceed 100,000 acre-feet of water. At the end of 1965, Colorado's accrued debit, as determined by the Rio Grande Compact Commission, was 939,900 acre-feet. In October of 1966, the States of Texas and New Mexico joined in filing a motion for leave to file complaint in the U.S. Supreme Court.

In December of 1967, the court granted this motion. In May of 1968, the court granted the motion of the United States for leave to intervene and a joint motion of the States of Texas, New Mexico and Colorado for a continuance.

In the "Memorandum of the Parties Relative to Motion for Continuance," these States of Texas and New Mexico advised the court of their concurrence in the request for a continuance in order to provide to the State of Colorado an opportunity to demonstrate its willingness and ability to deliver water at the Colorado-New Mexico State line annually in accordance with article III of the Rio Grande Compact.

The State of Colorado advised that it would undertake to deliver water at the Colorado-New Mexico State line to meet every year the delivery obligation established by the schedules of article III of the compact. To this end, the State of Colorado agreed to exercise its best efforts and use all available administrative and legal powers, including if necessary, the curtailment of diversions enforced by agents of the State.

In joining the other States in seeking the continuance, New Mexico was mindful of the Closed Basin project as a measure that Colorado could and should support to aid her in accomplishing the undertaking

agreed upon in the memorandum accompanying the motion for a continuance.

Of the water that would be delivered under the second priority of section 4(b) of S. 520 to eliminate Colorado's accumulated delivery deficit, about 25 percent would be available for use in New Mexico above Elephant Butte Dam, which is the point at which New Mexico's deliveries under the compact are made.

Of the balance, 57 percent would be available for use in New Mexico below the Elephant Butte Dam. Thus, New Mexico has a direct and important interest in the Closed Basin project. Authorization and construction of the project would not result in our receiving any more water than we are currently entitled to, but it can be expected that we would receive our entitlement at a much earlier date with a much reduced likelihood of litigation against our sister State that would be unpleasant and costly for the State of New Mexico.

The regional director's report on the Closed Basin project indicates that the individual beneficiaries of the water to be produced cannot be reasonably identified and recommends that project construction and operation and maintenance costs allocated to water salvage should be nonreimbursable to the extent that the water is needed for Colorado to achieve and maintain a debit free status under the Rio Grande Compact.

Mr. Chairman, it seems and I would like to point out that our position is consistent with the regional director's recommendations and consistent also with the recommendations of Assistant Secretary Smith, appearing at page 4 of H. Doc. 91–369, under letter dated 1970. I agree with Mr. Sparks that support for these recommendations can be found in the interim Rio Grande Compact of 1929, which was consented to by the Congress in June of 1930.

The water resources council's 1968 "Report on the Nation's Water Resources" points out that the Rio Grande region is confronted by major water problems in that the available water is not sufficient in quantity in nearly every part of the region and excessive nonbeneficial consumptive use of water occurs.

The report states that:

> Progress has been made and is being made in combating the problems, but their ultimate solution requires the coordinate planning and action of local groups, States, and the Federal Government . . . If the problems are not at least well on the way to solution in the very near future, economic growth will lag.

It is obvious that development of the Closed Basin project to increase the available annual water supply by 100,000 acre-feet would provide substantial regional and national benefits. It is important to the Nation, the region, and the water users to have these benefits realized at the earliest possible date.

In conclusion, Mr. Chairman, I wish to express on behalf of the State of New Mexico, appreciation of the opportunity to appear before this distinguished subcommittee to express the views of the State on S. 520.

Senator ANDERSON. Thank you very much. Your testimony is very valuable.

Senator ALLOTT. I appreciate your appearing here, Mr. Reynolds, it is good to see you again, and I am sure that we in Colorado appre-

ciate the support New Mexico has provided for S. 520. Hopefully, we can get some action on this bill. I hope so.

Mr. REYNOLDS. Thank you, sir.

Senator ANDERSON. Mr. Gilmer?

STATEMENT OF JESSE B. GILMER, TEXAS RIO GRANDE COMPACT COMMISSION

Mr. GILMER. If it meets with your approval, in order to expedite the hearing, I will be glad to submit my statement for the record, and confine myself with a few brief remarks at this time.

Senator ANDERSON. That would be fine, sir.

Mr. GILMER. Thank you. The State of Texas approves and supports the provisions of S. 520. We particularly approve and support that portion of S. 520 which provides for the nonreimbursability of this project.

When all of the previous compacts were under consideration and negotiation, the 1929 compact, the 1938 compact, and others, dealing with problems on the river, it was presumed that some of the Closed Basin project would be constructed. It is true that the treaty of 1906 with Mexico had been negotiated previous to this.

There are no records in my office which indicate that at the time the compacts were negotiated it was not supposed that the construction of the Closed Basin project would be done and paid for by the United States to benefit all of the people on the river, about a million and a half of us living on the Rio Grande below the Colorado State line.

Mexico has about 600,000 people dependent upon the Rio Grande River. But the Mexicans are becoming more water conscious every day. And the President of Mexico has just been in Washington, D.C., asserting himself forcefully on points, from his viewpoint, on relations between our two Governments. The Mexicans are watching to see what happens in connection with this piece of legislation. They are probably, in the next 10 years, going to want to take up the 1906 treaty again. It would seem to me, like as a citizen of the Rio Grande, and the compact commission, that the 60,000 acre-foot problem should be disposed of by this Congress at this time, and insofar as Texas is concerned, we recommend that the United States construct, operate, and pay for the Closed Basin project.

I am not asking that it be included at this time in this legislation, but I would like to call the chairman's attention to the fact that Elephant Butte Reservoir in New Mexico is probably the largest recreation area in the State of New Mexico. Because of the low flows in the Rio Grande in the past several years, recreation has been gravely endangered at Elephant Butte Reservoir in New Mexico. Last year it was pulled down from a total capacity of 2 million acre-feet to about 35,000 acre-feet.

This year, there is a greater water shortage on the lower Rio Grande than there was last year. Normally, there is allotted to the farmers in New Mexico and Texas, below Elephant Butte Reservoir about 3 acre-feet of water per acre. This year the allotment will be about 0.8 acre-feet per acre.

The Bureau of Reclamation and its administration of the Elephant Butte Reservoir will therefore have to lower the reservoir danger

point, denying many people from the southwestern United States the pleasure of recreation at Elephant Butte Reservoir.

We have just gone through in Texas the settlement of a treaty that we call the Chamizal Treaty with Mexico in which the United States returned to Mexico 600—over 600 acres of land that was alleged found itself north of the Rio Grande because of a shifting of the channel. The United States is spending $50 to $100 million, nonreimbursable, on this project in order to return to Mexico land that some people do not think should belong to Mexico.

The people of Texas were not asked to expend any of this money to reimburse this project.

I think if the United States can spend $50 to $100 million to correct a minor boundary dispute, the United States can well afford to spend $17 million to carry out a commitment which the then framers of the 1906 treaty probably had in mind that the United States would do.

The Commissioner of Reclamation testified this morning that one of the reasons why that Bureau had changed its position on the reimbursability of the project was that in recent years the people of Colorado had found that they could make payments on their debits to New Mexico and Texas and could manage their water. I am very proud of the performance of the people of Colorado and their water management program in the last few years.

I do not think the people in Colorado should be penalized for having gone into an era of good water, money, irrigation, management, in the last 4 or 5 years simply because they have learned to get along with what they have and share it with others. It makes it, in my opinion, no difference in determining the reimbursability for this project.

The Governor of Texas in 1964 recommended the approval of the Secretary's report. The Governor of Texas on June 22, 1972, recommends by letter to the committee the approval of S. 520, and indicates that he would like to give his support to it.

Thank you very much.

Senator ALLOTT. Thank you very much, sir. We are very appreciative of your support and the support of the people of Texas. I think one of the most significant instances that has come out of this hearing is the contemplation all along, particularly 1938 and 1939, at the time of the signing of the compact, that the Closed Basin would be constructed, and there is no question in your mind but that this was the view of the people who negotiated that contract as was testified to by both Mr. Sparks and Mr. Reynolds.

Mr. GILMER. I have been with Rio Grande Compact Commission for about 3 years. We research continuously the things that may have been in people's minds at the time the compact was negotiated and the time the treaty was negotiated. It seems to me that since all compact negotiations and at all periods of negotiations on the Rio Grande, contemplated the establishment of the Closed Basin. And since all of these negotiators had before them the treaty of 1906, that it most probably was the intent of the negotiators of the compact that when and if time arrived for the construction of the Closed Basin project, that it would be done without having to penalize the water users of Colorado, New Mexico, or Texas. It seems to me that had the negotiators of the compact, what they had in mind, that the vast change would take place with reference to the relationship of the three States, that some pro-

visions would have been made for altering the schedules for deliveries in the compact, and this simply was not done. There is no reference to the compact.

Senator ALLOTT. Well, I think the reference by Mr. Sparks to article III(4) also reinforces this position very strongly.

Mr. GILMER. I think so very strongly, and I agree with that interpretation.

Senator ALLOTT. Thank you very much, sir.

(The complete statement of Mr. Gilmer follows:)

STATE OF TEXAS
RIO GRANDE COMPACT COMMISSION
EL PASO

JESSE B. GILMER
COMMISSIONER

STATEMENT OF
JESSE B. GILMER
RIO GRANDE COMPACT COMMISSIONER FOR TEXAS

FOR SUBMISSION TO THE
INTERIOR AND INSULAR AFFAIRS COMMITTEE
U.S. SENATE
JUNE 26, 1972

PERTAINING TO S. 520

ENTITLED

A BILL TO AUTHORIZE THE CONSTRUCTION, OPERATION, AND MAINTENANCE OF THE CLOSED BASIN DIVISION, SAN LUIS VALLEY PROJECT, COLORADO, AND FOR OTHER PURPOSES

Mr. Chairman and members of the Committee, I appreciate the opportunity of submitting to you the views of the Rio Grande Compact Commissioner for Texas on S. 520.

We approve and support the broad general purposes and provisions of S. 520.

When the Rio Grande Compact of 1929 was being considered by the commissioners who negotiated the Compact under the Chairmanship of Secretary of Commerce Herbert Hoover, it was anticipated that at some future date the "Closed Basin would be developed.

When the Rio Grande Compact of 1939 was being negotiated, it was assumed that at some future date "...works would be constructed for the purpose of delivering water into the Rio Grande from the Closed Basin..."

In the development of the 1929 Rio Grande Compact, Article II states in part "...the U.S. of America was ... moved by considerations of international comity..."

The first paragraph of the Rio Grande Compact of 1939 states in part as follows:

> "...The State of Colorado, the State of New Mexico, and the State of Texas, desiring to remove all causes of present and future controversy among these States and between citizens of one of these States and citizens of another State with respect to the use of the waters of the Rio Grande above Fort Quitman, Texas, and being moved by considerations of interstate comity, and for the purpose of effecting an equitable apportionment of such waters....have resolved to conclude a Compact..."

It is in a spirit of friendship and with a desire to remove causes of future controversy that the Rio Grande Compact Commissioner of Texas joins with the Commissioners of Colorado and New Mexico in supporting S. 520.

United States of America Obligation to the United States of Mexico

In 1906 a Treaty between the United States of America and the United States of Mexico provided for delivery by the former to the latter from the Rio Grande 60,000 acre-feet of water annually. This is an obligation of the United States of America which we all intend to meet. In years of reduced water supply to the Rio Grande in the vicinity of El Paso, Texas which require the rationing of water on the United States side, prorated reductions have been made in deliveries of water to Mexico. The construction of the Closed Basin Project as planned by the Secretary of the Interior and as provided for in S. 520 would hopefully make sufficient water available to more nearly assure complete compliance with the Treaty with Mexico.

Report to the Secretary of the Interior

On April 14, 1965, the Governor of Texas notified the Secretary of the Interior that the Texas Water Rights Commission had examined the engineering plans set out in the report of the Secretary entitled "Closed Basin Division, San Luis Valley Project, Colorado". The Governor informed the Secretary that the Texas Water Rights Commission advised him that the State of Texas should waive any and all objections to the authorization of said project and;

"...1. That all works shall be constructed and operated so as to produce the maximum net benefit as determined by the Secretary of the Interior, and

2. That the delivery of water meeting Rio Grande Compact provisions from the Closed Basin into the Rio Grande above Lobatos shall be maintained at a rate which will eliminate Colorado's deficit in the minimum amount of time, as determined by the Rio Grande Compact Commission..."

The Governor endorsed and adopted the recommendations of the Texas Water Rights Commission and recommended the action indicated.

Operating Committee

We have had no experience with a U.S. Bureau of Reclamation Project being operated by a committee. This appears to be an innovation. We are not qualified to comment on the effectiveness of this type operation. It is recommended that the Rio Grande Compact Commission be added to the Operating Committee.

Water Quality and the Water Table

The Rio Grande Compact states (Article III, last paragraph):

> "...In event any works are constructed after 1937 for the purpose of delivering water into the Rio Grande from the Closed Basin, Colorado shall not be credited with the amount of such water delivered, unless the proportion of sodium ions shall be less than forty-five percent of the total positive ions in that water when the total dissolved solids in such water exceeds three hundred fifty parts per million..."
>
> Sect. 2 (b) of S. 520 states "...The Secretary will operate project facilities in a manner that will not cause the water table available for any irrigation or domestic wells in existence prior to the construction of the project to drop more than two feet and in a manner that will not cause reduction of artesian flows in existence prior to the construction of the project..."

The foregoing paragraphs offer little protection to downstream areas from relatively poor quality ground water being pumped to the Rio Grande. For example, referring to Table 8 of the Secretary's submission of the Closed Basin Division, San Luis Valley Project, Colorado Plan, Experimental Well No. 1 indicates a total dissolved solids of 442 ppm while the percentage of Sodium to the total cations is only 29 percent. This specific sample is rather poor quality water particularly in view of the fact that it is nearly double the flow weighted monthly average Total Dissolved Solids quality for the 11-year period for the Rio Grande above Culebra Creek, Colorado. The foregoing station was considered in the establishment of water quality standards for New Mexico for the reach of the Rio Grande from Cochiti Dam to the New Mexico-Colorado state line.

Table 10 of the aforementioned report gives a summary of weighted chemical concentrations for the ground water produced from the salvage area. The water is not particularly bad quality, and in fact, would meet U.S. Public Health Department drinking water standards. However, due to present irrigation practices prevailing in the

San Luis Valley, particularly the practice of sub-irrigation, the quality of water in the unconfined aquifer will steadily deteriorate. S.520 would authorize the Secretary to exchange river water for pumped water in making Compact deliveries to the State Line. For these reasons, finite upper limits must be established for the salvaged water. The quality protection offered by the Rio Grande Compact is inadequate.

The Evaluation Report on Closed Basin Division, San Luis Valley Project, Colorado, by Woodward-Clyde-Sherrard and Associates comments as follows:

> "...The salvage of waters from the Closed Basin would be a continuing operation. Salvage facilities would have to operate continuously throughout the years. The salvable waters would have to continue to flow into the Closed Basin and accumulate in the pumped and surface drainage areas. If the present recharge to the salvage area were to be intercepted before it reached the project pumps or drains, the program would become a mining operation. In such circumstances, with the salvable water in storage in the Closed Basin exhausted, the operation would not function as planned. In order to insure uninterrupted continuance of the salvage operation, Colorado would be almost certain to have to limit the future use of water to some safe pre-determined amount by application of its priority system on an annual, rather than a day-to day basis. Otherwise, increased upstream storage and expansion of irrigated lands using water which now reaches the salvage area could reduce the water now available for salvage in the Closed Basin. Any greatly expanded water uses within the Closed Basin would also have an immediate affect on the amounts of water available to the project.
>
> Insuring the uninterrupted continuance of the proposed salvage project by annual or long-term application of Colorado's priority system would virtually eliminate new appropriations until actual experience demonstrated that the water supply on the long-term basis would permit new uses within Compact limitations. This control would have to apply not only to the Closed Basin, but to the entire Rio Grande Basin in Colorado since the entire Basin contributes to the water supply on which the salvage project is dependent.

INFLUENCING FACTORS NOT CONSIDERED

No specific provisions were outlined in the U.S.B.R. report to limit appropriations or control new uses of water. Although this may require better administration by the Colorado Water officials, adequate enforcement of the law of priority is essential to success of the project..."

The State of Texas completely endorses this portion of the report of the Engineers of the Colorado Water Conservation Board.

The possible extention of irrigated areas diverting natural flow surface water could be detrimental to the downstream interests if not closely regulated and controlled, as to both quality and quantity aspects.

S. 520 should be changed to provide that the quality of water delivered to the State Line after the start of operation of the Closed Basin Project should be equal to or better than quality of the water delivered during the ten year period 1960 to 1970.

Fish and Wildlife and Recreation

We support fully the provisions of S. 520 having to do with the maintenance of the Alamosa National Wildlife Refuge and the Conservation and Development of Fish and Wildlife Resources and Recreational Facilities within the Closed Basin of the San Luis Valley.

Improvement of Channels

We urge and support the studies and investigations by the Secretary for the purpose of developing a general plan for the improvement of the channels of the Rio Grande, the Conejos, San Antonio, La Jara, Alamosa Rivers, and Rock Creek.

We do not object to the Secretary making a full and complete feasibility investigation for the purpose of developing a plan for the construction of Wagon Wheel Gap Dam and Reservoir for flood control purposes.

We would recommend that after the Secretary's studies and after authorization for constructing the Works, that the construction of Wagon Wheel Gap Dam be deferred until all river channels below the dam have been improved in accordance with the Secretary's specifications.

Senator ANDERSON. Mr. Kuiper?

STATEMENT OF CLARENCE KUIPER, STATE ENGINEER, STATE OF COLORADO

Mr. KUIPER. Thank you. My name is C. J. Kuiper from Denver, Colo., and as State engineer for the State of Colorado, I am the executive director of the Division of Water Resources and the Commission for Colorado on the Rio Grande Compact Commission.

As State engineer it is my responsibility to administer the distribution of water in the Colorado portion of the Rio Grande and fulfill the responsibilities of the State of Colorado according to the terms of the Rio Grande compact.

It was the intent of the negotiators for the Rio Grande compact that an equitable apportionment of the waters of the Rio Grande be made and this included a full supply for water uses in effect at this time the compact was negotiated and ratified in 1939. Certainly it was not intended by the State of Colorado that the current users at that time would be denied the right to a full water supply. The record is clear that the historic diversions from the natural flow of the Rio Grande were not adequate to furnish a full-water supply for uses current at the time the compact was ratified.

The vicissitudes of nature are such that the timing of the natural runoff is not compatible with the water requirements. In the classic style of the American farmer, means were improvised by the water users themselves to provide a complete water supply and this was partially accomplished by means of pumping from the underground aquifers.

In the year of ratification of the compact, 1939, there were about 240 large-capacity wells in operation in the San Luis Valley and since that date there have been an additional 2,700 wells put into operation, primarily to supplement the inadequate surface water supply. During this period of time, the irrigated acreage in the San Luis Valley has remained constant. The water supply studies, made primarily by Federal agencies, as a basis for compact negotiations did not take supplementation by wells into account and therefore erroneous conclusions were drawn.

It was assumed at the time the compact was negotiated that the closed basin project would be constructed and the project is referred to in article III, paragraph 4, of the Rio Grande compact. Had the project been constructed at that time, or shortly thereafter, this would have permitted Colorado water users to accomplish supplementation by well pumping without impairing the capability of Colorado to meet its compact commitments at the New Mexico State line.

Since the project was not constructed, as expected by the compact negotiators, Colorado has incurred a substantial debit on its compact commitments. Heavy drafts on the underground supply, during periods of low surface water supply, had to be replenished during periods of high runoff when the percentage of compact delivery requiremnets were highest and the debit was increased disproportionately. Unfortunately, the replenishment of the depleted ground water supply causes a rise in the water table in the area of the so-called sump and permits

great amounts of water loss from evaporation and nonbeneficial consumptive use. This unfortunate situation would be mitigated by the closed basin project.

In 1967, the U.S. Supreme Court continued the case of *New Mexico and Texas* v. *Colorado* with the stipulation that Colorado meet its annual compact deliver commitment at the New Mexico State line each and every year and failure to do so would reactivate the case, at the request of the plaintiffs.

In attempting to assure the required compact delivery, projection of annual river runoff must be made and determination of allowable diversions to Colorado water users made on this basis. The Soil Conservation Service makes a projection of the runoff, from snow survey records, for the period of April through September and this projection is used, along with an average annual runoff for the remaining months, to arrive at an annual figure on which to base compact requirements and necessary curtailment of diversions.

With such a paucity of information based on averages and under the U.S. Supreme Court stipulation, we have no choice but to be conservative in our projections and aim for compact overdelivery in order to provide for variations from normal runoff.

Curtailment of diversions to irrigation results in crop losses and aggravates the problem of economic distress in an area already declared to be a poverty area.

Senator ALLOTT. Well, just one question for the sake of the record. If you project a compact overdelivery, then to that extent you are depriving Colorado, even though you may have to do it, for your protection, you are depriving Colorado—diverters—to water to which they are entitled

Mr. KUIPER. That's absolutely right, Senator Allott. We must be ordered to assure ourselves that we do not underdeliver one drop or the Supreme Court case will be reactivated.

Senator ALLOTT. Thank you.

Mr. KUIPER. The State engineer's office curtailed diversions by Colorado water users during the year 1968 in order to comply with this stipulation and delivery at the New Mexico State line was inadvertently in excess of the compact requirement by some 21,000 acre-feet. This curtailment resulted in a financial loss to the water users of the State of Colorado of over $4,500,000. These losses were documented in a protest filed in the State engineer's office on February 18, 1969. A copy of this documented protest will be available to anyone wishing to review it.

In the year 1969, curtailment of diversions to Colorado water users resulted in a compact delivery at the New Mexico State line of some 65,000 acre-feet in excess of the compact requirement. Again, conservative projections based on annual averages, coupled with the fact that runoff from heavy late-season rains were passed downstream, resulted in an overdelivery.

Damage to crop production as a result of the curtailments in 1969, 1970, and 1971, have not been estimated; however, it is evident that severe damage did occur. Deliveries for the current year, 1972, indicate conditions are even worse than ever before and curtailment of Colorado diversions this year will result in severe economic loss to an already

depressed area. We dare not forecast that the occasionally high, late-season rainfall will be repeated, however, if it is, a sizable overdelivery for the year 1972 may again occur.

Should a series of dry years, such as occurred in 1953 through 1956, recur so that the ground water table would be radically depleted and this series was followed by a high-runoff year this excess runoff with its higher percentage of compact delivery requirement could not be utilized to recharge ground water.

Curtailment of such surface diversions to meet the compact requirements without recharge water would mean economic disaster in the Colorado portion of the Rio Grande. Without the closed basin project to augment the deliveries at the New Mexico State line, we would have the alternative of creating economic disaster in the San Luis Valley or violating the stipulation of the U.S. Supreme Court and reactivating the very expensive litigation between the three States and the Federal Government.

Water budget studies by the U.S. Geological Survey in the San Luis Valley indicate that there are some 1 million acre-feet of water lost to evaporation and nonbeneficial consumptive use. The closed basin project would salvage about one-tenth of this loss, resolve the controversey between States, avoid expensive litigation, and perhaps Federal supervision of the compact administration.

Some supplementation to water rights, which were valid at the time of ratification of the compact in 1939, had been accomplished by withdrawal of water from the deep aquifer underlying the San Luis Valley. The hydraulic head in this aqufer has diminished since the year 1939 to the point that many of these wells are having to abandon their irrigated land. Mining ground water from the deep aquifer leads to a disastrous situation at some point in time since the recharge is not sufficient to replenish the withdrawal.

A losing battle is being waged to maintain the economy of the San Luis Valley and resolve some of the existing economic problems. Recently, application for wells for industrial development had to be denied because additional development of wells would further impair Colorado's ability to meet compact and treaty commitments, provided the Closed Basin project were not constructed. These plants would employ several hundred persons in an area of chronic unemployment and economic distress and it would certainly be in the best national interest to accommodate these facilities.

I would like to comment on a statement contained in the third paragraph of the Department of Interior report, dated May 19, 1972, expressing the views of the Department on Senate bill 520.

The statement reads:

> We would prefer that Colorado meet its obligation through limitations on its internal water uses, an experience shown to be practical in the past several years.

In view of the extreme hardships and human suffering that results from such limitations, it is difficult to conceive that a Department of the Federal Government can adopt such a callous and unconscionable attitude, and deem such sufferings as practical.

If they deem welfare payments at less than a subsistence level to be more practical than providing an opportunity for people to support themselves, then the Department's view on practicality is a far cry from mine.

It makes me wonder whether the Department of the Interior is even aware of the fact that this area has been declared a part of the poverty area within the four corners region.

Another statement of the view of the Department of Interior with which I take issue is also contained in the third paragraph of the above referenced report. The view states:

> Sound policy requires that the bill be amended to require repayment of all costs of the Closed River Basin Division except that part of those costs allocated to fish and wildlife and recreation that would be nonreimbursable . . .

I cannot concur with a view that places more importance on fish than people, and this, in my opinion, is exactly what that statement implies.

I think it should be called to the attention of this committee that the Bureau of Reclamation constructed Platoro Dam and Reservoir on the Conejos River in 1959 for the purpose of flood control and irrigation. The irrigation allocation of the costs of this reservoir was to be repaid by the water users within the Conejos Water Conservancy District. Because of the restrictions imposed by the Rio Grande compact and the fact that Colorado could not meet its annual commitment due to the lack of operation of the Closed Basin project, the Federal investment in Platoro Dam and Reservoir is wasted. It would appear to me that the Department of the Interior would be most eager to not only recover the cost of Platoro Dam and Reservoir, but to realize a profit in regional and national benefits deriving from the use of these facilities, especially so when it is within an area of economic distress and poverty.

I would urge this committee to report favorably on S. 520 to resolve this interstate and international problem and fulfill the obligation of the Federal Government imposed by international treaty and interstate compact.

Senator ALLOTT. Thank you very much, Mr. Kuiper. You already picked up two or three things that I was going to ask you about anyway, and you anticipated me, and you have answered them, and I appreciate your testimony. It's a very fine statement.

Mr. KUIPER. Thank you.

Senator ANDERSON. Mr. Eddy, Mr. Davis, and Mr. Wham.

Senator ALLOTT. Gentlemen, we also have Mr. Kopfman here following you. I wonder if it would be possible to accommodate the chairman because we will both have to be near the floor from here on out. We can insert the statements in the record, and cover it with a short statement because most of the people on the committee will have to read the record anyway, in order to get the information.

STATEMENT OF ROBERT S. WHAM FOR THE RIO GRANDE WATER CONSERVATION DISTRICT AND THE RIO GRANDE WATER USERS' ASSOCIATION OF THE SAN LUIS VALLEY, COLO.

Mr. WHAM. My name is Robert S. Wham, attorney for the Rio Grande Conservation District, and I appear here today to indicate to the committee the support by the district for S. 520. The district is made up of all of the Colorado counties within the watershed of the Rio Grande River except for Costilla County. I want to point out, as my statement does, that at the time the compact was entered into,

the people in the valley were assured that the compact would operate in such a way that the existing historical diversions would not be curtailed and the commitments met without interference. Subsequent to that time, occurrence of the underdeliveries was in large part the result of that belief, and a result of the fact that the water officials of Colorado—and I believe with the concurrence of the water officials in the other two States—permitted the historical diversions to be utilized as was intended by the compact.

Now, at this time, by reason of the stipulation—diversions are being curtailed to the great damage of the people of the valley, and as a matter of fact, the compact is now working at a further variance than what was intended and from its own terms, and by reason of the stipulation in the Supreme Court of the United States, which forces Colorado to comply with the compact delivery schedule on an annual basis. The compact recognized that there is a greatly fluctuating flow in the river, that there will be times when it will be impossible for Colorado to meet the compact commitments on an annual basis, so therefore it makes provision for underdeliveries to be made up in later years.

Under the stipulation, the water users of Colorado have the burden of not being able to render delivery even for a single year, and it is completely devastating, and it has a potential of being completely disastrous.

Senator ALLOTT. Under Colorado law, the State engineer, under the Supreme Court decision, he has no other choice other than to do this, even though it works to the disbenefit of Colorado people. You agree with that, will you not?

Mr. WHAM. That is correct. Under the stipulation of the Supreme Court case, not going forward. This will become a very critical problem. We can predict on a historical basis when we have a series of years such as we are experiencing right now, a very low water supply, maybe followed by a year of high water supply. Because the compact delivery schedules are so accelerated at the higher water supply levels, and at the same time a lowered water table due to insufficient recharge of previous years, makes the land like a sponge and the return flows on which we rely to meet the compact schedules that it will be short. In such a year it may be impossible even with the extreme deprivation of the water users on the main stream unless we have the supplementation of the salvage water from the Closed Basin to meet the compact schedule.

This, then, would very likely reactivate the case in the Supreme Court and we would be faced—all three States would be faced—with protracted high expensive litigation that does not yield a single, solitary drop of water, new water, into this stream.

I want to, finally, in trying to go over the high points of my remarks, I want to indicate to the committee that my board the board of directors of the Rio Grande Water Conservation District, has indicated its support for this bill as it is presently written, and I want to emphasize the words "as written".

That, I believe, concludes my remarks. And I submit my written remarks for the record.

Senator ANDERSON. Thank you very much for your help.

(The complete statement of Mr. Wham follows:)

STATEMENT OF ROBERT S. WHAM

FOR THE

RIO GRANDE WATER CONSERVATION DISTRICT

AND THE

RIO GRANDE WATER USERS' ASSOCIATION

OF THE SAN LUIS VALLEY, COLORADO

ON

S. 520

WASHINGTON, D. C.

June 26, 1972

Mr. Chairman and Distinguished Senators:

As the attorney for the Rio Grande Water Conservation District, I have been given the privilege of conveying to this Committee the fact that the District which I represent supports and urges the passage of S. 520, as written, which would authorize the construction of the closed basin water salvage project in the San Luis Valley of Colorado. I have been asked also to indicate the same degree of support by the Rio Grande Water Users' Association, a voluntary organization which has among its membership the users of more than ninety per cent of the waters diverted from the main stem of the

Rio Grande River in Colorado. I want first to express our appreciation for the prompt attention given to this Bill, with so many other pressing matters at hand. The dispatch with which the Committee has moved has in fact rendered it impossible for us to make the necessary contacts to list in these formal remarks many other local organizations, agencies and units of local government which we know support the project. We are submitting separately, however, brief expressions of support from some of them that have managed to meet and adopt appropriate resolutions.

The Rio Grande Water Conservation District was created in 1967 pursuant to authorizing legislation adopted in Colorado earlier in the same year, and covers those portions of Alamosa, Conejos, Mineral, Rio Grande and Saguache Counties lying within the watersheds of the Rio Grande and Conejos Rivers, as well as the closed basin area of the San Luis Valley to the North. This brought together for the first time in one water conservation district the diverse interests of water users from the Conejos River, the Rio Grande River and the Closed Basin. The Closed Basin itself is an area of several parts, from the alluvial fan to the West, where the extreme porousity of the soil makes maintenance of a high water table or frequent application of large amounts of water, which is often unavailable, necessary for successful irrigation,

all the way to the sump area in the East Central portion of the Closed Basin where ground and surface drainage waters collect and are evaporated or consumed by phreatophlytes and other vegetation. It is in this latter area that the Closed Basin Project would salvage and conduct to the Rio Grande River much of the water now being lost to evaporation and transpiration.

There are approximately 430,000 irrigated acres in the San Luis Valley, a number which I am told has not materially changed since the Rio Grande Compact was made in 1939. The major irrigated crops in the valley are alfalfa hay, barley, potatoes and small grains. Acreage of alfalfa hay is decreasing, while that of the other three crops, which consume less water, is increasing. Altitude of the San Luis Valley averages approximately 7,800 feet above sea level and the average growing season for the valley is barely 100 days. Average precipitation in the valley proper is less than eight inches per year. Many parts of the valley are economically depressed areas.

The waters of the Rio Grande and Conejos Rivers in Colorado were over appropriated with decreed priorities many years before the Rio Grande Compact was made. That is to say, that many of the later decreed appropriations actually received water for only short periods during the spring runoff or not at all. Return flows to the rivers from these appropriations make up the river

flows that reach New Mexico. There are few significant diversions from the main stem of the Rio Grande River south of Alamosa to the state line. The Closed Basin Project would discharge its salvaged waters into the Rio Grande River south of Alamosa.

When the Rio Grande Compact was made, it was the conviction of those who developed its terms that Colorado's commitment to the lower states could and would be met without interference with or curtailment of the historical use of the waters of these rivers by the holders of decreed appropriations in Colorado. The operation of the compact was so represented to the people of the San Luis Valley and the State of Colorado at the time the compact was adopted. It is my conviction that this belief was held by the compact commissioners of all three of the signatory states during the period after 1950 when drought and other factors resulted in Colorado being repeatedly charged with underdeliveries to the lower states. I believe that this attitude, innocently held by the water users of the San Luis Valley, and the officials charged with the duty of administering their water, and not strongly disputed by the compact authorities of New Mexico and Texas, led to the continued use of water in Colorado as historically used, in the

blind faith that the drought would ultimately end and the compact imbalance would eventually right itself. But this was not the case, and the present litigation by Texas and New Mexico against Colorado in the Supreme Court was commenced, in which it was claimed that Colorado was more than 900,000 acre feet in arrears in deliveries.

Since that time stringent efforts on the part of Colorado Water Officials to meet Compact commitments each year have resulted in serious curtailments of water use in Colorado, to the damage of the valley's already shaky economy.

Those stringent efforts by Colorado Water Officials were in part made necessary by a stipulation which Colorado was forced to accept in the pending litigation to avoid protracted highly expensive litigation which would not add one drop of water to the stream. Under the stipulation, Colorado was required to meet Compact commitments each year, rather than being allowed to incur deficiencies in adverse water years, to be made up from later surpluses, as was expressly provided by the terms of the Compact. This means that the water officials intentionally overdeliver to the lower states each year, and deprive Colorado irrigators of water use to that extent, in order to assure that Compact deliveries will not fail.

It is virtually impossible to meet Compact delivery schedules during a high water year which follows two or more consecutive low water years, because of the high delivery requirement which the Compact schedules impose when the inflow index is high, coupled

with the absorption of incoming supply into the ground water table which is desiccated by successive years of low recharge. It was this type of problem which I believe the Compact sought to accommodate by its recognition that underdeliveries would occur in some years, and that they could be made up in other years. Now, the terms of the stipulation, which is being enforced by our Water Officials, preclude such underdeliveries from taking place.

It is quite likely that this pattern of successive low water years is taking place at the present time. When that high water year comes, unless some remedial action can be taken to alleviate it, the irrigators of the San Luis Valley will be forced to watch abundant supplies of water pass them by to meet the Compact requirements, while their own economic devastation simply becomes more complete. Even at that, it may well be impossible to meet the Compact delivery requirements in such a year, and we may find ourselves again facing that expensive but dry litigation because of a violation of the stipulation. What I have described here is clearly a greater burden than was ever intended to be imposed by the Compact. It is a burden which the people of the San Luis Valley simply cannot afford to bear.

The salvage of water from the sump area of the Closed Basin has long been recognized as a potential project. Certain terms

of the Rio Grande Compact were inserted in specific contemplation of the project. The Bureau of Reclamation has recognized for a number of years that prolonged drought conditions and other unforeseen circumstances have made it impossible for Colorado to meet its compact commitments without severe curtailments and unacceptable damage to its economy, all of which was neither contemplated nor intended by the Compact, and found the Closed Basin Project to be a feasible solution to the problem. The Bureau found the average underdelivery since the commencement of the drought period was between 50,000 and 60,000 acre feet annually, which incidentally corresponds remarkably with the commitment of the United States to deliver 60,000 acre feet annually from the Rio Grande River to Mexico under the Mexican Treaty. The Bureau of Reclamation also found that the excess water salvaged by the Project over and above the annual amount to keep Compact commitments current would repay the accumulated deficit in time, and thereafter would be available for distribution for new beneficial uses on a contract basis. But for meeting current Compact commitments and affording water to repay the accumulated deficit the Bureau found that the beneficiaries were not sufficiently identifiable to require repayment. We concur with this view. The salvaged waters, to the extent of their

application to meet Compact requirements and deficiencies, will be discharged into the Rio Grande River to be conveyed to the gauging station at Lobatos, and from there direct to New Mexico. It is a form of augmentation of the River, and no discernable or identifiable group, state or locality benefits more greatly than any other, including the Republic of Mexico and the Indian tribes for which the Federal Government has responsibility. No new or extended use of these waters will be undertaken in Colorado, nor presumably in the other two states, over and above the uses that were contemplated to be made of waters supposedly available when the Compact was made. At such time as water from the Project is available for use other than for application to Compact requirements, the Rio Grande Water Conservation District, according to the thinking of its present Board, will be ready and anxious to negotiate a contract with the Secretary for the purchase and distribution of such available waters for new or supplemental beneficial uses in the San Luis Valley. Prior to that time, however, the development of the Project and application of salvaged water to Compact requirements should be done on a non-reimbursible basis for the general benefit of the Rio Grande Valley as a whole, as was done on projects for the salvage of waters and channelization of the main stem of the Rio Grande River in Central New Mexico.

The people of the Closed Basin area have long been suspicious of the Closed Basin Project and until recent years have opposed it. This opposition centered around their own experience with the effect of wells in lowering the water table in parts of the Closed Basin area. Experience has shown them that in the porous soils a lowered water table greatly increases the requirement for water to satisfactorily irrigate in such areas. In addition, the propsect of the materially increased expense of pumping from greater depths for their own irrigation wells was unacceptable to many who are operating on close margins. Finally, an attitude of mistrust of engineering and hydrological estimates and projections was present, which was not lessened by a realization that the Rio Grande Compact was not operating as originally represented. This opposition has now virtually disappeared due to the following four factors: First, the United States Geological Survey underground water study in the San Luis Valley has answered many questions satisfactorily. Second, the analog model of the Closed Basin has given added assurance that the Project would not adversely affect existing uses in the valley. Third, the unsatisfied requirements of the Rio Grande Compact have tempered much of the opposition with the realization that something simply has to be

done to provide additional water to the river system. Finally, the inclusion of certain safeguards in the legislation which simply act as a guarantee that operation of the project will not adversely affect existing water uses, and that maximum benefit will be gained from the water salvaged. For these reasons, my Board and the other agencies and groups for whom I speak and who have submitted written statements in support of the project, endorse the proposed legislation "as written."

Again, I wish to express my appreciation to the Committee Chairman, its members and staff for its consideration of S. 520 and for this opportunity to present the views of the people I represent, and I believe, of the vast majority of the people of the San Luis Valley.

Senator ALLOTT. Mr. Davis.

STATEMENT OF PAUL B. DAVIS, CONSULTING ENGINEER FOR RIO GRANDE WATER CONSERVATION DISTRICT, RIO GRANDE WATER USERS' ASSOCIATION, CONEJOS WATER CONSERVANCY DISTRICT

Mr. DAVIS. I am Mr. Davis, and I would like to submit my statement and summarize some points that haven't been brought up, up to this time. Specifically, that approximately 55 percent of the Rio Grande river is diverted into the proposed Closed Basin area, and as far as return flow is concerned, it has lost to any further beneficial use, in an area which has a long-term average precipitation—six-tenths and eight-tenths inch—this is a particularly serious matter. And one point of interest might be that so far in 1972, up to June 1, we have received less than 1 inch of rain on the balance forward.

A recent study that was made by the U.S. Geological Survey indicates that the floor of the Closed Basin received approximately 375,000 acre-feet of water from precipitation alone. It appears that on the basis of these figures a reasonable estimate of inflow to the Closed Basin would be 975,000 acre-feet of water from diversions, direct flow, and precipitation.

The flows of the Rio Grande and Conejos River are unpredictable, quite erratic, and have declined over a period of the 80 years in which they have been measured. And at the back of this statement which I am submitting I have presented three graphs showing the declining flows at the Del Norte, Mogote, and Lobatos stations, which are the three principal stations used by the Rio Grande compact measuring stations.

It is well covered in my statement, but I would like to make—I listened to Commissioner Armstrong's statement, but I would like to say that I disagree with Commissioner Armstrong's statement that the people of the San Luis Valley are the prime beneficiaries of the Closed Basin project. Because, the existing physical conditions on the Rio Grande river, the water users in the Colorado cannot realize any additional available water except in rare years when runoff far exceeds capacity of decreed rights to divert the water. This condition results from the fact that decreed water rights already exceed any normal flow of the Rio Grande and the several diversions of both the point of discharge to the Closed Basin drain, are solid barriers across the river, under normal conditions. As a point of discharge, the Closed Basin drain is below any decreed point of diversion as to water. It cannot be used for irrigation of lands in the State of Colorado. Also, as all the water above this point is already diverted under normal conditions, it was equally apparent that no additional water can be diverted by exchange. The water just isn't there. Under these conditions, Colorado cannot be the primary beneficiary. Under any subnormal conditions, normally, New Mexico and Texas can realize any additional waters that result from the Closed Basin drain project. Colorado's runoff, and at infrequent intervals, may realize additional water, but these are rare cases, and they are unpredictable and make this water of little value to the people of Colorado. This is particularly true since the conditions will almost surely occur.

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Colorado's major benefits, as a result of the proposed construction, agreed to pay its alleged debit to New Mexico and Texas, to be able to regulate and administer the river without threat of action by New Mexico and Texas, and finally and hopefully a very long term restoration of salt laden lands in the closed basin area.

On behalf of the residents of the San Luis Valley, Colorado, and the organizations that I represent, I want to thank you for your consideration of this matter and the courtesy you have extended to those of us who have attended this hearing.

Senator ALLOTT. Thank you very much. I have been looking over your statement here and particularly the charts attached to it, which will be of great help to us in this matter.

Your statement reminds me of one thing. You talk about 1 inch of rain, and I am reminded by the staff that I believe that we have had 28 inches of rain thus far in Washington this year, more than we wanted. And I would like to spread it out a little bit, if we could possibly do it.

Mr. DAVIS. We would too, Senator.

(The complete statement of Mr. Davis follows:)

STATEMENT OF PAUL B. DAVIS
Consulting Engineer for
RIO GRANDE WATER CONSERVATION DISTRICT
RIO GRANDE WATER USERS ASSOCIATION
CONEJOS WATER CONSERVANCY DISTRICT

Before the
SUBCOMMITTEE ON POWER AND WATER
of the
INTERIOR AND INSULAR AFFAIRS COMMITTEE
of the
UNITED STATES SENATE

on
S. 520
Washington, D. C.
June 26, 1972

Mr. Chairman and Distinguished Senators:

Water related problems in the San Luis Valley of Colorado started in the period 1880 to 1890 when canal and ditch systems were constructed or extended to make possible irrigation and cultivation of large areas of fertile lands. The shortage of water in the Rio Grande brought protests by the United States of Mexico which resulted in the Embargo of 1896 and the Convention of 1906.

The Embargo of 1896 effectively slowed development of additional lands and construction of storage facilities for waters of the Rio

Grande and its tributaries until is was suspended in 1925. By terms of the Convention of 1906 the United States of America agreed to deliver to the headgate of the Acequia Madre, known as the Old Mexican Canal, above El Paso, 60,000 acre feet of water annually for use in Mexico.

The Rio Grande Commissioners were first appointed in 1923 and from that date until 1938 efforts were made to arrive at an agreement for the equitable distribution of waters of the Rio Grande between the States of Colorado, New Mexico and Texas. In 1929 the temporary Rio Grande Compact was drawn up and in 1938 the Rio Grande Compact was completed and became effective in 1939 upon its ratification by the signatory States and Congress.

The concept of a Closed Basin Drain project is not new. At least as early as 1915 studies were made by the Department of Agriculture and Bureau of Reclamation to determine costs, benefits and the estimated volume of water that might be salvaged as a result of construction of such a drain. At that time it was estimated that an open drain would salvage 300,000 acre feet of water annually from the Closed Basin. I might add later studies indicate this earlier estimate was most optomistic.

The temporary Rio Grande Compact of 1929 pointed out the desirability of the Closed Basin Drain Project. The conviction

was expressed by the Commission that the United States should construct the project and the State Line Reservoir without cost to the States by reason of its obligation under the Convention of 1906, in fulfillment of which it has, in effect, made an annual draft of 60,000 acre feet of water on Colorado, New Mexico and Texas.

Since the formation of the Rio Grande Commission the contention of Colorado has been that major storage development which would permit diversion for irrigation at time of need, coupled with adequate drainage development in the San Luis Valley, might bring about an increase in the flow of the river at the Colorado-New Mexico State Line. Siebenthal, in his report of 1910 based upon a water study for the United States Geological Survey of the San Luis Valley, made a similar observation.

The Closed Basin occupies the northern three-eights of the San Luis Valley of Colorado, or an area of 2940 square miles. In all water studies the unconfined aquifer of the Closed Basin area has been considered isolated from and nontributary to the Rio Grande from which it is separated by a low hydraulic divide. Approximately fifty-five per cent of the flow of the Rio Grande as measured at the Del Norte gaging station is diverted to irrigated lands within the Closed Basin. Added to this the rim inflow from

the many streams surrounding the Closed Basin contributes approximately 270,000 acre feet annually. Calculated from an 80 year record of flow of the Rio Grande, the Closed Basin received an average of 632,339 acre feet of water from surface flows alone. Precipitation in this area varies from six to forty inches per year, a substantial part of which is added to the ground water reservoir. Recent studies made by the United States Geological Survey indicate the floor of the Closed Basin received approximately 375,000 acre feet of water from precipitation alone. It appears that on the basis of these figures a reasonable estimate of inflow to the Closed Basin would be 975,000 acre feet of water from diversions, direct flow and precipitation.

In all of the Closed Basin area one drainage system, the Rio Grande Drain, servicing 30,000 acres, discharges into the Rio Grande. The remainder of the 1,881,600 acres in the Closed Basin drain to the sump area where much of the remaining water is lost by evapotranspiration.

Bureau of Reclamation studies indicate that if the water table can be controlled at a depth of eight feet below the surface in the salvage areas an annual average yield of 101,800 acre feet can be realized at completion of the project as it is now proposed. This is water that is lost to all beneficial use.

In the past San Luis Valley water users have viewed this project with less than enthusiasm as it was believed that the long term effects were of a speculative nature. An analog model of the San Luis Valley developed in the past four years by the United States Geological Survey, which shows the long term effects of water withdrawal from the shallow, unconfined aquifer, has answered many of the worrisome questions that have been heretofore unanswered. This has resulted in substantially unanimous support of the project from the local level.

It appears that there is no longer a question of acceptance and endorsement by local water users as long as the safeguards as written in the present S. 520 are retained, rather the problem now centers on the problem of financing construction, operation and maintenance of the project. The hesitancy of the local people to endorse the Closed Basin Project before the results of the analog model of the San Luis Valley were known may well stem from the hardship caused as a result of their attempts to meet the delivery schedules of the Rio Grande Compact. The average annual runoff of the Rio Grande at Del Norte between 1890 and 1935 was 707,365 acre feet. It was on this basis that the schedule of deliveries was calculated. The average from 1936 to 1969 was 592,894 acre feet. Obviously the decrease of 114,471 acre feet in the average flow of the river has caused a hardship on all concerned, and has

resulted in an understandable suspicion of other projects not thoroughly tested.

In the same period the Conejos River, the principal tributary of the Rio Grande in Colorado, had an average flow of 271,595 acre feet prior to the Rio Grande Compact and 227,579 acre feet subsequent to the Compact, a reduction in the average annual flow of 44,016 acre feet.

The flows of these two rivers determine the volume of water Colorado is obligated to deliver to the Colorado-New Mexico State line. The long term reduction in the average flows of these two rivers amounts to 158,487 acre feet of water. The erratic and declining flows of the Conejos River at Mogote and the Rio Grande at Del Norte and Lobatos, the three principal index stations, are clearly illustrated by graphs presented on Plates 1, 2 and 3, following this statement.

The latest study and that best known and accepted is the Closed Basin Division, San Luis Valley Project, Colorado which was published in 1963 and 1964 by the Bureau of Reclamation. The work now being considered for the Closed Basin Drain Project is based on this study. It conforms to good engineering practices. It provides for the conservation of a valuable resource now being lost to any beneficial use. It assures and provides for the quality

of water required by provisions of the Rio Grande Compact in order that the water developed by the project can be credited against the obligation of Colorado according to the terms of the Compact. It makes possible additional water for the Alamosa National Wildlife Refuge. It takes into consideration the needs of the Mishak Lakes National Wildlife Refuge and the recently proposed Blanca Wildlife Habitat Area. It incorporates safeguards for land adjoining the salvage areas of the project so that its utility and productivity will not be impaired. It assures recreational utility of the San Luis Lake area. The project as presented under the Bureau of Reclamation plan leaves little to be desired for development of the Closed Basin Drain.

It is the concensus of those who have studied the situation that the benefits of any drainage project tributary to the Rio Grande will be substantially diminished if restoration of the channel of the Rio Grande is not accomplished prior to, or concurrently with any drainage or water salvage projects.

Over the years since water was first diverted from the Rio Grande decreased flows and uncontrolled growth of phreatophytes have caused a gradual degradation of the river channel so that excessive losses are now realized. In this regard S. 520 combines the two items of work that will permit the development of

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salvage water and will assure its delivery to the Lobatos gaging station to be counted as credit water for the State of Colorado under the terms of the Rio Grande Compact. It is my earnest recommendation that, as a reconnaissance study has been made and cost estimates as of 1969 presented, the restoration of the channel be carried on concurrently with the remainder of the project. It is my understanding that the estimated cost of the Closed Basin Project includes channel rectification of the Rio Grande from the point at which the Closed Basin Drain discharges into the river to a point twelve miles downstream.

The Rio Grande Compact was drawn up and accepted by the representatives of Colorado in the belief that all rights of water users were amply protected. This has not proven to be the case. Colorado water users have been deprived of water decreed to them long before the Compact was formulated in an effort to meet the delivery schedules of the Compact.

Concurrently with the loss of marginal lands to salt encroachment, Forest Service personnel, in the interest of optimum long range planning, have found it necessary to reduce the area of forest grazing land adjoining the San Luis Valley. The total area available for grazing on forest lands has decreased from a high of 1,122,798 acres in 1946 to a low of 584,052 acres in 1964.

In 1970 there were 632,324 acres available to permittees. This loss of privately owned grazing land and curtailment of forest grazing land has worked to the economic detriment of the stockmen of the area and precludes their reliable long range planning.

As a result of these conditions the sheep population of the area has decreased from 206,755 in 1938 to 106,576 in 1970 and over the same period the increase in cattle population lags far behind the normal increase for other cattle producing areas.

To further reflect the responsibility of the United States, Elephant Butte Reservoir was completed in 1916 "..... to insure the fulfillment of the Mexican Treaty." In spite of the acceptance of this obligation, from 1938 to 1970 the United States failed to deliver all of the 60,000 acre feet guaranteed to Mexico by the Convention in nine out of 32 years. For this period the cummulative debit mounted to 239,210 acre feet of water. There appear to be no available records for deliveries made between 1906 and 1938; however, there is no reason to believe that deliveries to Mexico were any more satisfactory for that earlier period, in which case the total cumulative debt may well be one-half million acre feet of water, or even more.

The delivery schedules of the Rio Grande Compact take into consideration the obligation of Colorado and New Mexico to deliver

60,000 acre feet of water to the headgate of the Old Mexican Canal in accordance with terms of the Convention of 1906. Despite the fact that the United States has failed to make the required delivery to Mexico, the obligation of Colorado in regard to delivery of water to the Colorado-New Mexico State line is in no way diminished.

In addition to the salvage of water, the project will restore much land to productivity and add water to the Rio Grande to assure a sustained flow, reduce siltation and aggradation of the channel, promote fish and migratory bird habitat and tend to restore the river to its earlier conditions.

The nonreimbursable clause of S. 520 seems a position justified by the following facts:

1. Projections of Government records which were used in the formulation of delivery schedules stipulated in the Rio Grande Compact have proven to be in error and work a hardship on Colorado water users.

2. The responsibility of the Government to the local water users as a result of its commitment under the Convention of 1906 for 60,000 acre feet of water to be delivered annually to Mexico.

3. The Closed Basin Drain project will tend to restore affected land and the channel of the Rio Grande to their former condition, it is of benefit to an international stream, contributes toward the long range migratory bird and sports fisheries program, and will help to restore harmony between the States of Colorado, New Mexico and Texas and the United States of Mexico.

4. Restrictions applying to and reduction of Federally controlled grazing lands with a resultant adverse effect on the local economy.

5. The citizen of the San Luis Valley have diligently solved such water related problems as have been within their financial capacity and will continue to do so.

On behalf of the residents of the San Luis Valley of Colorado and the organizations I represent I want to thank you for your consideration of this matter and the courtesy you have extended to those of us who have attended this hearing.

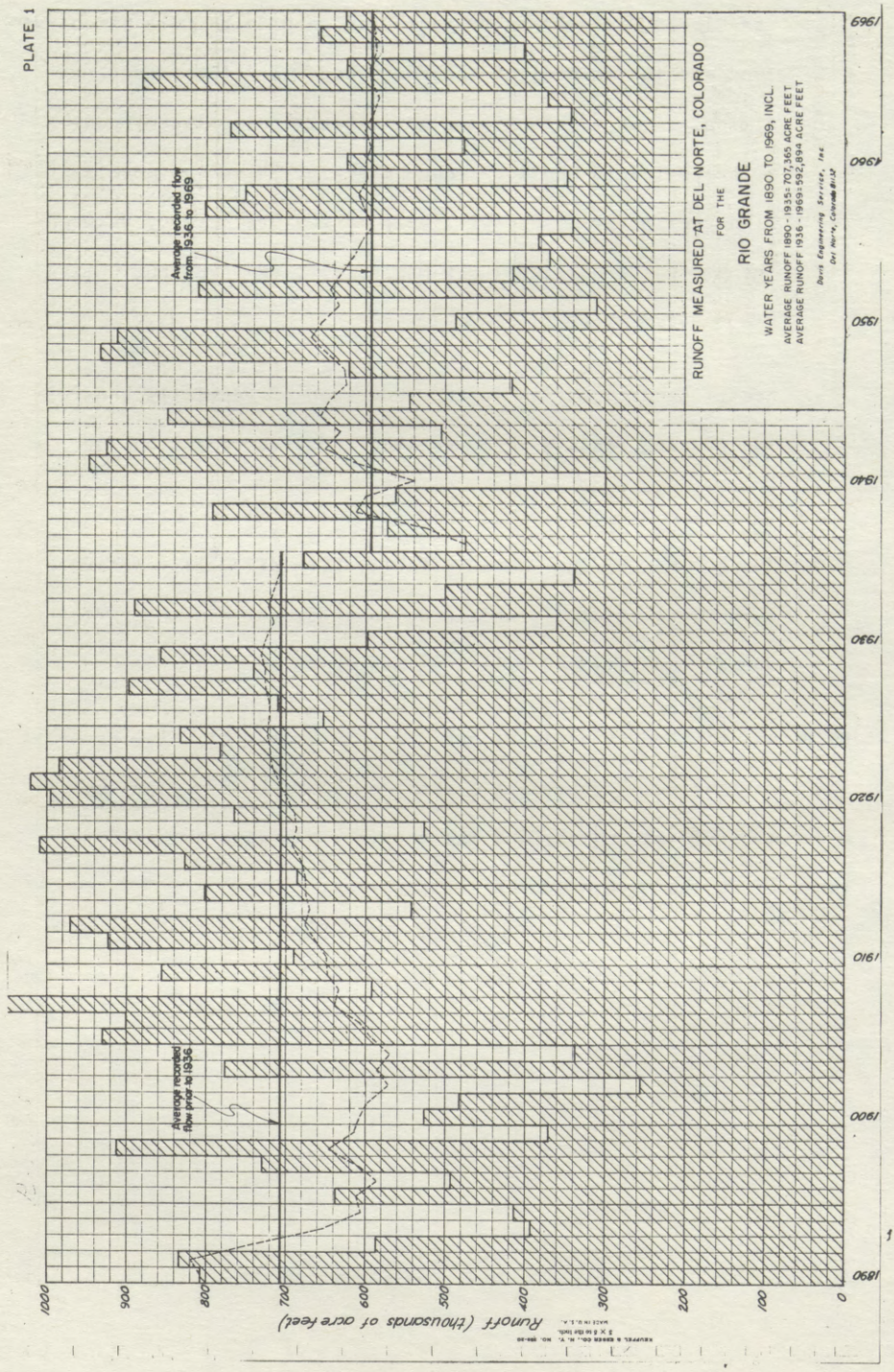
PLATE 1
RUNOFF MEASURED AT DEL NORTE, COLORADO
FOR THE
RIO GRANDE
WATER YEARS FROM 1890 TO 1969, INCL.
AVERAGE RUNOFF 1890 - 1935= 707,365 ACRE FEET
AVERAGE RUNOFF 1936 - 1969=592,894 ACRE FEET
Davis Engineering Services, Inc.
Del Norte, Colorado 81132
Average recorded flow from 1936 to 1969
Average recorded flow prior to 1936
Runoff (thousands of acre feet)
1000
900
800
700
600
500
400
300
200
100
0
1890
1900
1910
1920
1930
1940
1950
1960
1969

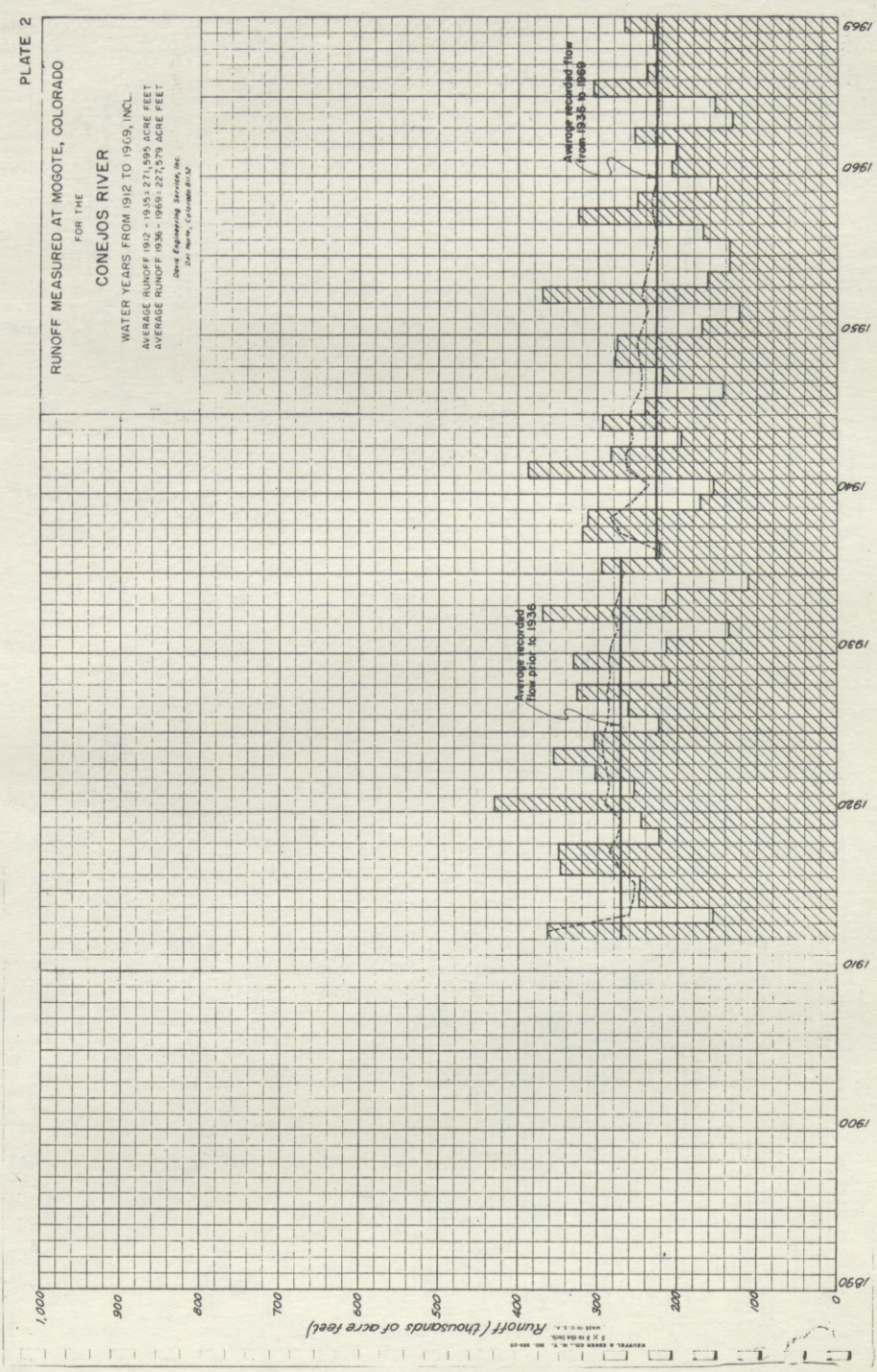
PLATE 2
RUNOFF MEASURED AT MOGOTE, COLORADO
FOR THE
CONEJOS RIVER
WATER YEARS FROM 1912 TO 1969, INCL.
AVERAGE RUNOFF 1912 - 1935 = 271,595 ACRE FEET
AVERAGE RUNOFF 1936 - 1969 = 227,579 ACRE FEET
Dana Engineering Service, Inc.
Del Norte, Colorado 81132
Average recorded flow from 1936 to 1969
Average recorded flow prior to 1936
Runoff (thousands of acre feet)
1,000
900
800
700
600
500
400
300
200
100
0
1910
1920
1930
1940
1950
1960
1969

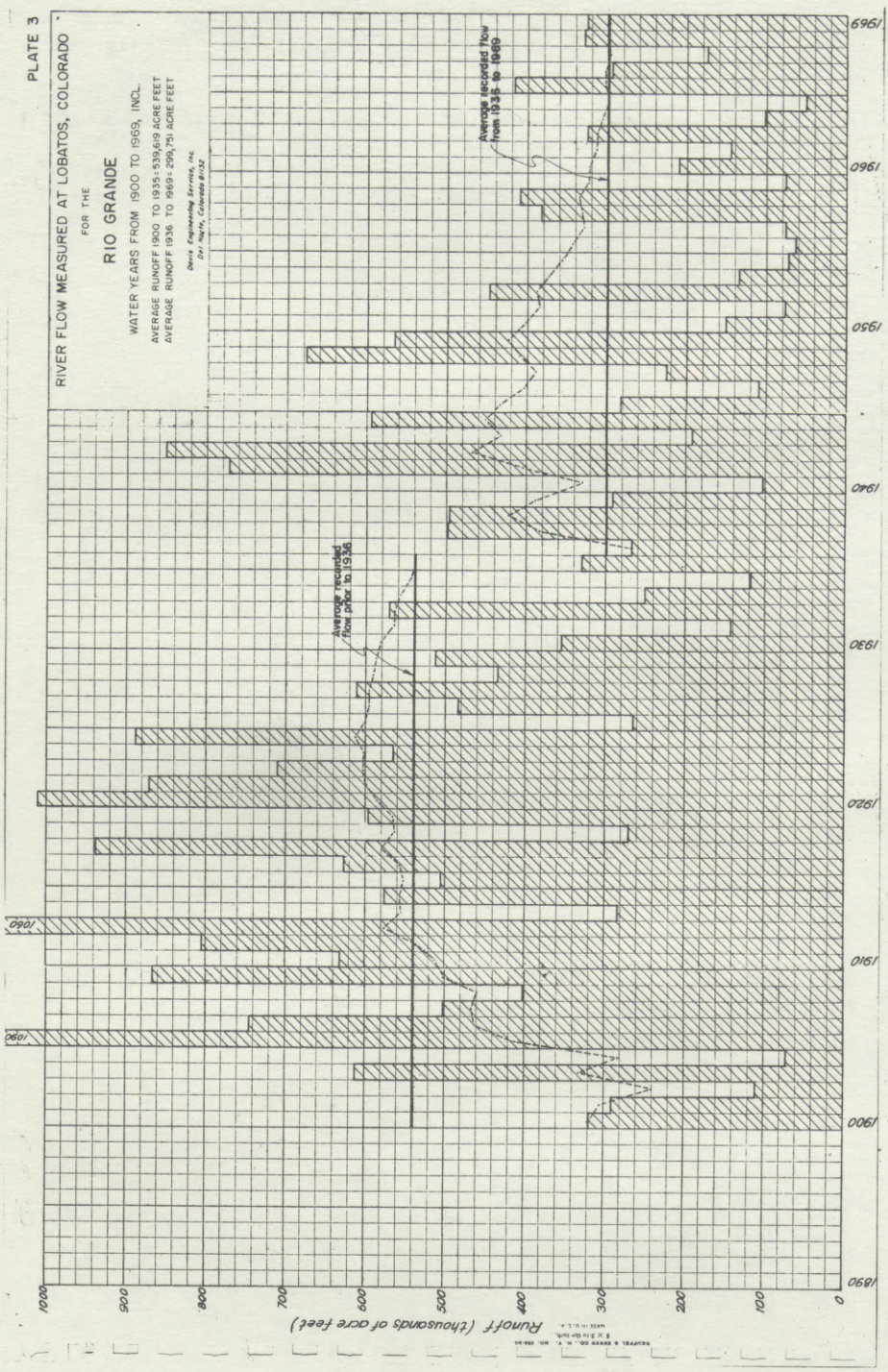
PLATE 3
RIVER FLOW MEASURED AT LOBATOS, COLORADO
FOR THE
RIO GRANDE
WATER YEARS FROM 1900 TO 1969, INCL.
AVERAGE RUNOFF 1900 TO 1935 = 539,619 ACRE FEET
AVERAGE RUNOFF 1936 TO 1969 = 299,751 ACRE FEET
Davis Engineering Service, Inc.
Del Norte, Colorado 81132
Average recorded flow from 1936 to 1969
Average recorded flow prior to 1936
Runoff (thousands of acre feet)
1000
900
800
700
600
500
400
300
200
100
0
1890
1900
1910
1920
1930
1940
1950
1960
1969
1090
1060

Senator ANDERSON. Mr. Eddy.

STATEMENT OF F. C. EDDY, GENERAL MANAGER, RIO GRANDE WATER CONSERVATION DISTRICT

Mr. EDDY. I am Frank Eddy, general manager of the Rio Grande Water Conservation District. I would like to submit my statement and I have just a couple of comments.

I have with me letters from the Boards of County Commissioners of the counties involved. We were a little rushed in getting to the meetings, and they couldn't schedule meetings at some of the other districts, but they wanted to support us and they will follow us as quickly as they are allowed to have time to have the meetings.

So if I could submit those.

Senator ALLOTT. I ask that they be inserted in the record.

Senator ANDERSON. Very well.

(The letters referred to follow:)

SAN LUIS VALLEY CATTLEMEN'S ASSOCIATION,
March 6, 1972.

GORDON ALLOTT,
U.S. Senator,
U.S. Senate, Washington, D.C.

DEAR SENATOR ALLOTT: After reviewing the Closed Basin project for the San Luis Valley thoroughly with M. Franklin Eddy of the Conservancy District; the board of directors of the San Luis Valley Cattlemen's Association would like to make the following recommendations.

That we will support the Closed Basin project with the following reservations.

1. That local control be definitely implemented into the bill.

2. (a) That river channelization be limited to trash removal only—reasoning being that deep channelization will break through the clay layer only a few inches thick and the water will be lost in the lower aquefers.

(b) That straight river channelization will destroy fishery and wildlife habitat.

A copy of this letter is being sent to Franklin Eddy.

Cordially yours,

ED OLIVER.

CONEJOS BOARD OF COUNTY COMMISSIONERS,
Conejos, Colo., June 21, 1972.

To Whom It May Concern:

The Board of County Commissioners of Conejos County, Colorado Resolve, Endorse and Support Senate Bill #520 pertaining to the Closed Basin Water Salvage Project in the San Luis Valley.

RAMON A. CHACON,
JOE R. CASIAS,
DALE SOWARDS.

To Whom It May Concern:

The following resolution was adopted by unanimous vote by the Board of Alamosa County Commissioners, meeting in special session on June 21, 1972:

RESOLUTION

Whereas it has been called to the attention of the Board of Alamosa County Commissioners that the Closed Basin Bill has been presented to the United States Senate as Senate Bill No. 520, and

Whereas it is the opinion of this Board that the passage of this Bill as written is of utmost importance to the economic development of the County of Alamosa and the San Luis Valley, and

Whereas it is the desire of this Board to urge the passage of this much needed legislation; Now, therefore be it

Resolved That this Board place itself on record as supporting the Closed Basin Bill, Senate Bill No. 520, as written, and further be it

Resolved That a copy of this Resolution be forwarded to the Subcommittee on Power and Water of the Interior and Insular Affairs Committee of the United States Senate.

* * * * * * *

I, J. E. Trogdon, Jr., Clerk of the Board of Alamosa County Commissioners do hereby certify that the above resolution was adopted by said Board, meeting in special session on June 21, 1972.

In witness whereof I have fixed my signature and the seal of Alamosa County this 22nd day of June, 1972.

J. E. TROGDON, Jr.,
Clerk of the Board of
Alamosa County Commissioners.

SAGUACHE COUNTY COMMISSIONERS
Saguache, Colo., June 16, 1972.

Hon. GORDON ALLOTT,
U.S. Senator, State Office Building,
Washington, D.C.

SIR: The following resolution by this Board in support of the Closed Basin Bill SB 520, was passed by a unanimous vote of two County Commissioners, meeting in Special Session on Friday, June 16, 1972.

RESOLUTION

"Whereas it has been called to the attention of the Board of Saguache County Commissioners that the Closed Basin Bill has been presented to the United States Senate as SB 520, and

"Whereas it is the opinion of this Board that the passage of this Bill, as written, is of utmost importance to the economic development of the County of Saguache and the San Luis Valley, and

"Whereas it is the desire of this Board to urge the passage of this much needed legislation; Now, therefore, be it

Resolved That this Board place itself on record as supporting the Closed Basin Bill, SB 520, as written, and further, be it

Resolved That a copy of this resolution be forwarded to the Subcommittee on Irrigation and Reclamation of the Interior and Insular Affairs Committee of the Senate of the United States."

(Signed) E. J. HAZARD,
Chairman.

Senator ALLOTT. And the others, if they come after the record is closed, can be included in the files.

Mr. EDDY. Thank you. The only other comment that I would like to add is that the San Luis Valley—all six counties—the district only has five of the six, but Costilla County has the same problems and they have their own conservancy district and we work very closely with them and we consider them part of us. Their problems are the same. And the whole valley is a part of the four corners economic development region, and also part of the southern Colorado Economic Development District. Three of the six counties have been declared economically depressed counties. And the welfare rolls in the last year run some 18 to 29 percent in Costilla, Conejos and Saguache. And the percent of unemployed at present is 8 to 12 percent in those three counties.

So this is speaking to the position of the San Luis Valley in being able to repay anything over the expenses that they are meeting at present.

Senator ALLOTT. I thank you very much. I am fully aware of the very depressed situation in that area. And this is why I have had

such a determination, although it seems like progress is slow, we were going to get this bill pushed, and push it this year. Budget difficulties, of course, and we frankly have to compromise to so manage, but despite that, it is my determination with the help of my good friend here on my right, and others, to see if we can't get this enacted into law this year.

I thank you all very, very much.

Senator ANDERSON. Thank you, sir.

(The complete statement of Mr. Eddy follows:)

STATEMENT OF F. C. EDDY, GENERAL MANAGER, RIO GRANDE WATER CONSERVATION DISTRICT

Mr. Chairman and Distinguished members of the Committee: I appear today in behalf of the Board of Directors of the Rio Grande Water Conservation District, an organization which is now actively and conscientiously representing the 37,000 to 38,000 people and water users of the San Luis Valley.

At one time I enjoyed the position of board member, and am now employed as General Manager for the District.

The history of the water short areas of the Southwestern United States and the efforts of the people involved down through the years to conquer this real problem are voluminous. Without question the people of the San Luis Valley are engaged as part of the problem, and the Closed Basin Project could be one of the many steps that must be taken to make our Valley a reasonable part of the solution.

Since the formation of the District, the Board has been unceasing in its efforts to find solutions to our many water problems. A large percent of our time has been devoted to presenting the true picture of the Closed Basin Project and Senate Bill 520, as it is written and appears before this Committee today, to all of the people of the San Luis Valley, individually and at meetings, both large and small. We believe our efforts have been fruitful in alleviating the suspicions originally attached to the project, and the people of the Valley have reached a favorable decision as evidenced by the statements in support of the project. I have with me letters from the Board of County Commissioners of the Counties in our District and other organizations, and with the permission of the Chairman I would like to submit these at this time for the record.

In speaking to the non-reimburseable features of the Bill, my Board would like to emphasize the fact that there isn't any way to clearly define the beneficiaries of the Project, as everyone along the full reach of the Rio Grande River would benefit both physically and esthetically. It would work an unbelievable hardship on these same people, in the head waters, to construct this project out of the pockets of an area that finds itself in the position of being recognized as one of the most economically depressed parts of not only our State, but of the Nation.

We are now included in the Southern Colorado Economic Development District and a part of the Four Corners Economic Development Region, which were designated as a result of provisions in Title I and Title V of the Public Works and Economic Development Acts of 1965. These designations were the result of determinations made by the Secretary of Labor and are areas of substantial unemployment, under-employment and low per capita income. Our growth rate is well below the national average, and we have a high rate of out migration of both capital and labor. Three of our counties, Costilla, Conejos and Saguache have been designated as economically depressed, and have a high percentage of Spanish surnamed residents. In 1968 they had the highest unemployment rate in Colorado, running from 8 to 12 percent unemployed. The percentage of population on welfare for these Counties in recent years has been extremely high, from 18 to 29 percent.

The construction of the Closed Basin Project would, of course, provide many jobs for residents of this area during the construction phase. But it would also benefit the economy over the years because of the increased agricultural production, which this project would insure. Increased economic benefits could also be expected to the recreation and tourism industry in the San Luis Valley due to the improved fish and wildlife habitat features of the project.

Small operators of deversified farms and ranches in the Valley have shown a steady decline, and the use of our surrounding Federal and State lands has

been blamed. This has resulted in a tremendous loss in our livestock population, and a severe economical impact on the Valley. We feel that this situation will steadily become worse as the years go by, until only the cash crop type farm will be able to survive, and the Closed Basin area will slowly become a saline basin, devoid of people or farms. To prevent this, should be reason enough for the construction of the Project.

We who lived with the idea and practical plan for the construction of this project for all these years, and have been unable to afford the expense of having it built, are almost to the point of frustration, thinking that, had it been built, and now in operation actually salvaging all of the waters lost annually in evaporation, a lot of the problems we are facing today would not now exist. The long road to a stable Rio Grande River and recovery of adjacent lands involved would be close at hand, and visible results and improvements would exist today.

For your consideration of this vitally important issue to us, and your time and efforts, I would like to extend our thanks and appreciation.

Senator ALLOTT. Mr. Chairman, Mr. Kopfman.

STATEMENT OF BILL KOPFMAN, PRESIDENT OF THE RIO GRANDE WATER USERS ASSOCIATION

Mr. KOPFMAN. Mr. Chairman, Senator Allott, I don't wish to take up any more of your time. I have submitted my statement, I might just comment that as chairman of the Rio Grande Water Users Association, we are the ones that use the water that you have been talking about, that is diverted out of the river. Our organization, we are responsible for about 90 percent of the water that is in use, of the Rio Grande River.

And the only comments that I would have to make—I am like Mr. Wham—protect our existing water rights and our existing wells in the Closed Basin area. And I wish to express, with all the safeguards written into this bill, this is the only way we feel we can protect our existing rights.

Senator ALLOTT. Thank you very much, Mr. Kopfman. You have a very fine statement here. And since you have done us the courtesy of briefing it, I suppose, Mr. Chairman, the whole statement will appear in the record as if it had been given in full.

Mr. KOPFMAN. Thank you very much, Senator Allott and Mr. Chairman.

Senator ANDERSON. Thank you for being here.

Senator ALLOTT. Thank you very much, gentlemen. We have learned a great deal by your testimony.

(The prepared statement of Mr. Kopfman follows:)

STATEMENT OF BILL KOPFMAN, PRESIDENT OF THE RIO GRANDE WATER USERS ASSOCIATION

Senator Gordon Allott: I, Bill Kopfman, President of The Rio Grande Water Users Association, desire to present the following Statement in support of Closed Basin Bill, S. 520, which represents the unanimous opinion of the Board of Directors of The Rio Grande Water Users Association, in accordance with their expression as expressed at a regularly called meeting on June 19, 1972.

I

The Rio Grande Water Users Association is an organization representing 90% of the water diverted from the main stem of the Rio Grande River in the San Luis Valley, which makes it an obligation of our organization to see that commitments under the Rio Grande Compact are met and that the Decrees of farmers decreed water under procedures of our courts receive their decreed water, which in some years is impossible of accomplishment.

II

The area served by water users taking water from the Rio Grande River in Colorado is basically a farming community and derives its income from agriculture and livestock operations, which requires the periodic application of water to make the lands in San Luis Valley fruitful and productive.

III

The Board of Directors of my organization, who have carefully considered the Bill as now being considered by this Committee and the provisions thereof, have directed me to appear on behalf of the water users represented by our organization in support of this Bill, for it is the utmost importance to the economy and welfare of the entire San Luis Valley.

IV

It is of the utmost importance that the decreed water and existing wells in the Closed Basin area be protected and that all surface decrees be recognized and protected with all of the safeguards that have been written into S. 520.

V

Because of the embargo placed on the construction of reservoirs in the San Luis Valley in connection with international difficulties with the Republic of Mexico, the development of our entire Valley was delayed, and it has been the main purpose of our organization to endeavor to right the wrong that was caused by this embargo and endeavor to develop and protect the water rights used from the main stem of the Rio Grande River, which activities of our organization resulted in the negotiation of the Rio Grande Compact on the part of the State of Colorado. These activities of our organization have resulted in close study of all projects related to the Closed Basin area, one of which in the past was approved for construction.

VI

The Compact commitments in the future can only be made by strict control of the operation of the Rio Grande River and the saving of water to be made available to the States of New Mexico and Texas in connection with our Compact obligations. It was the unanimous belief of the present Board of Directors of The Rio Grande Water Users Association that the construction of the Closed Basin Project will in the future make it possible for us to adequately meet our Compact obligations and at the same time continue the development of the farming, livestock and recreation facilities in the San Luis Valley which will assist in alleviating the depressed condition of this area and also will assist the economy of the State of Colorado.

I, therefore, desire to place the Board of Directors of The Rio Grande Water Users Association on record as supporting the Closed Basin Bill, S. 520, together with all of the safeguards that have been written into said Bill for the protection of the established water rights of the people living in the Closed Basin area.

(Whereupon the hearing in the above matter was closed at 12:47 p.m.)

(Subsequent to the hearing the following statement was received.)

STATEMENT BY THE NATIONAL AUDUBON SOCIETY

Mr. Chairman and Members of the Subcommittee: We appreciate the opportunity to present the views of the National Audubon Society on this legislation because it could affect the quality of one of America's historic and truly beautiful scenic rivers. As an organization committed to the belief that man's welfare is dependent upon a healthy relationship with his environment, we are vitally concerned with the exploitation of our rivers and their waters. We wish to stress that our concern includes not only a national interest in maintaining environmental quality as represented by a functioning riparian ecosystem but extends equally to encompass the economic well-being of the people of the San Luis Valley. We are not unmindful of the dependence of the San Luis Valley on water to support its agricultural economy. We hope that our suggestions will

improve this bill and contribute to the continued quality of life in the United States and the economic prosperity of its citizens.

Mr. Chairman, it is our understanding that the argument for proceeding with this project stems from the fact that Colorado has overdrawn its proportionate share of the flow of the Rio Grande River according to the Rio Grande Compact. Colorado voluntarily entered into this Compact with New Mexico and Texas but because of excessive water withdrawals Colorado now is in debt to the other two states by approximately 779,000 acre feet. Texas and New Mexico brought a lawsuit against Colorado in federal court requiring Colorado to deliver more water to the downstream states. In a nutshell then, the Closed Basin project is being proposed as a form of federal assistance to help Colorado meet a deliberately incurred water deficit, the obligation for which she voluntarily assumed under the terms of the Compact.

With respect to specific provision of the bill, we would like to question some, suggest revisions in others and, respectfully but strongly request that one section be entirely deleted.

Section 8 of S. 520 authorizes the Secretary of the Interior to conduct studies with a view toward channelization of the Rio Grande, Conejos, San Antonio, La Jara and Alamosa Rivers, and Rock Creek. It also authorizes "feasibility studies" of a dam at Wagon Wheel Gap on the Clear Fork (north fork) of the Rio Grande.

Mr. Chairman, we strongly urge the deletion of Section 8 from the bill. Stream channelization is a destructive engineering fad that is widely acknowledged to pose one of the most insidious environmental threats facing our nation today. Channelization is basically a process of making ditches out of rivers and streams. The bends and oxbows are straightened and vegetation is removed from the banks. The stream, once teeming with fish and wildlife, becomes sterile. Water quality is ruined and the river banks erode. The public, which pays billions to protect natural areas and water quality, in this case ends up paying to destroy them.

We do not intend to use this forum to make a full case that stream channelization is a massive hoax. We would like to point out a few consequences of channelization that may have been overlooked. For example, Rock Creek, one of the streams proposed for channelization studies, originates in the spectacular rock canyons and gorges of Rock Creek State Park. Both the park and the creek are nestled in a scenic basin on the eastern slope of the San Juan Mountains. We believe it would amount to a travesty of the park concept and an insult to the citizens of Colorado and the nation to authorize channelization studies within lands and waters the people have dedicated for park purposes.

Similarly, the headwaters of the Rio Grande and of the other rivers proposed for channelization study arise in the national forest lands west of the San Luis Valley. These streams, in a natural state, are important components of an expanding recreation industry that is economically important to the San Luis Valley and surrounding communities. Channelization would strip these streams of their beauty and wildlife, including their outstanding value for trout fishing. Is it right or fair to destroy these streams which are an important part of the economic base of the area's recreation industry in a mistaken attempt to favor the agricultural economy? Isn't this robbing Peter to pay Paul?

From Monte Vista to below Alamosa the Rio Grande River snakes in weaving bends and oxbows across the San Luis Valley. The combination of sandbars, riverside cottonwood groves and wet meadows of native grasses, and the protection of wide sweeps of the river provide ideal habitat for many species of wildlife. One of the largest concentrations of the rare greater sandhill crane is regularly dependent upon this habitat for several weeks during the spring and fall migrations. The welfare of this rare race of crane, the largest and most imposing of the sandhills, may depend upon the quality of this favored habitat. So far as we know, the San Luis Valley is the only important migration stopover for the cranes as they make their semiannual migrations between their breeding areas in Idaho and their wintering range in New Mexico. Channelization spells doom to this traditional migration resting and feeding environment. Should we thus deliberately gamble with the fate of a magnificent bird that is even now struggling for survival? We emphatically think not.

This same stretch of river in winter provides the essentials of life for another species of wildlife, our endangered National Emblem, the bald eagle. Groups of up to 40 bald eagles have been seen on the upper Rio Grande in recent years. Channelization would destroy the value of this river for eagles, thus accelerating

the already alarming decline of the bird chosen to symbolize the noblest civilization yet attained by man.

We could cite many further examples of the tragic consequences of channelization but we believe our point has been amply made: stream channelization is a destructive environmental malpractice that is not in the best interest of our society and one that we simply can no longer tolerate.

For these same reasons we urge the deletion of language authorizing, not studies, but actual channelization of the Rio Grande River between the project site and the New Mexico state line. This stretch of the river flows through the Alamosa National Wildlife Refuge. We submit that converting rivers to ditches within the national wildlife refuge system is a betrayal of the public trust of serious magnitude.

Beginning at the New Mexico state line the Rio Grande River has been designated as a Wild and Scenic River under the National Wild and Scenic Rivers Act. Visualize the paradox then, as one stands at the entrance to the canyon of the Rio Grande near the New Mexico boundary. In one direction you could view a straight and sterile ditch which upon reaching an imaginary line suddenly is transformed into a Wild and Scenic River, part of our nation's great natural heritage. Channelizing this portion of the river would be akin to establishing a garbage dump adjacent to an arboretum and would make a mockery of the Wild and Scenic Rivers Act.

Mr. Chairman, we recommend the deletion of lines 5 through 10 on page 1, lines 1 through 3 on page 2, and on page 3, line 13, the words "except channel rectification" should be eliminated. These changes that we have proposed, deletion of Section 8 in its entirety and deletions suggested above in Sections 1 and 2, eliminate the most serious environmental objections to the bill.

We believe the bill could be greatly improved by revising water use priorities. The Alamosa and Mishak Lake National Wildlife Refuges should have first priority on water from the Closed Basin project, or they should be guaranteed a proportionate share of the annual water produced by the project.

We have not had time to analyze all provisions of the bill in equal detail but we do have one additional suggestion that may improve the bill. We note that water will be salvaged over an area of 108,600 acres, of which 48,000 acres will be acquired by the federal government in fee title. Since much of this acreage may be made suitable for agriculture, we suggest that a provision be inserted into the bill preventing project lands or waters from being used for the production of crops which are in excess of the normal supply as defined in Section 301(b)(10) of the Agricultural Adjustment Act of 1938 as amended. In calendar year 1971 the federal government spent 31 million dollars in the San Luis Valley, and of this total the Department of Agriculture accounted for $7,782,838. The provision suggested above may protect the taxpayer from paying additional subsidies on un-needed crop surpluses.

Mr. Chairman, we appreciate this opportunity to present our preliminary views on Senate 520.

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