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United States
Department of the Interior
Stewart L. Udall, Secretary

Pacific Southwest

WATER PLAN



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REPORT
January 1964

BUREAU OF RECLAMATION
Floyd E. Dominy, Commissioner



UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SECRETARY
WASHINGTON 25, D. C.



January 21, 1964

The Secretary
of the Interior

BUREAU OF RECLAMATION
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Sir:

On November 6, 1963, you directed me to supervise the preparation of a revised report to the President and the Congress proposing, on a regional basis, a plan of action designed to deal constructively with the acute water problems of the Pacific Southwest. The attached report of the Commissioner of Reclamation, in which I concur, was prepared under my direction.

As you directed, we have been responsive to the views of the affected States, wherever possible. We have maintained coordination with other divisions of the Department, and considered the views of other Federal agencies.

The report outlines a plan of action designed to meet the immediate and long-range water needs of the Pacific Southwest, defined in this report as the water service area of the Lower Colorado River Basin including southern California. It presents an initial plan for approval. We recommend prompt authorization of those features of the initial plan for which adequate engineering and economic investigations have been completed. Approval of the basic plan and authorization of the recommended features will start the Pacific Southwest on the road back to water sufficiency.

In 1930 the population of the Pacific Southwest was 3-1/2 million. In 1960 it had grown to 10-1/2 million. In the year 2000 it will be about 30 million. The water demands of this arid area, which supports the most rapidly expanding population in the United States, have already outstripped the natural water supply available to serve it and its attendant industry and agriculture. In large portions of the region present water requirements are being met by mining rapidly diminishing ground-water supplies. Tomorrow's needs will exhaust these reserves

and the Pacific Southwest must look to careful husbandry of its existing water resources and to new sources of supply if it is to continue to expand and prosper. Careful and imaginative planning, backed by positive action on a broad front of coordinated local, State, and Federal endeavor, can meet the challenge. The alternative is economic stagnation and retrenchment.

Decades ago men of vision realized the growth potential of the Pacific Southwest. They understood the underlying importance of the waters of the Colorado River Basin to this growth. To assure that this great resource potential did not become dedicated to the benefit of any one area or State, they instituted a series of actions which led to interstate compacts, an international treaty, State and Congressional legislation, and Supreme Court decisions which today, in the aggregate, constitute the "Law of the River."

Major benchmarks in the "Law of the River" began in 1922 with approval of the Colorado River Compact by representatives of the Colorado River Basin States. The Compact apportioned the waters of the Colorado River system between the Upper and Lower Basins, but did not divide the waters among the States. The Boulder Canyon Project Act of 1928 approved the Compact and authorized the construction of Hoover Dam and the All-American Canal. This Act and the Boulder Canyon Project Adjustment Act of 1940 vested certain key responsibilities in the Secretary of the Interior relative to the comprehensive and coordinated development of the Colorado River and the marketing of water and power from Lower Basin facilities. The Mexican Treaty of 1944 obligated the United States to deliver 1,500,000 acre-feet of Colorado River water annually to Mexico. The Upper Colorado River Compact of 1948 divided the Upper Basin's Colorado River Compact apportionment of Colorado River water for beneficial consumptive use among the Upper Basin States. This, in turn, led to the Colorado River Storage Project Act of 1956, which established an Upper Basin development fund and authorized the initial phase of a comprehensive Upper Basin plan of development. The most recent addition to the "Law of the River" is the Supreme Court decision of 1963, following eleven years of litigation, in the case of Arizona v. California, et al. This decision apportions the first 7.5 million acre-feet per annum of main stream Colorado River water available below Lee Ferry for consumptive use in the States of Arizona, California, and Nevada as follows: Arizona--2.8 million acre-feet, California-- 4.4 million acre-feet, and Nevada-- 0.3 million acre-feet.

By 1974, however, within ten brief years, there may not be 7.5 million acre-feet per annum available for consumptive use in the Colorado River below Lee Ferry to divide among the Lower Basin States. In succeeding years the amount of water for division will steadily decrease as the Upper Basin States put to use their apportioned waters in accordance with the Upper Basin Compact. Ultimately, the 7.5 million acre-feet could be reduced by 2.0 million acre-feet per year or more. This is only a part of the water shortage facing the Pacific Southwest. By the year 2000 it is estimated that new water supplies of about 4.0 million acre-feet must be developed over and above existing supplies and additional supplies to be developed by works now under construction if the region is to realize its growth potential.

In the decade following 1952, when Arizona instituted its suit against California and in which the States of Nevada, New Mexico, and Utah and the United States later became involved, investigations to develop comprehensive water resource plans for the Pacific Southwest were not undertaken although investigation of certain individual projects that could go forward regardless of the outcome of the suit did proceed. Until the issues in the suit were settled, no solid base existed for comprehensive planning for the use of the waters of the Colorado River. In addition, it was agreed that necessary assumptions for such planning would have been interpreted as prejudging the outcome of the suit. A hiatus in water planning for the Pacific Southwest was the result.

As the decision in Arizona v. California, et al., drew near, you recognized the urgent need for a comprehensive water resources plan under which development for the Pacific Southwest could go forward in an orderly manner. The Honorable Wayne Aspinall, Chairman of the House Interior and Insular Affairs Committee, brought the whole problem into sharp focus in his letter to you dated November 27, 1962. In that letter Mr. Aspinall, after pointing out that further Lower Colorado River water resource development must be related to an effective, comprehensive, and coordinated plan, stated, "As an initial step in stimulating widespread public discussion and the consideration of coordinated and comprehensive water resources development in the Southwest, and as an aid to the Committee's own evaluation of authorization programs, I should like to have from the Department of the Interior at an early date a statement of the extent of your present studies and an outline for a coordinated, comprehensive pattern under which, in your Department's understanding and view, the Southwest's water and power needs might be satisfactorily provided for."

Responding to this challenge, the Department of the Interior, through intensive effort, developed the broad outlines of a comprehensive plan. It was evident from the beginning that any regional water and related land resources plan for the Pacific Southwest must be based on much more than physical and economic considerations. It must accommodate, as well, the many historic and institutional patterns that have evolved over past decades.

First, a regional plan must recognize and respect the "Law of the River." The Upper Basin States must be assured, for instance, that no regional plan for the Pacific Southwest will, in any way, deprive them of Colorado Basin water apportioned to them by the Colorado River Compact. The rights of the individual States likewise must be respected and the aspirations of the States accommodated to the greatest extent practicable. Even within individual States the rights and aspirations of geographic areas must be given proper consideration. The plan has to recognize the structure of water rights law in each affected State. The basic rights of the several Indian tribes have to be respected. Existing water contracts and agreements, entered into in good faith, cannot summarily be set aside even if to do so would provide a more economic method of developing new water supply. The plan must conform to congressionally directed Federal policies and it must adhere to sound financial requirements. It must provide for existing and future patterns of economic growth. Finally, it must so relate these many factors with the basic problem of developing new water supplies for the Pacific Southwest that it will receive maximum acceptance by and support of the widely varied local, State, and regional interests. The Pacific Southwest Water Plan presented in the Task Force report which you transmitted to the affected States and Federal agencies for comment on August 26, 1963, pursuant to the Flood Control Act of 1944, was prepared within the framework of these guiding objectives.

Briefly, it proposed that the States of the Pacific Southwest put aside the long and wearisome controversies that have plagued Lower Colorado Basin development for over half a century, and unite in support of a broad regional approach to assure that water as required would be developed and made available to meet all needs within the region wherever and whenever they occur. It proposed the establishment of a Pacific Southwest Development Fund as the financial foundation upon which the comprehensive plan could be established. To demonstrate how new water sources could be developed for the Pacific Southwest, it outlined a plan of physical works separated into two phases. Phase I, the immediate action program, was recommended for early authorization and Phase II, the continuing program,

for further study. Together the works proposed were designed to erase the existing water deficiencies in the Pacific Southwest and meet the needs of future municipal and industrial growth to about the year 1990. In both Phases, substantial emphasis was placed on the salvage of water and more efficient water use.

In transmitting the report to the Governors of the affected States, you made it clear that while the report had been approved as a proposed report for transmittal in accordance with the Flood Control Act of 1944, nevertheless, as Secretary, you had made no final judgments concerning the component parts of the plan and that it was your intention to maintain an open mind on all of its details until the comments and recommendations received in the course of the statutory review were taken into account.

The obvious thoroughness with which the proposed report was reviewed by the States and Federal agencies, the statesmanlike nature of the comments submitted, the constructiveness of the many suggestions received, and the prompt responses were most gratifying. The suggestions for modification and improvement of the proposed plan were most valuable. They were instrumental in decisions leading to revision of the proposed plan and preparation of this final report. The entire region endorsed the broad underlying concepts of a comprehensive regional approach, establishment of a Pacific Southwest Development Fund, and the attainment of optimum use of existing water supplies through maximum emphasis on water salvage. There was general recognition of the great potential of desalting as a major future source of new water supply. There is a common ground on which the people of the Pacific Southwest can unite in forging solutions to their interrelated water problems.

Within the framework of these basic concepts and in recognition of the many constructive suggestions for improvement received, the plan presented in the Task Force report has been revised substantially. Physical works proposed for congressional authorization at this time are limited to those related to a proposed initial plan. We can be confident that timely solutions for the long-range future will be developed if a framework for regional development and the basin fund principle are established now. However, reference now to any specific plans or features which might be considered as parts of such long-range solutions would be misleading. Reference to those items has been deleted. Instead, we propose that a regional commission be established to coordinate long-range planning.

The Initial Plan, as presented in the attached report of the Commissioner of Reclamation, proposes that the Congress guarantee, as a matter of Federal policy through construction and operation of necessary works, the equivalent of 7.5 million acre-feet of water per year in the Colorado River below Lee Ferry, either directly or through exchange, to satisfy consumptive uses of 2.8, 4.4, and 0.3 million acre-feet annually in Arizona, California, and Nevada, respectively. Costs to the water users would be no greater than they would have been had sufficient water been available in the river to satisfy the above amounts.

To accomplish this basic objective, the Initial Plan proposes the establishment of a Pacific Southwest Development Fund, patterned after the Upper Colorado River Basin Fund, which would (1) underwrite financially the guarantee referred to in the preceding paragraph, (2) provide financial assistance and protection to areas of origin from which water may be exported to the Pacific Southwest in satisfying the guarantee, (3) provide financial assistance in the repayment of costs allocated to irrigation which are beyond the ability of water users to repay, and (4) provide financial assistance for future long-range developments.

To provide the revenues essential to the functioning of the Development Fund, as well as to help meet the area's power requirements, the Initial Plan proposes the immediate authorization of Bridge Canyon and Marble Canyon Dams, powerplants, and transmission system. To enhance the Development Fund, the then net revenues from the existing Hoover and Parker-Davis projects would be added after they have paid out existing costs and obligations.

During development of the Initial Plan, I have not been unmindful of your concern regarding impact of any proposed developments upon Grand Canyon National Park and Grand Canyon National Monument. The high dam at Bridge Canyon would back water some 93 miles: first, 53 miles within Lake Mead National Recreation Area; then 27 miles where the Monument includes or borders the river; and, finally, the last 13 miles of the reservoir would abut the Park along the Colorado River and extend a distance of less than one mile into the Park at Havasu Creek. However, the Act of February 26, 1919 (40 Stat. 1175), creating Grand Canyon National Park, contains a reservation clearly contemplating possible need in the future for a narrow infringement such as would be herein involved to accommodate reclamation developments. The Monument as established is subject to the same policy

that the Congress expressed in the case of the Park. In view of this reservation, the Bridge Canyon proposal is consistent with existing law. The need, long contemplated as possible, is now here.

The revenues provided by sale of power from Bridge Canyon Powerplant are essential to achieve required levels of operation of the Pacific Southwest Development Fund which, in turn, is the key to success of the Pacific Southwest Water Plan. The destiny of a five-State region of the United States with a present population of over 11 million and investments measured in billions depends upon a successful solution of the region's water problem.

The power needs of the Pacific Southwest region could be met by other means. Nevertheless, Bridge Canyon would meet a need for peaking power which, otherwise, would have to be met by development of other less-well-adapted power facilities.

Development funds, like the one now proposed, have been the means long favored and adopted by Congress for providing financial feasibility for river basin development in the West. In effect, they use a region's hydroelectric resources to tax the region's people in support of long-range and large-scale Federal resource investments that are beyond the ability to repay of immediate beneficiaries. In this way, Federal taxpayers, as a whole, are substantially relieved of a financial burden, otherwise theirs, if such Federal investment were made.

The Upper Colorado River Basin Fund and the basin accounts of the Missouri Basin Project and the Central Valley Project, California, are major examples of this means of financial support for needed developments. The Boulder Canyon Project Act of 1928 (45 Stat. 1057) clearly anticipated that this means would be needed and used for full development of the Colorado River.

With all of this in mind, I am compelled to recommend the authorization and construction of the High Bridge Canyon Dam.

I am not unmindful either of the special relationship of the United States to the various Indian tribes that will be affected by construction of works proposed in the Initial Plan. I suggest that wherever Indian lands are to be acquired in connection with implementation of the Initial Plan, you should submit recommendations to the Congress for appropriate payments to the Indians in addition to amounts paid as just compensation for lands acquired.

The Initial Plan proposes further the immediate authorization of specific features in addition to the Bridge Canyon and Marble Canyon projects for which adequate studies have been made to define them in detail and to demonstrate their engineering and economic feasibility. These features include water salvage and recovery programs, the Central Arizona Project in Arizona, Federal participation in enlargement of the California Aqueduct from Wheeler Ridge to Cedar Springs Reservoir, the Southern Nevada Water Supply and Moapa Valley Pumping Projects in Nevada, the Hooker Dam and Reservoir in New Mexico, the Dixie Project in Utah, Indian Irrigation Projects, and provisions and programs for recreation and fish and wildlife conservation and development.

The balance of the Initial Plan outlines a system for importing water from North Coastal California streams which, unless the cost of desalted water becomes competitive, will be necessary to sustain the guarantee of an equivalent of 7.5 million acre-feet in the Colorado River beyond that which can be accomplished through water salvage and related measures. While such an import system is known to be feasible from engineering and economic standpoints, its details are not sufficiently refined to support a request for authorization at this time.

The costs of that portion of the Initial Plan proposed for immediate authorization are estimated to be \$1,704,000,000 of which \$1,564,000,000, or 92 percent, would be fully reimbursable. The costs of each feature would be repaid within 50 years after it became revenue-producing. At the end of the payout period there would have accrued to the Development Fund \$900,000,000 of unassigned revenues, on the basis of water and power rates used in making the economic analysis. The ratio of estimated benefits to costs is 2.3 to 1.0.

The total construction cost of the Initial Plan is estimated as \$3,126,000,000 of which \$2,969,000,000, or 95 percent, would be fully reimbursable. The costs of each feature would be repaid within 50 years after it became revenue-producing. At the end of the payout period there would have accrued to the Development Fund \$675,000,000 of unassigned revenues, again on the basis of water and power rates used in making the economic analysis. The ratio of estimated benefits to costs is 1.9 to 1.0.

These statistics demonstrate the economic justification and financial soundness of the proposed Initial Plan.

The Initial Plan will constitute a significant step forward in eliminating present water deficiencies and in providing new water supplies to meet growing demands in the Pacific Southwest. It does not provide an overall solution for the region's total future needs. This can only be accomplished through long-range, comprehensive, regional planning. It will, however, accomplish the following:

1. Meet the most immediate and urgent water needs of the Pacific Southwest and provide time in which to work out comprehensive solutions to long-range needs.
2. Provide the setting, point the direction, and create the means whereby comprehensive, long-range plans can be developed to make and keep the Pacific Southwest water sufficient.
3. Establish a development fund that is essential as the financial foundation of future Pacific Southwest water development.
4. Protect the extensive economies that have been developed in the Pacific Southwest and which are dependent upon the continuation of the availability of 7.5 million acre-feet of water for consumptive use from the Lower Colorado River.
5. Assure maximum utilization of existing water supplies through water salvage, waste-water renovation, and related measures.
6. Provide for authorization of several urgently needed water and power developments that have been long delayed.
7. Enhance the well-being and economic status of the many American Indians living in this area.
8. Provide means for meeting the rapidly expanding needs for water-oriented outdoor recreation.
9. Provide necessary facilities for the conservation and development of fish and wildlife, including urgently needed wintering waterfowl habitat in the Pacific Flyway. Public fishing and hunting opportunities will be expanded to meet ever increasing demands.

10. Provide the climate in which past controversies can be set aside and all who would be so vitally affected by the common spectre of future water shortages can move forward in resolution of the region's water problems in a united effective approach.

The proposed Initial Plan as the first step of a comprehensive plan will meet only the most immediate and urgent demands for increased water supplies for the Pacific Southwest. It is clear that further long-range planning is necessary. Because of the numerous water development functions involved and the many interests affected, it is equally clear that this effort should be fully coordinated. To assure such coordination among Federal, State, interstate, and local plans, it is highly desirable that the authorizing legislation establish a regional water commission modeled to the extent appropriate upon that set forth in Title II of S. 1111 as supported by the Administration and as passed by the Senate.

The Initial Plan contemplates the conveyance of 1.2 million acre-feet of surplus water from northern to southern California to guarantee against deficiencies in water supplies available from the Lower Colorado River. It is apparent, therefore, that water planning for the Pacific Southwest is tied closely with water development programs in northern California. The sphere of coordinating action to be undertaken, at least initially, by such a regional water commission should encompass not only the Lower Colorado River Basin and its service area in California, but the entire State of California as well. The States appropriate at the outset for participation in its work would be Arizona, California, Nevada, New Mexico, and Utah.

Colorado River legislation and the decree in Arizona v. California, et al., impose responsibilities upon the Secretary of the Interior that are unique to the region. Moreover, proper management of the Pacific Southwest Development Fund, if established, would be a responsibility of the Secretary of the Interior. Consequently, as a departure from S. 1111 in this case, the Secretary of the Interior should be chairman of the commission, with the right to appoint a deputy chairman who would serve in his absence.

While the costs of the Initial Plan may appear high, in reality they are modest in relation to the value of the extensive and diversified economy of the five-State area. The task of providing water to maintain this growing economy is great. The stakes are high. The national interest is involved.

Because of water-right controversies there has been a virtual moratorium on water resources development in the Pacific Southwest for the past 20 years. During that period, the Federal Government has invested only modest amounts in the region. In contrast, substantial Federal investments and major water resource development programs have been moving forward in the other major river basins of the country--the Columbia, the Central Valley of California, the Upper Colorado, the Missouri, the Lower Mississippi, the Delaware, the Tennessee Valley, and others.

It is time for water resource development in the Pacific Southwest. The need is urgent. Settlement of the basic rights of the States to Lower Colorado River water has been achieved. Basic concepts of a regional approach have received wide support and approval. Soundly conceived plans are available to support a request for authorization of initial key developments. A regional development fund provides a dependable financial structure. The rights and aspirations of the individual States and of the areas within States can be respected and met.

The States and the many varied interests of this great Pacific Southwest region seem ready to unite and work together to achieve common objectives. I am optimistic of success. If this is not the case, and divergent courses are pursued, resumption of bitter feuding and its end product, stalemate, will result.

United action is the path of progress. The Initial Pacific Southwest Water Plan presented in this report merits united support.

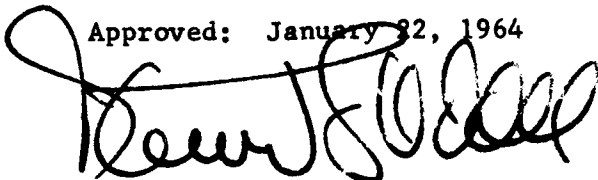
I recommend, therefore, that by your signature below you approve the report of the Commissioner of Reclamation, together with this memorandum, as your report on the Pacific Southwest Water Plan and that you transmit them to the President and subsequently to the Congress as provided by the Reclamation Project Act of 1939.

Respectfully,



Assistant Secretary
Water and Power Development

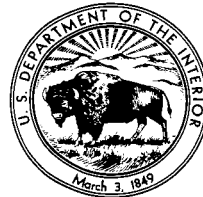
Approved: January 22, 1964



Secretary of the Interior

**United States
Department of the Interior**
Stewart L. Udall, Secretary

Pacific Southwest WATER PLAN



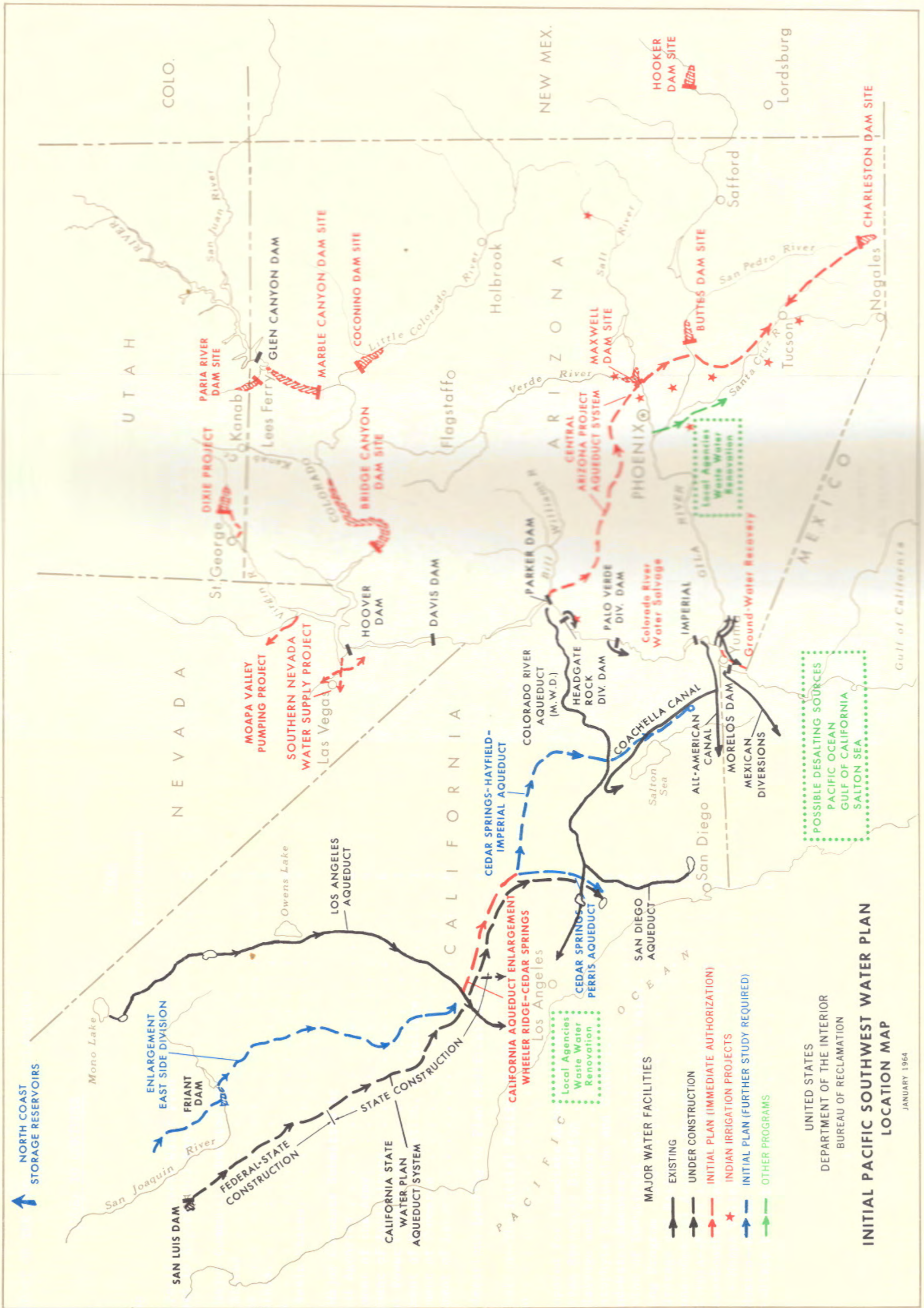
REPORT
January 1964

BUREAU OF RECLAMATION
Floyd E. Dominy, Commissioner



UNITED STATES
 DEPARTMENT OF THE INTERIOR
 BUREAU OF RECLAMATION

INITIAL PACIFIC SOUTHWEST WATER PLAN LOCATION MAP EXTENSION



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REPORT OF THE COMMISSIONER OF RECLAMATION

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IN REPLY
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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
WASHINGTON 25, D. C.

January 15, 1964

The Secretary
of the Interior

Sir:

On August 26, 1963, you submitted The Task Force report on the Pacific Southwest Water Plan to the affected States and the Federal agencies for review and comment in accordance with provisions of the Flood Control Act of 1944. In so doing, you emphasized the tentative nature of the report and that you had made no final judgments as to the components of the plan. You solicited suggestions and recommendations for modification and improvement of the plan.

The review period has now terminated, and all comments have been received. They are characterized by their high degree of statesmanship and by their constructive nature. Most heartening was the unanimity of agreement on four major aspects of the plan:

1. A regional approach to solution of Pacific Southwest water problems in which all interests participate--Federal, State, and local--is essential.
2. A Pacific Southwest Development Fund should be established as the financial cornerstone of the regional plan.
3. Measures to promote more efficient water use, water salvage, and renovation of waste water and reuse should constitute the first steps in firming Pacific Southwest water supplies to assure the fullest use of presently available supplies.
4. Desalting of seawater and brackish water should be carefully and continually evaluated as a new source of water supply for the Pacific Southwest.

In addition to this general agreement, a number of excellent suggestions for plan modification were received and have been adopted. There were, of course, some suggestions made that were incompatible or in conflict, one with the other. In view of the wide scope and complexity of the proposed plan and of the number and variety of interests affected, however, the number of such comments was remarkably few. None appear to present problems that defy resolution.

Summary of Pacific Southwest Water Plan as Proposed in August 1963
Report

As a background to a resume of the comments made by the individual States and agencies, a brief summary of the Pacific Southwest Water Plan as presented in The Task Force report of August 1963 is in order.

The August 1963 report presented a new approach to solving the water problems of the Pacific Southwest. It proposed that the old divergent paths be discarded and that a regional approach be adopted that would end competitive struggle among States and assure the development of water to meet the burgeoning demands of the next 25 years or until about the year 1990.

The Task Force report proposed an "immediate action" program for early authorization and a "continuing project development" program, as Phases I and II, respectively.

Phase I proposed that a Pacific Southwest Development Fund be established with the defined purpose of underwriting both proposed and future Pacific Southwest water developments. Phase I included, among other proposals, a water salvage program on the Lower Colorado River to salvage for beneficial use almost 700,000 acre-feet now lost annually. Bridge Canyon and Marble Canyon Projects on the Colorado River were proposed to produce hydroelectric power that, in addition to providing energy for project pumping, would have provided vital revenues to the Development Fund from commercial energy sales. Hoover and Parker-Davis Projects also would have contributed revenues after completion of their repayment obligations. Phase I included construction of the Central Arizona Project to import 1.2 million acre-feet of water into central Arizona; an incremental enlargement of the California State Water Project Aqueduct to convey 1.2 million acre-feet of water annually and a second incremental enlargement of the Tehachapi Mountains segment to convey an additional 1.2 million acre-feet of water annually into the Pacific Southwest from future development of surplus North Coast waters. The plan further proposed the construction of the first stage of the Southern Nevada Water Supply Project in Nevada; Hooker Dam and Reservoir in New Mexico as part of the Central Arizona Project; and the Dixie Project in Utah. Additional developments were proposed for Indian irrigation projects in Arizona, California, and Nevada; for tributary projects in Arizona, New Mexico, and Utah; and for outdoor recreation and fish and wildlife. In recognition of the great promise indicated for desalting processes to deliver almost unlimited water supplies to meet future growth needs of the Southwest, a 50-million-gallon-per-day demonstration desalting plant was proposed for construction on the coastal area of southern California.

Phase II provided for lining of the Imperial and Coachella Canal systems in California which, although one of the most economical sources of new water for the Pacific Southwest, may require extended negotiation to amend existing water contracts and agreements to be of maximum effectiveness. It provided for the continuation of programs that would be initiated in Phase I and for the reclamation of municipal waste water which could well be an avenue of major local participation. In the main, however, Phase II outlined works necessary for the storage and import of North Coast California water into the Pacific Southwest. It was recognized that plans for such imports had not been studied in detail sufficient to permit decision at this time. In this respect, it was intended only that Phase II suggested works were to demonstrate one way in which the water problems of the Pacific Southwest could be solved. Alternatives were presented including the development of new water supplies by desalting.

The construction cost for Phase I was \$1,920,862,000 and for Phase II, \$2,164,482,000.

A repayment demonstration was made for the reimbursable portion of Phases I and II construction costs which indicated payout within a period of 50 years after the last features were constructed at 3 percent interest on municipal, industrial, and power allocated components.

In essence, this was the plan on which the States and Federal agencies commented.

Summary of Major Comments Submitted by Affected States

Arizona. Governor Fannin expresses general agreement with the regional concept, but emphasizes it must not be permitted to delay independent authorization of the Central Arizona Project which is now under consideration in Congress; if the inclusion of Marble Canyon in a separate Central Arizona Project or in any other plan to bring additional water into Arizona will facilitate and result in early authorization and construction, Arizona should agree to its inclusion; development of additional water for Arizona above and beyond the 1,200,000 acre-feet planned under the Central Arizona Project should be a major objective of the plan; projects in northern Arizona, dependent upon water exchange arrangements and upon direct diversion from the Colorado River, should be authorized as soon as feasibility reports are completed.

California. Governor Brown submitted comments which, with respect to broad aspects, strongly support the regional program concept, and indicate that individual projects should be authorized only after

agreement by the interested parties on a truly regional approach; the subsidy to municipal and industrial water should be eliminated; the Pacific Southwest Development Fund should be used to guarantee a basic supply, either from the Colorado River or some other source, at costs not in excess of what the costs would have been from the Colorado River, permitting a beneficial consumptive use of 7.5 million acre-feet per annum in Arizona, California, and Nevada; also, the Development Fund should be used to guarantee that costs of water development in areas of origin will not be greater than with no export under the plan, to guarantee similar cost protection to water users within the States of origin, and to afford the areas of origin contributing imported water for operation of the plan the same opportunities for financial assistance as are to be provided tributary areas of the Lower Colorado River; a Regional Water Commission should be established to advise concerning development of the region and to coordinate regional project planning.

With respect to details of elements to be included in the plan, California's recommendation included the following: exclude from Phase I the second 1.2-million-acre-foot enlargement of the State aqueduct, the sea water conversion plant (and incorporate in other immediate programs), and the unidentified tributary projects; include in Phase I the two Trinity River projects or appropriate alternatives, and the lining of canals in Imperial and Coachella Valleys; fish, wildlife, recreation, and watershed management and protection features and programs should be planned and undertaken as features of the plan; incorporate worthy components of the "Lower Colorado River Land Use Plan" in the plan; the plan should deal with the problems of the Sacramento-San Joaquin Delta; consideration should be given to extension of the water and financing pool concept to include creation of a power pool; water quality management must be an integral part of the scheme of operation; consideration should be given to possible effects on the Salton Sea as a fishing and recreational area.

The California comments also highlighted the desirability and need for continuing cooperative planning studies relating to various aspects pertinent to future expansion of the plan, including special studies of regional water requirements and supply; and outlined the State's desires with respect to certain details of financial and contractual arrangements.

Nevada. Governor Sawyer fully endorses the principles of regional development and expresses great interest in increased water supply for Nevada from water salvage, ground-water recovery, and water

import; all stages of the Southern Nevada Water Supply Project should be recommended for authorization; if the southern Nevada area is not to face disaster, the Southern Nevada Water Project must be authorized in the next session of Congress; the Moapa Valley Pumping Project should be included for authorization in the first phase; Nevada should share in benefits of the salvage and recovery program; the desalinization plant should be financed as a research project and not as a part of the plan; the subsidy of municipal and industrial water supply should be eliminated; it appears prudent to include the storage works associated with enlargement of the California Aqueduct in the plan proposed for immediate authorization.

Upper Basin States. Governors Love, Campbell, Clyde, and Hansen submitted comments which were similar in many aspects. All concurred with the concept of regional development. Comments with respect to the Colorado River Compact included: Delivery of 7.5 million acre-feet annually at Lee Ferry is all that is required of Upper Basin States; Lower Basin tributary flows should be accounted for as III (a) or III (b) water; evaporation losses in Lower Basin reservoirs must be charged to that basin as beneficial consumptive use.

Other comments included: Deliveries of Colorado River water from the Upper Basin assumed in the report must not receive legislative sanction as a result of authorization of the plan--the Colorado River Compact must control; the Pacific Southwest Development Fund revenues should reimburse the Upper Basin Fund with interest for any costs involved in meeting Hoover power deficiencies during the filling period of Upper Basin reservoirs; downstream benefits accruing to Marble Canyon and Bridge Canyon resulting from the operation of Glen Canyon Dam should be credited to the Upper Basin Fund.

Also, Governor Clyde of Utah urges earliest possible authorization of the Dixie Project; points out that in the event either or both Dixie Project and Central Arizona Project are approved by Congress before authorization of the Pacific Southwest Water Plan, steps should be taken to integrate these projects into the plan as participants in the Development Fund and operation of the river; and opposes any delay in authorizing the Dixie Project simply to have it made a part of the Southwest Water Plan. Commenting on New Mexico's behalf as a Lower Basin State, Governor Campbell advocates construction of the Hooker Dam and Reservoir to the maximum practicable capacity, and proposes actions and agreements, including water exchanges, to make Hooker feasible.

Summary of Major Comments Submitted by the Federal Agencies

Department of the Army. The Acting Chief of Engineers, Department of the Army, expresses the views that more detailed studies of water needs and supplies and of alternative uses of available water supplies are needed before conclusions can be reached on a plan of this magnitude, and suggests that such studies should be made for separate areas of the affected States as the initial steps in definition of the regional water plan. He suggests that perhaps a specific plan for the reduction of depletions, evaporation, and conveyance losses would go far in alleviating present ground-water over-drafts; points out that careful consideration should be given to the geographic area to be served by the Development Fund, and suggests that perhaps the Fund should be made available for other agencies' use and its use restricted to individually justified projects; and expresses the belief that careful appraisals of the engineering, economic, and social factors that contribute to the water problems should be the basis for future consideration.

Department of Agriculture. The Assistant Secretary of Agriculture, noting that irrigation accounts for a substantial part of the total benefits, expresses the belief that any substantial additional irrigation development should be appraised carefully in the light of national requirements; notes that there are several REA-financed systems in the area which could use power developed at the projects; and states that use of surplus power revenues, through the Development Fund, to assist in amortizing other features of the program would tend to operate against maintenance of power rates at the lowest feasible rates in accord with existing Federal power marketing policies.

The Assistant Secretary observes that the report seems to assume that maximum efficiency now has been reached in the on-farm use of present irrigation water supplies but that his Department considers that a great deal remains to be done to reach optimum levels of efficiency; notes lack of indications of substantial recognition of the need for companion upstream watershed conservation and improvement programs; mentions an apparent lack of contributions to the plan by other agencies except in relation to the major structural phases; and itemizes examples relative to forest and land management, phreatophyte control, and potential impacts on National Forest programs.

He concludes that it would be desirable for the authorizing legislation to require cooperative Federal-State-local preparation of a comprehensive plan integrating initial-phase projects into the broader plan prior to requests for authorization of subsequent expansions, and for the authorizing legislation to include provision for interchange of land jurisdiction between the Departments of the Interior and Agriculture, creation of recreation facilities in or near National Forests, definition of project purpose jurisdiction, and interdepartmental collaboration to mitigate adverse impacts on programs associated with the National Forest system.

Federal Power Commission. The Chairman refers to earlier comments of the Commission that 750,000 kilowatts represent the minimum capacity that should be installed at Bridge Canyon, and that the proposed hydroelectric power development providing 13,200 kilowatts was a desirable feature of the Dixie Project plans; notes that studies by the Commission staff indicate that the Marble Canyon and Bridge Canyon Projects are economically justified, but indicates that in view of the pending license application the Commission does not deem it appropriate to comment on the proposal for Federal development of the Marble Canyon and Bridge Canyon Projects; and observes it would seem appropriate that the final report indicate the consideration given to the Kanab tunnel diversion as a part of the Marble Canyon Project.

Department of Health, Education, and Welfare. The Assistant Surgeon General finds the analysis of the problem from a regional standpoint meritorious; emphasizes the belief that in planning for further water resources development primary consideration should be given to water reuse and the quality factors adversely affecting reuse; notes that one of the most pressing needs is for a detailed investigation of the long-range municipal, industrial, and agricultural waste disposal requirements in the Southwest; and suggests that water quality should be the subject of continuing interdepartmental conferences.

Department of Commerce. The Federal Highway Administrator, in submitting comments of the interested agencies of the Department of Commerce, indicates that additional geodetic control may be needed to determine seismic and other earth movements, and points out that the construction of the projects would have a beneficial

effect on the economy of the Area Redevelopment areas within which 70 percent of the work proposed for immediate action is situated.

Department of Labor. The Secretary of Labor endorses the plan as it would be of paramount importance in California, Arizona, and Nevada where an adequate water supply is crucial to continued economic expansion. He finds that limited employment opportunities would be created through the plan in the other affected States of New Mexico and Utah.

The foregoing summaries are indicative of the thoroughness and care with which the Task Force report was reviewed. Many of the suggestions received are either incorporated in modification of the Task Force report or can be adopted in future planning. Attached are copies of the comments received, together with a discussion of how they were accommodated or otherwise considered.

Major Considerations Leading to Plan Modification

The major considerations leading to modification of the proposed report are as follows:

1. The most fundamental new concept adopted in revising the Pacific Southwest Water Plan stemmed from California's suggestion that the plan be reoriented and the Development Fund used in part to guarantee the availability of 7.5 million acre-feet of Colorado River water or its equivalent for consumptive use in California, Arizona, and Nevada at costs to water users no greater than they would have been if this amount were available from natural streamflow. Any incremental increase in cost involved in such a guarantee would be underwritten by the proposed Development Fund.

The annual sustained water yield of the Colorado River over the past 30 years is considerably less than was estimated in past years. Nevertheless, the Colorado River Compact and the Mexican Treaty were negotiated and approved by the Congress on the basis of historical flows which so far have proved to be substantially above present average, which includes the recent low flow year. Billions of dollars have been invested within the Pacific Southwest predicated upon a continuing high-level water supply in the Colorado River. The use of the Development Fund to guarantee the basic water supply upon which these expenditures and the resulting economy are based appears clearly in the

national as well as the regional interest. This is all the more evident when it is considered that the revenues flowing into the Development Fund will derive from the same economy that it will assist.

2. The identification of specific projects, as was done in Phase II of the proposed report of August 1963, has been eliminated. Those projects, all admittedly requiring further study, would be defined in more comprehensive long-range regional type investigations.

3. The States of California and Nevada suggested the elimination of subsidy to municipal and industrial water users. In view thereof, and because it has been consistent Federal policy to require municipal and industrial water users to repay all costs with interest, this suggestion also was adopted.

4. The 50-million-gallon-per-day desalting plant proposed for construction on the coastline of southern California from which to gain experience toward improving the technology of operating large-scale plants, and incidentally to provide additional water to southern California, has been deleted from active consideration under the Initial Plan. The States' comments, while recommending immediate construction of such a plant, indicated that this program more properly belongs to broad Federal research and demonstration programs, and these comments were concurred in despite the obvious future potential of the desalting plants as technology improves to solve the ever-mounting water problems of the Southwest.

Plan Modification - The Initial Pacific Southwest Water Plan

In recognition and acceptance of these major suggestions, the Pacific Southwest Water Plan presented in the proposed report submitted to the States and Federal agencies on August 26, 1963, has been substantially revised. An Initial Plan is now proposed which has two primary immediate objectives: (1) Establishment of a Pacific Southwest Development Fund and with it the guarantee, in effect, of a basic water supply in the region sufficient to meet, either by direct diversion from the Lower Colorado River or by exchange, 7.5 million acre-feet of consumptive use annually by the States of Arizona, California, and Nevada, in the amounts of 2.8, 4.4, and 0.3 million acre-feet, respectively, at costs to the water users no greater than if these amounts were available from natural flows; and (2) the early authorization of those features of the Initial Plan for which adequate studies have been made to demonstrate engineering and economic feasibility. A major second step objective is the authorization of the remaining features of the Initial Plan as soon as feasibility studies can be completed.

Based on estimates of the rate at which the Upper Basin will develop uses for its apportioned share of Colorado River water, it is estimated that by the year 2030, in the absence of measures to increase Lower Basin water supplies, the amount of water available from the Colorado River at and below Hoover Dam for consumptive use by the Lower Basin States will decrease to 5,620,000 acre-feet annually. This would be 1,880,000 acre-feet below the 7,500,000 acre-feet divided among the Lower Basin States by the recent decision of the Supreme Court in the case of Arizona v. California. To make up this deficiency, through the 7,500,000 acre-foot guarantee, the Initial Plan provides for water salvage and related works to yield 680,000 acre-feet annually and for import of the remaining deficiency of 1,200,000 acre-feet.

The elements of the Initial Plan are shown on the frontispiece map and on the accompanying tabulations and control schedule.

Features Proposed for Immediate Authorization

Brief descriptions of the features of the Initial Plan proposed for immediate authorization are as follows:

Mainstream Reservoir Division

The Mainstream Reservoir Division includes Bridge Canyon and Marble Canyon Projects on the Colorado River. Hydroelectric power would be produced that, in addition to providing energy for project pumping, would provide revenues to the Development Fund from commercial sales.

The Bridge Canyon Project would be composed of Bridge Canyon Dam and Reservoir, Powerplant, transmission facilities, and associated recreation and fish and wildlife development facilities. Coconino Dam and Reservoir on the Little Colorado River would provide 2,100,000 acre-feet of capacity for sediment and debris control for the Grand Canyon National Park and protect Bridge Canyon Reservoir capacity.

The thin-arch concrete Bridge Canyon Dam would rise 673 feet above streambed and would create a reservoir of 3,710,000 acre-feet capacity with a normal water surface at elevation 1866. The installed capacity of the powerplant would be 1,500,000 kilowatts, which would generate an estimated 5.36 billion kilowatt-hours annually.

A lower Bridge Canyon Dam rising about 570 feet above streambed was analyzed as an alternative. While such a structure could be justified as an independent project, its test as a desirable component of the Pacific Southwest Water Plan must take into account the contribution

INITIAL PACIFIC SOUTHWEST WATER PLAN

<u>Item</u>	<u>Features Proposed for Immediate Authorization</u>	<u>Features Requiring More Detailed Study</u>
Mainstream Reservoir Division		
Bridge Canyon Project	\$ 511,000,000	-
Marble Canyon Project	239,000,000	-
Water Salvage and Recovery Programs	42,000,000	-
Renovation of Waste Water Program	(1/)	-
Desalting Programs	(2/)	-
Arizona		
Central Arizona Project	527,000,000 <u>3/</u>	-
California		
California Aqueduct Enlargement	240,000,000	-
Cedar Springs-Perris Aqueduct	-	\$ 205,000,000
East Side Division Enlargement <u>4/</u>	-	250,000,000
Trinity River Basin Storage or Alternatives	-	617,000,000
Cedar Springs-Hayfield-Imperial Aqueduct	-	350,000,000
Nevada		
Southern Nevada Water Supply Project	72,000,000 <u>5/</u>	-
Moapa Valley Pumping Project	12,000,000	-
New Mexico		
Hooker Dam and Reservoir	(28,000,000) <u>6/</u>	-
Utah		
Dixie Project	45,000,000	-
Indian Irrigation Projects	10,000,000	-
Recreation and Fish and Wildlife Programs	6,000,000	-
Total Federal Cost	\$1,704,000,000	\$1,422,000,000

-
- 1/ Local agency undertakings.
- 2/ Work under other Federal, State, and local programs.
- 3/ Includes \$20,000,000 for distribution facilities for Bureau of Indian Affairs projects.
- 4/ Including appropriate participation in solution of problems of Sacramento-San Joaquin Delta.
- 5/ Enlarged capacities for Southern Nevada Water Supply Project under consideration with State and local agencies may increase construction cost from \$72,000,000 to \$81,000,000.
- 6/ Included in Central Arizona Project.

it would make to the Development Fund. A financial analysis of the Initial Plan, including the lower dam, indicated that repayment of the plan would be marginal with insufficient revenues to cover possible cost increases and other contingencies. Further, the greater revenues from the higher Bridge Canyon Dam would permit flexibility for the earlier staging of construction of water import facilities, which may well be found to be desirable upon additional study. For this reason, and because the lower dam would underdevelop an important natural resource, decision between the alternatives clearly favored the higher dam.

The Marble Canyon Project would be composed of Marble Canyon Dam and Reservoir, Powerplant, transmission facilities, and related recreation and fish and wildlife development. Paria Dam and Reservoir on the Paria River would provide 98,000 acre-feet of capacity for sediment control to protect the Marble Canyon Reservoir capacity and Glen Canyon tailwater channel from sediment encroachment.

Marble Canyon Dam would be a thin-arch concrete design rising 310 feet above streambed to create a reservoir with 363,000 acre-feet of capacity and a normal water surface at elevation 3140. The installed capacity of the powerplant would be 600,000 kilowatts, and would generate an estimated 2.31 billion kilowatt-hours annually.

Water Salvage and Recovery

The water salvage and recovery program annually would conserve an estimated 680,000 acre-feet of water now being nonbeneficially consumed and lost along the Colorado River downstream from Hoover Dam. Senator Wash Reservoir and river channelization measures are presently authorized and will effect an estimated water savings of 360,000 acre-feet of the total indicated above. The 320,000 acre-foot balance would be conserved by two programs--Phreatophyte Eradication and Control, and Ground-Water Recovery--both of which are included among the facilities of the Pacific Southwest Water Plan.

Phreatophyte Eradication and Control--This program would mechanically eradicate and control dense growths of phreatophytes now infesting about 42,000 acres of Federal and nonarable Indian land on the flood plain of the Colorado River which annually consume many thousands of acre-feet of water. Combined with and assisting

the eradication and control program, 141 miles of drains would be constructed. The dual program would effect the salvage of an estimated 100,000 acre-feet of water annually.

Ground-Water Recovery--The ground-water recovery program would provide an additional 220,000 acre-feet of water for further beneficial use in the Lower Basin. These waters would be obtained by pumping from the Yuma ground-water reservoir. Pumping these waters that are contributed primarily by surface irrigation application in the Yuma area will reduce the subsurface drainage requirement in certain areas and effect a savings of bare-ground evaporation losses, as well as a recovery of those percolated underground waters now flowing from the area.

Renovation of Industrial and Other Waste Water

The potential for the salvage and reuse of extensive quantities of water in the Pacific Southwest, particularly in southern California, through renovation of urban waste water is widely recognized. As water use in the metropolitan areas grows, the potential will increase accordingly.

Local organizations in California and Arizona have already undertaken a portion of the task required to salvage waste water return flows, and plans are in process for more extensive local development of this water resource. This is a field in which local and State agencies can and properly should contribute to the overall solution of water-deficiency problems in the Pacific Southwest. Thus, insofar as the Initial Plan is concerned, renovation of waste water is a segment of the regional plan where local and State agencies can accept a major responsibility.

Because development of new water supplies by import or desalting will be expensive, because renovation of waste water is relatively inexpensive, and because the potential for increasing the effective water supply of the Pacific Southwest by renovation of waste water is of major significance, future financial Federal participation in waste water renovation should be delineated as rapidly as possible to achieve full realization of the potential. This should be a matter of immediate cooperative study, and ground rules for Federal participation should be developed as rapidly as possible.

Desalting Program

The rapid strides which have been made in desalting techniques hold forth significant promise that, in time, this means of

developing new water supplies will become economically competitive with other alternatives. To the extent that desalting of sea or brackish water in the future may contribute to meeting the region's growing water demands, the magnitude of alternative water imports can be decreased. Present sizes of demonstration plants and present techniques, however, do not produce fresh water at costs commensurate with the costs of alternative measures. Larger size plants and improved techniques may make desalting competitive economically in meeting certain future municipal and industrial demands. Specific desalting installations have not been included in the Initial Plan. However, the Initial Plan does contemplate continued Federal-State research aimed at advancement of the science of desalting seawater and brackish water.

The future role of the Federal Government in the construction of larger demonstration plants is provided for under the Anderson-Aspinall Act of September 22, 1961. This Act is the fourth of a series of Acts authorized to provide research into and development of practical means for the economical production of fresh water from sea and brackish waters. The first two Acts, Public Laws 82-448 and 81-111, provided for research and development over a period of 10 years to 1962. The third Act, Public Law 85-883, provided specifically for five demonstration plants for five different processes. Four such plants have been built, and the fifth which, while a pilot plant, will carry out most of the functions of a demonstration plant, is under construction. The most recent authorization, Public Law 87-295 of September 22, 1961, provided for increased research and development activity as well as for extension of the demonstration plants program through the year 1970.

Section 2(c) of the Anderson-Aspinall Act, 75 Stat. 628, provides for the construction of additional demonstration plants.

The congressional intent with respect to Section 2(c) is set out in the report by the Committee on Interior and Insular Affairs, 87th Congress, 1st Session, House of Representatives (page 10, Report 908, August 15, 1961), which states:

"The committee wants to make it clear, however, that proposals submitted under section 2(c) must be justified on the basis of serving to advance the science and technology in the field of saline water conversion and contributing materially to low cost desalination. . . . "Another requirement which the committee believes such a proposal should meet is that there is no alternative source from which water could be obtained at a cost appreciably less than the cost of production under the proposal."

In addition to advancement of the objectives of the Act, "the committee believes that the agency or organization obtaining the water should be willing to pay at least 50 percent of the overall cost of producing it, including both capital cost and operation and maintenance cost, and should be in a position to take over the plant at the end of the demonstration period and operate it without further Federal subsidy."

Section 2(k) of the Anderson-Aspinall Act provides that the Department of the Interior may "cooperate with other Federal departments and agencies, with State and local departments, agencies and instrumentalities, and with interested persons, firms, institutions, and organizations."

In accordance with this congressional policy, the Federal Government may contribute to the construction of desalting plants by local, private, and public agencies or State agencies under limited conditions, but as the Act prescribes only after specific additional authorizations by the Congress.

Water Storage and Delivery

Arizona--Central Arizona Project--The Central Arizona Project would be designed to divert 1,200,000 acre-feet of water annually from the Colorado River under ultimate conditions, via high-lift pumping plants and an open, concrete-lined aqueduct, into central Arizona for supplemental irrigation and for municipal and industrial uses by the cities of Phoenix and Tucson. Initial efficiencies of pumping equipment and other facilities would permit operation of the project during early years at greater capacity than under ultimate conditions. This would permit Arizona to utilize more fully its entitlement of the consumptive use of 2.8 million acre-feet of Colorado River water per annum, and would aid in bridging the gap between the time of construction of the Central Arizona Project and the time when, with the assistance of Development Fund revenues, works could be planned and constructed to completely eliminate Arizona's present water deficiencies and provide also for its growing demands.

Under ultimate conditions, the project would annually deliver 312,000 acre-feet for municipal and industrial use. In 1960 there were about 1,200,000 acres of land developed for irrigation, and the project is designed to deliver 758,000 acre-feet of supplemental water for irrigation uses. The present ground-water overdraft in the project area would be substantially reduced from about the present effective overdraft of about 2,200,000 acre-feet annually.

Four multipurpose dams and reservoirs--Buttes, Charleston, Hooker, and Maxwell--on the Upper Gila River system are included for flood control, water conservation, recreation, fish and wildlife and additional river

regulation. Through coordinated operation by which the four proposed reservoirs would provide upstream regulation, the benefits of the Colorado River import waters can be extended from the central zone throughout much of the State of Arizona, and into western New Mexico through water exchange agreements. The rehabilitation and lining of distribution systems for Bureau of Indian Affairs projects within the project service area are included.

California - State Aqueduct Enlargement

The plan proposes conveyance of an additional 1,200,000 acre-feet of import water annually through enlargement of the portion of the California Aqueduct from Wheeler Ridge to Cedar Springs, in order to obtain the substantial cost-saving advantages of combined construction of these conveyance facilities.

The California Aqueduct, which is a key feature of the \$2 billion State Water Plan now under construction, is being built to convey water from the Sacramento-San Joaquin Delta southward through the Central Valley and Tehachapi Mountains into southern California. Construction has already advanced from the Delta southward to such an extent that savings through enlargement will be practical only for that portion southward from Wheeler Ridge. A major savings, estimated at over \$100,000,000, can be realized through enlargement of the Wheeler Ridge-Cedar Springs section of the aqueduct, as contrasted with independent construction. However, to keep step with the State's construction program, and to realize the full potential savings, the decision on this enlargement should be made in 1964.

For this reason, and in view of the advanced preconstruction status of the State's designs and estimates, Federal participation in the enlargement of this portion of the California Aqueduct is recommended for immediate authorization. The remaining facilities for conveyance of the additional 1,200,000 acre-feet from northern California to the Pacific Southwest region have been investigated sufficiently to definitely establish the feasibility of the overall import plan but, as discussed subsequently, further studies are required for final refinement of the details of the individual features.

It is proposed that the State of California will design, construct, and operate the enlarged portion of the California Aqueduct from Wheeler Ridge to Cedar Springs, with appropriate Federal financial participation. The current State preconstruction estimates are used in this report, with the fair Federal share of costs of the

enlarged facilities determined using an equitable allocation method. The Federal portion has been determined as 60 percent of construction costs and 45 percent of annual operation, maintenance, and replacement costs (exclusive of pumping power), which the current State estimates indicate to be \$240,000,000 and \$1,600,000, respectively.

Although immediate authorization of this enlargement of the State aqueduct is required, only those facilities requiring joint construction with the basic aqueduct would be built immediately. This will permit deferment for some five to ten years of approximately one-third of the cost of this enlargement properly assignable to the Pacific Southwest Water Plan.

Nevada--Southern Nevada Water Supply Project--The Southern Nevada Water Supply Project would provide additional municipal and industrial water supplies for distribution in Clark County, including Nellis Air Force Base. The project is proposed for authorization of its ultimate size, but for construction in three stages to correspond to the build-up of demand. It ultimately would withdraw from Lake Mead 270,000 acre-feet of water annually to supplement present ground-water supplies and provide an integrated system sensitive to peak and base water demands. The project features would be designed and constructed so as to minimize their effect on the scenic and other attractions of the Lake Mead Recreation Area. Enlarged capacities for the project are under consideration with State and local agencies which would ultimately withdraw 312,000 acre-feet from Lake Mead with a net depletion of 262,000 acre-feet annually. This would increase the construction cost from \$72,000,000 to about \$81,000,000.

Moapa Valley Pumping Project--The Moapa Valley Pumping Project would, through conservation of winter runoff and pumping about 22,000 acre-feet of water annually from Lake Mead, provide supplemental water for 3,300 acres of presently irrigated lands and a full water supply to about 6,000 acres of new land in Moapa Valley and Meadow Valley Wash on the Muddy River.

New Mexico--Hooker Dam and Reservoir--The multipurpose Hooker Dam and Reservoir would be located on the upper Gila River in New Mexico and provide, among other values, flood control, outdoor recreation, fish and wildlife, and a firm water supply through river regulation for municipal, industrial, and agricultural uses. This development is included in the Central Arizona Project discussed above.

Utah--Dixie Project--The Dixie Project would, through construction of multipurpose dams on the Virgin and Santa Clara Rivers, provide full and supplemental water supplies to about 11,600 acres of new and 9,400 acres of existing irrigated land. About 5,000 acre-feet of municipal and industrial water would be provided to the town of

St. George, and through an existing local agreement, Cedar City would obtain the right to divert up to 8,000 acre-feet of water from upper tributaries. Hydroelectric powerplants at the Virgin City Dam and at canal drop structures would provide electrical power and energy for areas in Washington and Iron Counties in southwestern Utah.

Indian Irrigation Projects

The continuation of construction of irrigation distribution and drainage systems and appurtenant works is proposed on the Colorado River Indian Reservation, and new diversion and distribution facilities to develop 3,200 acres of land are included for the Fort Apache Indian Reservation. Construction of new distribution systems and rehabilitation and lining of existing distribution systems are proposed to benefit the San Carlos Project, Gila River, Ak Chin (Maricopa), Papago, Salt River, Fort McDowell, and San Xavier Indian Reservations. The latter projects are included in the Central Arizona Project. Costs for facilities to serve Indian lands within the ability of the lands to repay are considered subject to the Leavitt Act (47 Stat. 564); otherwise, they are considered nonreimbursable.

Recreation and Fish and Wildlife

Recreation--Water-based outdoor recreation is one of the most popular leisure-time activities in the Pacific Southwest region. The capacity of many existing recreation facilities is already strained. Coincident with the anticipated population growth of the region will be an increased demand for water-oriented outdoor recreation uses. Thus, new basic facilities are included in the plan of development wherever appropriate.

The basic facilities that would be provided at the reservoirs include access roads, parking areas, beaches, boat launching ramps, picnic and campground areas, public utilities, comfort stations, and related items. The new reservoirs would create new large water areas for boating, fishing, swimming, and water skiing and, additionally, would provide new access to some of the most spectacular scenery in the Nation, particularly at Bridge Canyon and Marble Canyon Reservoirs.

No costs are included for recreational developments of the Lower Colorado River Land Use Plan, although under ultimate development it is estimated that recreation use possibly would total 34 million visitor-days. The necessary facilities, which are highly desirable and should be installed at an early date, are to be provided by non-Federal agencies; thus, no monetary recreation benefits are reflected in the analysis of the Pacific Southwest Water Plan. There will be full coordination of the Lower Colorado River Land Use Plan with the Pacific Southwest Water Plan.

Cooperative Federal-State studies of recreation potentials should be expedited to determine additional recreation measures and related water requirements for the achievement of optimum overall program benefits.

Fish and Wildlife--The plan includes adequate features for the conservation and development of fish and wildlife resources. The use of water for fish and wildlife purposes is recognized as beneficial and necessary. Water would be supplied at Federal cost from project sources directly, or by exchange, for the operation of both Federal and State fish and wildlife installations, including fish hatcheries, fishing lakes, wildlife management areas, and refuges. Sufficient water would also be provided to insure permanent pools in reservoirs and minimum streamflows needed for fish life and related public recreation opportunities.

The water requirements for present and future fish and wildlife installations within the Pacific Southwest region are estimated at about 407,000 acre-feet of consumptive use per annum. Present annual consumptive uses made under varying water right conditions amount to about 46,000 acre-feet. The Supreme Court opinion in Arizona v. California, et al. (373 U.S. 546), allowed for consumptive use within the Havasu Lake and Imperial National Wildlife Refuges a maximum of 60,339 acre-feet per annum; however, the amount actually available within that total will be dependent, among other things, upon the relative priorities for the refuges as against other priorities recognized under the Boulder Canyon Project Act in the States of use. Thus, additional water requirements amount to about 301,000 acre-feet of consumptive use per year, a portion of which will be supplied by Colorado River water. Also, the plan would provide an additional 324 cubic-feet-per-second of water for nonconsumptive use to supply these fish and wildlife facilities, in addition to the 303 now being utilized.

Increased uses of mainstream Colorado River water for fish and wildlife purposes are proposed in this report. (The details are in the Fish and Wildlife Appendix.) Approval by the Congress of the fish and wildlife installations proposed herein would give legislative approval also to utilization of mainstream Colorado River water for these purposes to the extent that such water is not otherwise committed to valid existing rights. It is not proposed to impair any existing rights to such water.

In California the several water delivery contracts between the United States and various California entities and certain other rights recognized under the opinion in Arizona v. California, et al. (373 U.S. 546), encompass all the water available for consumptive use in

California within a total of 7,500,000 acre-feet of mainstream water available for Lower Basin consumptive use each year. It may be possible, however, to assure a water supply for the proposed fish and wildlife installations in California requiring mainstream water by reasonable accommodation among the California users. In addition, it is anticipated that water will be developed under the extension of the Initial Plan which will be available for fish and wildlife facilities in California. Also, water could be made available during interim periods from facilities of the Initial Plan.

In Arizona and Nevada present rights to the use of mainstream water are substantially less than the States' entitlements to consumptive use within a total of 7,500,000 acre-feet per annum. Thus, if the proposed fish and wildlife developments are approved by the Congress, water for fish and wildlife uses would be reserved from the unallocated portions of these States' shares of Colorado River water.

Increased uses on Lower Basin tributaries are also proposed, principally in Arizona. Water for increased uses in Arizona could be made available by direct deliveries or exchanges through the proposed Central Arizona Project. Similarly, increased consumptive uses of water from the Gila River system in New Mexico could be made on an exchange basis, although a compromise agreement between New Mexico and Arizona recently approved by the United States Supreme Court in Arizona v. California, et al. (373 U.S. 546), might have to be amended to accommodate the uses contemplated by proposed fish and wildlife installations.

Cooperative Federal-State studies of fish and wildlife resources should be expedited to determine additional fish and wildlife measures and related water requirements for the achievement of optimum overall project benefits. The most important new facility for wildlife in the plan is the proposed Cibola National Wildlife Refuge on the main stem of the Colorado River. This 16,200-acre refuge would provide urgently needed wintering waterfowl habitat in the Pacific Flyway and add substantially to the public hunting opportunities of the area. Public lands involved are being withdrawn for the establishment of this refuge.

Two large fish hatcheries are included in the plan for mitigation of damages to major anadromous fish runs of streams utilized for California North Coast storage. Adequate minimum flows would be supplied below major dams on these streams to insure protection of the fishery resource. Stream habitat improvement measures and land acquisition to improve access and mitigate losses to wildlife are included in the plan.

Following detailed studies, a further determination will be made of the necessary volumes and schedules of the streamflows for protecting and enhancing fish runs of California streams affected by the Pacific Southwest Water Plan. Such flows would be nonconsumptive of water by fish and wildlife and would be available to satisfy other downstream requirements.

The annual benefits from the investment in the fish and wildlife features of the plan would far exceed the costs assignable to that purpose.

Features Requiring More Detailed Studies

Brief descriptions of the features of the Initial Plan requiring further study before submission for authorization are as follows:

Background--Northern California Water

As previously indicated, the Initial Pacific Southwest Water Plan herein proposed includes facilities for the conservation of 1,200,000 acre-feet of surplus northern California water and its conveyance south for use in the southern California area of the Pacific Southwest region. This continues, and expands upon, the maturely conceived procedure now being followed by the State of California.

The Northwest Coastal area of California, from San Francisco Bay to the Oregon boundary, is by far the most prolific water-producing area in California. The North Coast streams, the largest of which are the Klamath, Trinity, Mad, Van Duzen, and Eel Rivers, drain the western slopes of the Coast Range, the Klamath Mountains, and southern portions of the Cascade Range. At the present time, Trinity Reservoir, a feature of the Federal Central Valley Project, is the only existing major storage reservoir on these North Coast streams. As a result of this lack of control, over 25 million acre-feet annually, on the average, are being wasted to the ocean from these streams.

Comparison of the estimated future local water requirements with the streamflows in the North Coastal section clearly illustrates that large quantities of surplus flows will be available for future use in other areas at least to the extent that they can be developed economically.

The importance that is being placed upon the proper conservation and use of the water resources of California's North Coastal section is summarized effectively in the California Department of Water Resources

"Preview of Bulletin No. 136--North Coastal Area Investigation--September 1963." The following statement particularly is pertinent in that regard:

"California is blessed with sufficient natural water supplies to meet present and all probable future needs, provided these supplies are prudently controlled, conserved, and distributed. In recognition of the importance of water to the maintenance of an expanding economy and to the health and welfare of the citizenry, provisions are being made to meet this unprecedented challenge of developing the State's water resources. Federal, State, and local levels of government are proceeding vigorously to fulfillment of this goal."

Delivery of the needed import water to the southern California area is provided in the Initial Pacific Southwest Water Plan by means of North Coast storage reservoirs in the Trinity Basin (or alternatives) for benefit to the local area and conservation of 1,200,000 acre-feet of surplus water, transport of the water through the mountains to the Sacramento River, and thence, conveyance south through the following facilities: Enlargement and extension of the proposed East Side Division of the Federal Central Valley Project to connect with the California Aqueduct at Wheeler Ridge at the southern end of San Joaquin Valley; the previously discussed enlargement of the California Aqueduct from Wheeler Ridge through the Tehachapi Mountains to Cedar Springs Reservoir; and two separate conduits from that location. One of these would extend southerly from Cedar Springs Reservoir to Perris Reservoir with a connection to the Colorado River Aqueduct of the Metropolitan Water District of Southern California, and the other would extend easterly and southerly to the vicinity of the Colorado River Aqueduct above the Hayfield Pumping Plant, with possible connection to Coachella and Imperial Canals.

These facilities are discussed in the following sections of this report.

Trinity Storage or Alternatives--A great many possible reservoir conservation facilities have been investigated within the North Coastal area during the past several years. Noteworthy reports covering the results of these investigations include the Department of the Interior's 1960 report on Natural Resources of Northwestern California, the Bureau of Reclamation's June 1963 reconnaissance report on Eel River Division, and a series of bulletins and reports by the State of California, the most recent of which is the State Department of Water Resources September 1963 Preview of Bulletin No. 136 on North Coastal Area Investigation.

In general, the studies have been made on a reconnaissance basis, and are continuing with the objective of obtaining increased detail. General accord exists among the State and Federal agencies regarding the appropriate methods of water conservation on these streams to serve local needs and provide surplus water for export to other areas. The accompanying map shows the reservoir conservation opportunities in the North Coast area, as copied from the State's Preview of Bulletin No. 136, which, it is generally agreed, present the best opportunities of development. Additional intensive investigation is required, however, to firm up the details of the specific individual facilities.

The storage facilities tentatively proposed in the Initial Pacific Southwest Water Plan, for demonstration of economic justification and financial feasibility of the entire Initial Plan, consist of Helena Reservoir on the main stem of Trinity River and the Eltapom Reservoir on South Fork Trinity River, with tunnel diversion to Clear Creek, and thence, down that stream through regulatory storage and powerplants to the Sacramento River. It is estimated in the California Department of Water Resources Preview of Bulletin No. 136 that 1,200,000 acre-feet of water yield would be developed from these reservoirs, together with associated diversion and power facilities, at a cost of \$540,000,000. In addition, Bureau of Reclamation preliminary estimates indicate a cost of \$60,000,000 for transmission of the power generated at these plants to the load center at Tracy for distribution to help supply the pumping power requirements of the plants along the proposed enlarged East Side Canal. Also the Fish and Wildlife Service and Bureau of Outdoor Recreation contemplate facilities estimated to cost \$17,000,000. Thus, the total cost of the Trinity Reservoir supply of water is estimated at \$617,000,000.

With this proposal, water for the Initial Plan would be developed independently. However, the State Water Plan and the Federal Central Valley Project also are looking to the North Coast area for future water supplies. The opportunity, therefore, exists for joint developments to supply water from the North Coast area for all three of these programs at substantially less cost than if each pursued an independent approach. The information already available clearly indicates that the economies available to each of these three water programs through joint participation, and pooling of supplies sequentially as individual reservoir facilities are completed, are potentially so great that they must not be ignored. Such joint development and pooling needs to take into consideration all major stream systems of the North Coastal area. The most favorable initial opportunities appear to exist on the Eel River system

with possible inclusion of an enlarged Monticello Reservoir, and, on the Trinity River system with consideration given to inclusion of the Mad and Van Duzen Rivers.

Thus, while the Trinity Reservoirs are tentatively included in the Initial Pacific Southwest Water Plan, further detailed studies are needed to determine the most desirable plan--probably a joint development by the Federal Government and the State of California. Such investigations also should include full consideration of the water requirements and best methods of serving the local areas. These further detailed studies should be initiated immediately.

East Side Division Enlargement--The 1,200,000 acre-feet of water delivered from the North Coast reservoir developments are proposed to be diverted from the Sacramento River through an enlargement of the proposed pump-channel connection for the East Side Division, now planned at Hood on the Sacramento River a few miles downstream from Sacramento. This diversion location is upstream from the main portion of the Sacramento-San Joaquin Delta, and consequently the effect of the diversion of this conserved supply on the delta itself would be minimized.

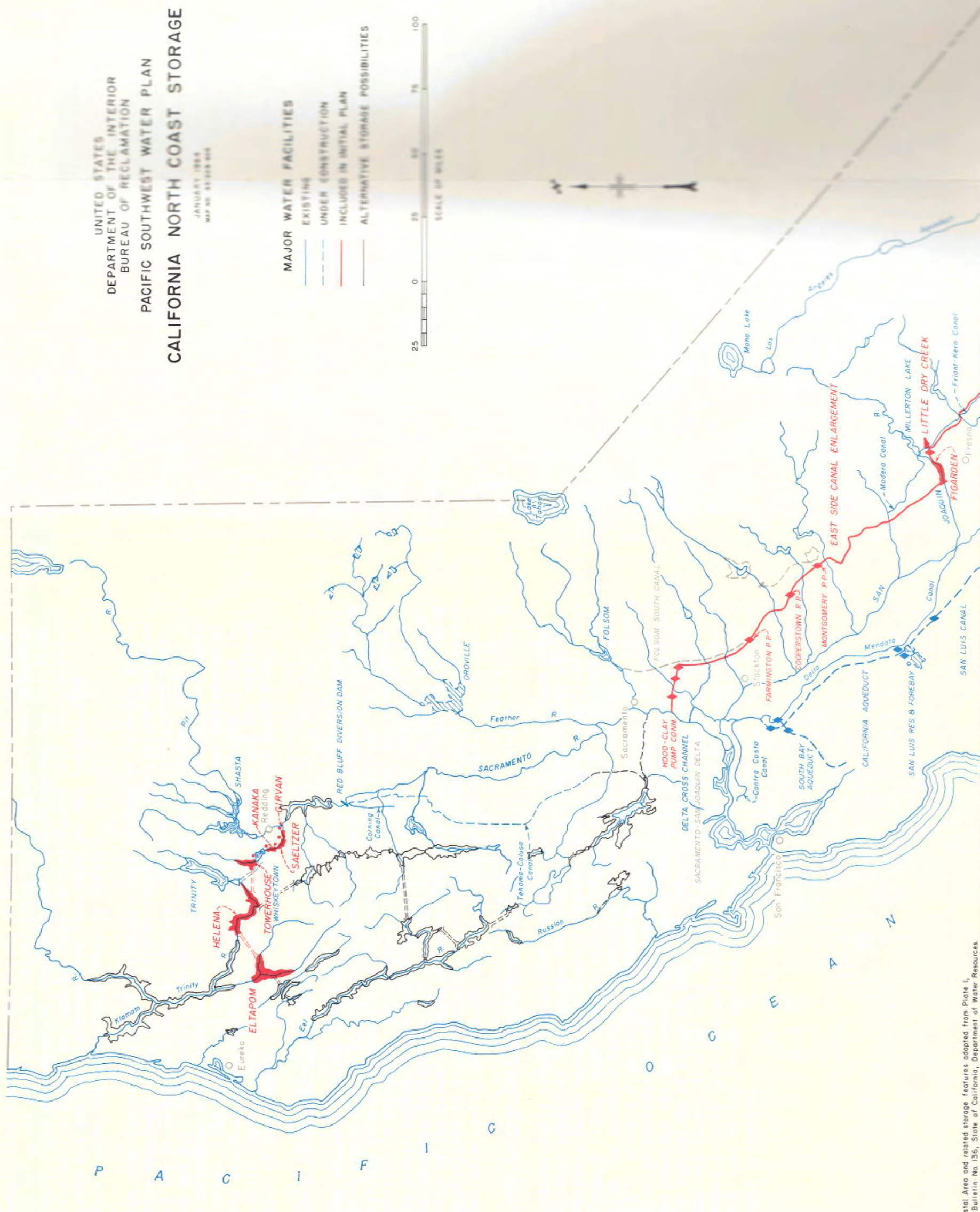
The Sacramento-San Joaquin Delta is a highly important and complex area. Currently, the Federal Government, the State of California, and other agencies are investigating the best methods to accomplish the necessary additional transfers of water across the delta for the State Water Project and the Federal San Luis Unit and, at the same time, protect the delta from damage and provide increased benefits to that area. The additional transfer of water will require modification of the present delta channels. Current investigations underway by Federal, State, and other agencies are expected to result in a satisfactory solution for the California Water Project and Federal San Luis Unit. The possible future effect on the delta of diversion of the additional conserved supply through the enlarged East Side Division as proposed herein will be considered carefully, and any additional measures which prove necessary for protection and enhancement of the delta will be included in the East Side Division enlargement.

The entire length of the proposed East Side Canal from the Hood pump channel to Kern River near Bakersfield would be enlarged for conveying the additional water for the Pacific Southwest Water Plan--a distance of nearly 350 miles. In addition, a southerly extension of about 40 miles of canal would be required from Kern River to connect with the California Aqueduct at Wheeler Ridge Pumping Plant No. 1.

UNITED STATES
 DEPARTMENT OF THE INTERIOR
 BUREAU OF RECLAMATION
 PACIFIC SOUTHWEST WATER PLAN
CALIFORNIA NORTH COAST STORAGE

JANUARY 1964
 MAP NO. 65-355-004

- MAJOR WATER FACILITIES**
- EXISTING
 - - - UNDER CONSTRUCTION
 - INCLUDED IN INITIAL PLAN
 - ALTERNATIVE STORAGE POSSIBILITIES



North Coast Area and related storage features adopted from Plate 1, Preview of Bulletin No. 136, State of California, Department of Water Resources.

Insert color map
11 x 17

Feasibility studies by the Bureau of Reclamation have been completed to the point of definitely establishing the engineering and financial feasibility and layout of the basic East Side Division, but the final feasibility report has not yet been submitted, and only reconnaissance-grade designs and estimates have been made for the Initial Plan enlargement and extension to Wheeler Ridge.

The opportunity exists for worthwhile cost savings to both the East Side development and the Pacific Southwest Plan through incorporation of the proposed enlargement. However, the need for additional water in the East Side Division is urgent, and the proposed East Side development has widespread and unified support within the San Joaquin Valley. The additional investigations needed for final refinement of the proposed combined development, therefore, are a matter of the utmost urgency, both to avoid any delay to East Side and for realization of the potential savings to the Pacific Southwest Water Plan.

Cedar Springs-Perris Aqueduct

The proposed conduit from Cedar Springs Reservoir to Perris Reservoir with connection to the Colorado River Aqueduct is planned for conveying 550,000 acre-feet annually of the supply imported through the enlarged California Aqueduct. This conduit would be scheduled for completion to permit deliveries in accordance with the need for additional water in southern California, now estimated to be required in 1981. Preparation of the plans and cost estimates for this aqueduct has been greatly facilitated by work previously accomplished for the State Water Project, but more investigations are needed for final refinement.

Cedar Springs-Hayfield-Imperial Aqueduct

Approximately 650,000 acre-feet annually would be conveyed from Cedar Springs Reservoir through the proposed conduit to the vicinity of the Colorado River Aqueduct a short distance westerly of the Hayfield Pumping Plant. From that location estimated costs are included in the plan for possible service extensions to Coachella and Imperial Canals. In accordance with current estimates, this proposed conduit from Cedar Springs Reservoir would need to be scheduled for completion by 1997 to maintain the guaranteed basic water supply of 7.5 million acre-feet or equivalent of water in the Lower Colorado River for consumptive use. Reconnaissance studies only have been made for this aqueduct. The route is such that no question exists concerning the practicability, but feasibility investigations are required to finalize layout and cost estimates.

Financial Summary

The total construction cost for the Initial Plan is estimated as \$3,126,000,000. Of this amount, \$2,969,000,000 would be fully reimbursable and would be repaid within 50 years after the last unit becomes revenue producing. The cost of each unit also would be repaid within 50 years after it becomes revenue producing. Costs allocated to power and municipal and industrial water service will be repaid in total at 3 percent interest by the water and power users. Irrigation costs will be returned without interest by the irrigators within their ability to repay with the balance being returned from revenues in the Development Fund. The remaining costs allocated to flood control, fish and wildlife, outdoor recreation, and area redevelopment are considered nonreimbursable. Costs for facilities to service Indian lands within the ability of lands to repay are considered subject to the Leavitt Act; otherwise they are considered nonreimbursable. After accomplishment of the foregoing repayment objectives, the balance that would accrue to the Development Fund by the year 2047 amounts to about \$675,000,000. These monies can be used and will be needed to assist in development of future projects in the Pacific Southwest needed to meet increasing water and power demands. They will be needed also to guarantee financial assistance and protection to areas of origin from which water may be exported to the Pacific Southwest.

The costs of that portion of the Initial Plan proposed for immediate authorization are estimated to be \$1,704,000,000. Of this amount, \$1,564,000,000 would be reimbursable and the balance would be non-reimbursable. Repayment of reimbursable costs would be in accordance with the criteria established in the foregoing paragraph. At the end of the payout period in year 2030, the balance in the Development Fund would amount to about \$900,000,000.

Consolidated payout studies are attached.

Economic Analysis Summary

The annual equivalent Federal cost for the Initial Plan would be \$89,300,000. Annual operation, maintenance, replacement, and pumping energy costs would be \$34,400,000. Total annual equivalent benefits resulting from this program would amount to \$237,000,000, and the resultant benefit-cost ratio would be 1.9:1.0. The benefit-cost ratio for that portion proposed for immediate authorization would be 2.3:1.0. These computations are based upon an interest rate of 3 percent and a 100-year period of analysis. These relationships adequately demonstrate the economic justification of the Pacific Southwest Water Plan.

Initial Plan Accomplishments

The Initial Plan will constitute an impressive step forward in eliminating present water deficiencies and in providing new water supplies to meet growing demands in the Pacific Southwest. It will not provide an overall solution to the region's total future needs. This can only be accomplished through long-range, comprehensive regional planning. It will, however, accomplish the following:

1. Meet the most immediate and urgent water needs of the Pacific Southwest and provide time in which to work out comprehensive solutions for long-range needs.
2. Provide the setting, point the direction, and create the means whereby comprehensive, long-range plans can be developed to make and keep the Pacific Southwest water sufficient.
3. Establish a development fund that is essential as the financial foundation of future Pacific Southwest water development.
4. Protect the extensive economies that have been developed in the Pacific Southwest and which are dependent upon the continuation of the availability of 7.5 million acre-feet of water for consumptive use from the Lower Colorado River.
5. Assure maximum utilization of existing water supplies through water salvage, waste water renovation, and related measures.
6. Provide for authorization of several urgently needed water and power developments that have been long delayed.
7. Enhance the well-being and economic status of the many American Indians living in this area.
8. Provide means for meeting the rapidly expanding needs for water-oriented outdoor recreation.
9. Provide necessary facilities for the conservation and development of fish and wildlife, including urgently needed wintering waterfowl habitat in the Pacific flyway. Public fishing and hunting opportunities will be expanded to meet ever-increasing demands.
10. Provide the climate in which past controversies can be set aside, and all who would be so vitally affected by the common spectre of future water shortages can move forward in resolution of the region's water problems in a united, effective approach.

Implementation of the Plan

It is contemplated that the Pacific Southwest Water Plan could be implemented readily through: (1) Establishment of a development fund; (2) immediate authorization and construction of those features of the Initial Plan for which investigations have established engineering and financial feasibility; (3) authorization of the remaining features of the Initial Plan upon completion of feasibility studies and their construction as needed; (4) establishment of procedures to accomplish coordinated, comprehensive, regional, long-range planning including establishment of a regional advisory commission; (5) close and effective participation and cooperation by all interests involved-- Federal, State, and local; and (6) studies and research as required to provide technical data and information of a general nature needed to support future water resource development programs.

Specific items of policy or action that will be involved in implementation of the Pacific Southwest Water Plan are as follows:

1. Development Fund

It is proposed that a Pacific Southwest Development Fund be established similar to the Basin Fund created by the Colorado River Storage Project Act (70 Stat. 105). The Development Fund would be created in the Treasury of the United States, and amounts credited thereto would remain available until expended for the purposes authorized by the Congress.

There would be credited to the Development Fund all appropriations made for the purposes of carrying out the construction of the units authorized by the Congress, except recreation, fish and wildlife, and Indian developments which are part of the comprehensive plan but separate from other units for storage, irrigation, hydroelectric power, and municipal and industrial water. Appropriations for such excepted developments would be made as an integral part of appropriations for implementing the plan as a whole, but they would be accounted for separately from the Development Fund. Also credited to the Development Fund would be all revenues from sales of water and power collected in connection with the units constructed with monies appropriated to the Development Fund and, after repayment, all revenues from the Boulder Canyon and Parker-Davis projects surplus to the operation, maintenance, and replacement requirements of the two projects and any payments from Boulder Canyon Project revenues needed to reimburse the Upper Colorado River Basin Fund for any expenditures made from that fund as provided in the Glen Canyon filling criteria to meet deficiencies in generation at Hoover Dam during the filling period of the Colorado River Storage Project reservoirs.

Revenues accruing to the Development Fund would be made available to defray costs of operation, maintenance, and replacement requirements of the units, to return the construction costs with interest allocated to power and municipal and industrial water features of all units, to return the construction costs allocated to irrigation features of all units, to return the construction costs of units of irrigation projects beyond the ability of the water users to repay, to assist development of future projects in areas of origin from which water may be exported, to afford protection to areas of origin from increased costs of future projects caused by the pre-emption of lower-cost water sources, and to defray added costs of water to users which would otherwise not have been incurred by such users if there were sufficient water available in the Colorado River to satisfy an annual consumptive use of:

2,800,000 acre-feet in Arizona
4,400,000 acre-feet in California
300,000 acre-feet in Nevada

No change is proposed in existing laws relating to the appropriation of funds, the construction, operation, or maintenance of any projects, the deposit of receipts in the Treasury, or the nonreimbursability of amounts allocated to purposes for which such provision is made pursuant to law.

Further, establishment of the Development Fund would not affect existing water or power contracts.

2. Protection for Areas of Origin

If waters are to be exported from areas of surplus to southern California, it is mandatory that protection from any damage be afforded the areas of origin. Accordingly, to effect this policy the following are proposed: (1) a guarantee to the watersheds of origin that diversions of water would be subordinate to all existing and anticipated future needs, including the retention of water in the watersheds of origin if estimates of future needs prove insufficient; (2) financial assistance from the Development Fund for the construction of any future projects in the watersheds of origin, if such assistance is not otherwise provided; and (3) a guarantee that any additional costs of future projects, caused by the pre-emption of lower-cost water sources which otherwise would benefit the areas of origin, or the State of California insofar as its water supply is diminished, would be offset by Development Fund revenues to the extent that the costs chargeable to such projects would be no greater than if there had been no export under the Pacific Southwest Water Plan.

3. Agricultural Uses

There is not enough water presently available to the region at economic cost to provide for an expansion of irrigated acreage, except on Indian reservations and limited areas having local water supplies available. However, because of the importance of agriculture to the region, a major objective is to augment the water supplies to maintain irrigated acreage as close as possible to present levels.

Under the circumstances, it is contemplated that the authorizing legislation would require the Secretary of the Interior to take appropriate steps to insure that no new lands may be irrigated within service areas of units authorized under the Initial Pacific Southwest Water Plan, except on Indian reservations, the Dixie Project, the Moapa Valley Pumping Project, and wildlife management areas and refuges.

While the suggested requirement to be included in the authorizing legislation is rather broad, the Secretary of the Interior should have flexibility in applying standards designed to control expansion of irrigated acreage because of variations in conditions in different areas overlying critical ground-water aquifers. Accordingly, no contracts for the delivery of supplemental water would be made with irrigation districts or other public entities unless:

- (1) Agreements are included not to deliver water to lands other than those having a recent irrigation history, as determined by the Secretary of the Interior, and
- (2) arrangements, satisfactory to the Secretary of the Interior, are included to control expansion of irrigation from ground-water aquifers affecting project service areas.

4. Enlargement of the California Aqueduct

It is proposed that the State of California would design, construct, and operate whatever enlargement of the California Aqueduct is authorized and constructed for the Pacific Southwest Water Plan. The United States, however, would provide appropriate financial assistance and, consequently, would need to be assured through negotiated contractual arrangements that the foregoing functions would be performed properly.

The State of California would be the marketing agent for the United States for water conveyed through the enlarged California Aqueduct to be marketed in California. The United States, however, would have to be furnished appropriate assurances relative to the disposition of water and financial return on its investment.

The report provides for an appropriate allocation of costs between the base California Aqueduct and the incremental enlargement for the Pacific Southwest Water Plan.

5. Exchange or Replacement of Water

One of the features of the Pacific Southwest Water Plan is the substitution of water through exchange or replacement to compensate for taking water from present sources of supply of existing projects so as to provide supplemental water supplies for water-deficient areas.

Such exchanges of water would be accomplished pursuant to a legislative provision authorizing the Secretary to require such exchanges as a condition of contracts for the supply of supplemental waters. No exchange or replacement of water would be permitted to injure a present valid user.

6. Agreements Relative to Hooker Dam

The report has proposed authorization of Hooker Dam on the assumption that any necessary agreements will be entered into. The United States would be a necessary party to any agreements and would not support, however, any agreements that did not protect the rights of all existing users to Gila River water.

7. Canal Lining

California has recommended that lining of canals in the Imperial and Coachella Valleys should be placed in Phase I, or the immediate-authorization program.

There can be no question that lining of these canals is one of the most economical means of increasing the effective water supply of the Pacific Southwest. It is estimated that 500,000 acre-feet of water could be conserved annually by this means. Water now diverted through these canals is diverted under contracts with the Secretary of the Interior. It is part of the share of Colorado River water allocated for use in California and enjoys a relatively high priority as against other uses from the Colorado River in California. The priorities contained in the contracts are those agreed to by all California contractors for use of Colorado River water under the so-called "Seven Party Priority Agreement," dated August 18, 1931.

Before the Federal Government should participate in a canal lining program, however, the problem of the disposition of the conserved water must be resolved. If water conserved by canal lining were to be devoted to irrigation of new lands in the Imperial and Coachella Valleys, it would not be consistent with a primary objective of the Pacific Southwest Water Plan; i.e., to meet present water deficiencies and growing demands, but only to sustain, through the plan facilities, the existing level of irrigation development. If the conserved water were to be used not for irrigation of new lands but for meeting other water demands in California this would require, as a prelude, extensive negotiation and modification of existing agreements and contracts.

Proposals on such matters must originate in California. Because of the magnitude and importance of this untapped, inexpensive source of new water supply, it is urged that California take the initiative in seeking decisions, including proposals for contract modification, that will permit canal lining to be undertaken as part of the Pacific Southwest Water Plan or through some other program. The Federal Government should, of course, participate to the extent that its contractual responsibilities for Colorado River water are concerned. As soon as these matters are resolved and a feasibility report can be prepared, lining of these canals should be proposed for authorization.

8. Regional Power Intertie

There are advantages of electrically interconnecting with the Pacific Northwest through the proposed intertie, and plans are being considered to secure these advantages. They will be further considered as plans for the intertie become more concrete. Mutual advantages to the Bonneville Power Administration and the Central Valley Project must also be taken into account.

9. Staging of Construction to Meet Needs

It is axiomatic in water resource planning that water be made available as the demand therefor is created. However, in the interests of economy, development should be staged so as to defer capital investments so as to coincide as closely as possible with the buildup in demand.

Accordingly, the implementation of the plan embodies a carefully staged development of the units included therein which will effect substantial economies without detriment to water users. As the population and water demands of the Pacific Southwest increase in the future, the demand-supply relationships may change from those assumed for purposes of this report, in which event suitable adjustments can be made in construction schedules.

10. Priority Planning Program

It is contemplated that the Secretary of the Interior would be authorized and directed to give priority to completion of feasibility reports on tributary projects within the Pacific Southwest where undeveloped local water supplies are available or can be made available by replacement or exchange and to other projects, including Indian reservations, in Arizona, California, and Nevada which can utilize the waters of the Colorado River by direct diversion or which can develop other water which can be utilized either directly or through the exchange process to meet water deficiencies in the area. Similar priority in planning is contemplated relative to watersheds of origin of import supplies.

11. Long-Range Planning

The proposed Initial Plan as the first step of a comprehensive plan will meet only the most immediate and urgent demands for increased water supplies for the Pacific Southwest. Water demands over and above these immediate needs can and should be provided for through long-range planning. Further detailed planning will be necessary for works and programs beyond those recommended for authorization as part of the Initial Plan. Because of the numerous water development functions involved and the many interests affected, it is obvious that long-range plans should be fully coordinated. To assure such coordination among Federal, State, interstate, and local plans, consistent with the responsibilities of the Secretary of the Interior under existing Colorado River legislation and the decree in Arizona v. California, it is highly desirable that the authorizing legislation establish a regional water commission modeled, to the extent appropriate, upon that set forth in Title II of S. 1111, as supported by the Administration and as passed by the Senate.

12. Continuing Study of Water Supply

Bureau of Reclamation estimates of future water supply available for consumptive use from the Colorado River at and below Hoover Dam have been used in the report. It should be stressed, however, that these estimates will be subject to continuing and intensive cooperative study with all interests concerned and to periodic modification. Such continuing study is essential to proper planning and phasing of units to be constructed under the Pacific Southwest Water Plan in order that water supplies may be provided as the water demands of the area develop. However, construction of the initial features of the Pacific Southwest Water Plan must not be deferred pending completion of these studies since such studies will be carried out on a continuing basis for the foreseeable future.

13. Water Quality Management

The maintenance of water of acceptable quality in the Colorado River, the delta of the Sacramento-San Joaquin River, and other areas of the region is of extreme importance. Cooperative Federal-State studies should be continued and expedited with the objective of assuring sound water quality management practices throughout the region.

14. Study and Research

The facilities recommended for authorization as a part of the Pacific Southwest Water Plan cannot meet the long-term needs of the region. Much research and planning must be done before the additional projects which will be needed can be properly identified and evaluated as to economic justification, feasibility, and phasing.

Accordingly, it is contemplated that the implementing legislation would authorize the Secretary of the Interior to carry out accelerated general investigation and research programs associated with ways of meeting these future needs within the Pacific Southwest including, but not limited to, potential sources of additional import supply, the fields of saline water conversion, canal sealants, evaporation reduction, weather modification, waste-water renovation, general hydrology, water quality and waste management, water salvage, and fish and wildlife conservation.

The accelerated general investigations and research program should proceed concurrently with construction of those elements included under the immediate authorization program. Construction of those urgently needed projects should in no event be delayed because of this study and research which must continue indefinitely.

15. Pending Legislation

Authorization is currently being sought in the Congress by the States of Arizona, Nevada, and Utah for three of the projects included in the Initial Plan, namely: the Central Arizona Project (S. 1658), the Southern Nevada Water Supply Project (S. 2388), and the Dixie Project (S. 26), all with accompanying identical bills in the House of Representatives. Bureau of Reclamation reports demonstrating economic and engineering feasibility of each of these projects are included as supplemental information supporting this report. These three projects are included without change in the principal physical works involved for immediate authorization as integral parts of the Initial Pacific Southwest Water Plan which provides at the same time for the establishment of the Pacific Southwest Development Fund and for incorporation of these projects in the Plan.

Supporting Material

The above presentation outlines the plan set forth in the Task Force report of August 1963, reviews the comments received from the States and Federal agencies, presents a modified or Initial Plan for your approval, and indicates major steps proposed for implementing the plan. To more fully present the Pacific Southwest Water Plan, the Task Force report has been revised in its entirety, but along the lines of its original format, to reflect the modifications adopted as a result of State and Federal agency review. The modified report is attached.

In the modified report the following chapters remain essentially unchanged: Chapter I - The Pacific Southwest; Chapter II - The Water Problem; Chapter III - Present Water Supplies and Uses; Chapter V - Power Requirements, Sources, and Markets; and Chapter IX - Study and Research. The remaining chapters have been revised substantially.

Revisions to the Appendix material are inserted where appropriate in front of the individual appendices of the Task Force report. Revisions have been made only in the appendices of the Bureau of Reclamation, Bureau of Outdoor Recreation, Bureau of Sport Fisheries and Wildlife, and the Bureau of Indian Affairs.

Attached also are reports containing supplemental information on the Bridge Canyon Project, the Marble Canyon Project, the proposed water salvage programs, the Central Arizona Project (including as an annex the report of June 1963), the Southern Nevada Water Supply Project, and the Moapa Valley Pumping Project. The report of the Secretary of the Interior on the Dixie Project published as House Document No. 86, 88th Congress, contains full supporting information on that project.

Recommendations

It is recommended that the Congress of the United States be asked to approve the Initial Plan and to implement it by the following:

(1) Guarantee, as a matter of Federal policy through the construction of necessary works, the equivalent of 7.5 million acre-feet of water per year in the Colorado River, either directly or through exchange, to satisfy the consumptive use of:

2.8 million acre-feet per annum in Arizona;
4.4 million acre-feet per annum in California;
0.3 million acre-feet per annum in Nevada;

at cost to users no greater than would otherwise have been incurred had there been sufficient water in the river to satisfy the aforesaid amounts.

- (2) Establish a Pacific Southwest Development Fund to be used to:
 - (a) Underwrite the financial aspects of implementing the policy set forth in (1);
 - (b) Underwrite the financial protection and assistance to areas of origin;
 - (c) Assist in the repayment of irrigation costs beyond repayment ability of water users.

- (3) Authorize the following features of the Initial Plan:
 - (a) Mainstream Reservoir Division consisting of the Bridge Canyon Project and the Marble Canyon Project on the Colorado River including transmission facilities;
 - (b) Water salvage and recovery programs consisting of phreatophyte eradication and control along the lower reaches of the Colorado River and installation of wells for recovery of ground water in the Yuma area;
 - (c) Central Arizona Project, Arizona;
 - (d) Federal participation in enlarging that portion of the California Aqueduct from Wheeler Ridge to Cedar Springs Reservoir;
 - (e) Southern Nevada Water Supply Project, Nevada;
 - (f) Moapa Valley Pumping Project, Nevada;
 - (g) Hooker Dam and Reservoir, New Mexico (included with Central Arizona Project);
 - (h) Dixie Project, Utah;
 - (i) Indian Irrigation projects consisting of irrigation distribution and drainage systems on the Colorado River Indian Reservation and Fort Apache Indian Reservation. Also new distribution systems and rehabilitation and lining of existing systems for the San Carlos Project; Gila River, Ak Chin (Maricopa), Papago, Salt River, Fort McDowell, and San Xavier Indian Reservations (all included within the Central Arizona Project).
 - (j) Basic recreation facilities in connection with the foregoing.

(k) Fish and wildlife facilities consisting of fish hatcheries, a national wildlife refuge, wildlife management areas, a rough fish eradication program, and other features and programs generally in accordance with the Fish and Wildlife Appendix of January 1964, exclusive, pending further study as outlined in (4) below, of the Trinity and South Fork Trinity River proposals.

(4) Direct the Secretary of the Interior to expedite completion of feasibility reports on the remaining features of the Initial Plan which require further study as follows:

- (a) North Coastal California reservoir storage projects, giving consideration to sites on the Trinity River, South Fork Trinity River, Eel River, and other potential sites;
- (b) Central Valley Project East Side Division enlargement including appropriate participation in measures for protecting and enhancement of the Sacramento-San Joaquin Delta to provide a means of transporting North Coast water to a point of connection on the California Aqueduct enlargement;
- (c) Cedar Springs-Perris Aqueduct to connect the enlarged California Aqueduct to the Metropolitan Water District system;
- (d) Cedar Springs-Hayfield-Imperial Aqueduct to afford another possible connection to the Metropolitan Water District system or to connect the enlarged California Aqueduct to Colorado River water users in the Imperial and Coachella Valleys.

(5) Authorize the Secretary to require provisions for exchange or replacement of existing water supplies, on a basis that avoids injury to present users, in contracts for the supply of supplemental Colorado River water.

(6) Establish a priority planning program for feasibility reports on tributary projects where undeveloped local water supplies are available or can be made available by replacement or exchange, and other projects including potential Indian developments which can utilize the waters of the Colorado River by direct diversion. Similar priority in planning should be accorded to watersheds of origin of import supplies.

(7) Establish a regional water commission modeled to the extent appropriate upon that set forth in Title II of S. 1111 as supported by the Administration and passed by the Senate.

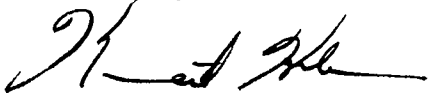
(8) Authorize the Secretary of the Interior to make all necessary agreements needed to effectuate the plan.

The above, together with the enclosures, constitutes my report on the Pacific Southwest Water Plan. I recommend that you approve and adopt this report as your report on the Pacific Southwest Water Plan and that you transmit it to the President and subsequently to the Congress in accordance with the Reclamation Project Act of 1939.

Respectfully,


Commissioner

I concur JAN 21 1964



Assistant Secretary--Water and Power Development

LEGEND: Types of Activity
 Preconstruction Construction

LINE NO.	CLASS AND ACCOUNT	PROGRAM ITEM	QUANTITY	UNIT	ESTIMATED TOTAL	TOTAL TO JUNE 30, 1965	FISCAL YEARS										FISCAL YEARS														
							1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1		FEATURES PROPOSED FOR IMMEDIATE AUTHORIZATION																													
2		MA INSTREAM RESERVOIR DIVISION																													
3		Bridge Canyon Project	1,500,000	K.W.	499,368,000	1,370,000	13,571,000	37,450,000	38,031,000	56,813,000	83,296,000	98,437,000	89,019,000	45,673,000	32,476,000																
4		Oconino Dam and Reservoir	2,100,000	A.F.	11,960,000	295,000							2,000,000	5,000,000	4,665,000																
5		Marble Canyon Project	600,000	K.W.	227,865,000	1,038,000	10,000,000	21,710,000	24,037,000	46,000,000	48,500,000	43,970,000	32,640,000																		
6		Paria Dam and Reservoir	98,000	A.F.	10,759,000	43,000				509,000	2,250,000	4,000,000	3,957,000																		
7		WATER SALVAGE AND RECOVERY																													
8		Groundwater Recovery	220,000	A.F./Yr	38,720,000	329,000						1,280,000	9,685,000	17,985,000	9,444,000																
9		Rhizophyte Control	100,000	A.F./Yr	3,730,000	188,000						276,000	1,072,000	1,477,000	725,000																
10		ARIZONA																													
11		Central Arizona Project 1/	1,200,000	A.F./Yr	506,829,000	5,950,000	6,951,000	16,645,000	91,386,000	95,594,000	77,501,000	63,841,000	58,192,000	42,419,000	25,094,000	11,881,000															
12		Indian Project Distribution	135,040	Acres	19,970,000	-		1,500,000	2,500,000	3,520,000	4,000,000	1,500,000	3,200,000	3,430,000																	
13		CALIFORNIA																													
14		California Aqueduct Enlargement 2/	1,200,000	A.F./Yr	240,000,000	5,000,000	20,000,000	30,000,000	35,000,000	30,000,000	20,000,000	15,000,000																			
15		NEVADA																													
16		Moapa Valley Pumping Project	22,000	A.F./Yr	11,465,000	49,000			1,000,000	3,000,000	4,400,000	3,016,000																			
17		Southern Nevada Water Supply	270,000	A.F./Yr	72,108,000	275,000	700,000	21,657,000	18,334,000	1,585,000																					
18		NEW MEXICO																													
19		Hooker Dam and Reservoir 1/	98,000	A.F.	(28,128,000)	(133,000)					(200,000)	(300,000)	(6,000,000)	(11,500,000)	(9,995,000)																
20		UTAH																													
21		Dixie Project	59,500	A.F./Yr	44,868,000	387,000	394,000	4,875,000	13,532,000	13,945,000	7,974,000																				
22		Indian Irrigation Projects	110,800	Acres	9,675,000	-	1,775,000	2,400,000	2,500,000	1,500,000	1,500,000																				
23		Recreation and Fish and Wildlife	-	-	6,415,000	-		1,000,000	1,415,000				1,000,000	1,000,000																	
24		Subtotal			1,703,760,000	14,913,000	53,361,000	137,237,000	227,735,000	255,469,000	249,651,000	231,324,000	201,765,000	116,980,000	72,404,000	17,201,000	10,000,000	15,000,000	26,000,000	21,000,000	10,000,000	0	0	0	0	500,000	4,500,000	8,000,000	1,672,000	0	0
25		FEATURES REQUIRING MORE DETAILED STUDY																													
26		CALIFORNIA																													
27		Oedar Springs-Perris Aqueduct 3/	550,000	A.F./Yr	205,000,000	-										5,000,000	15,000,000	50,000,000	80,000,000	40,000,000	15,000,000										
28		East Side Division C.V.P. Enlargement	1,200,000	A.F./Yr	250,000,000	-			1,000,000	4,000,000	20,000,000	20,000,000	26,000,000	30,000,000	30,000,000	30,000,000	20,000,000	20,000,000	20,000,000	20,000,000	15,000,000										
29		Trinity River Diversion 3/	600,000	A.F./Yr	373,517,000	-									5,000,000	15,000,000	70,000,000	100,169,000	97,140,000	62,250,000	23,100,000										
30		Oedar Springs-Hayfield-Imperial Aqueduct 3/	650,000	A.F./Yr	350,000,000	-																									
31		South Park Trinity River Diversion 3/	600,000	A.F./Yr	244,140,000	-																									
32		Subtotal			1,422,657,000	-			1,000,000	4,000,000	20,000,000	20,000,000	20,000,000	30,000,000	35,000,000	50,000,000	105,000,000	170,169,000	197,140,000	122,250,000	53,100,000	0	0	0	0	0	0	0	0	0	
33		TOTAL			3,126,417,000	14,913,000	53,361,000	137,237,000	228,735,000	259,469,000	269,651,000	251,324,000	221,765,000	146,980,000	107,404,000	67,201,000	115,000,000	185,169,000	223,140,000	143,250,000	63,100,000	0	0	0	0	500,000	4,500,000	8,000,000	1,672,000	0	0

Notes:
 1/ Hooker Dam is included as part of the Central Arizona Project.
 2/ Allocated portion of estimated joint costs to be borne by Federal Government.
 3/ Adopted tentatively for payment demonstration purposes.
 4/ Drainage facilities - completion date indeterminate.
 5/ Recreation facilities for 100 year operation, completion date indeterminate.

(continued on next page)

Table No. 24
 CONSOLIDATED PAYOUT STUDY - PACIFIC SOUTHWEST WATER PLAN - INITIAL PLAN
 In Thousands of Dollars

Year of Study	POWER									MUNICIPAL & INDUSTRIAL					IRRIGATION					RECAPITULATION - DEVELOPMENT FUND				
	Net Operating Revenue	Interest @ 3%	Interest bearing Unpaid Balance	Investment Plant In Service	Non-interest bearing Unpaid Balance	Investment Plant In Service	Allowable Unpaid Balance	Net Credit to Development Fund	Net Operating Revenue	Interest @ 3%	Unpaid Balance	Plant in Service	Allowable Unpaid Balance	Net Credit to Development Fund	Net Operating Revenue	Unpaid Balance	Plant in Service	Payment from Development Fund	Allowable Unpaid Balance	Power	M&I	Irrigation	Cumulative Net Balance	Year of Study
1968																								1968
1969								456	1,296	43,187	43,187													1969
1970			7,058	7,058				597	1,321	44,027	43,187													1970
1975	270	212	301,864	301,922				819	1,425	80,630	78,460													1975
1980	10,099	9,056	588,627	589,726	72,052	72,052		1,437	2,419	168,323	165,171													1980
1985	23,680	17,659	622,871	629,993	77,460	77,460		3,684	5,050	175,524	171,006													1985
1990	26,337	18,686	643,851	658,624	81,305	81,305		4,216	5,266	184,033	178,465													1990
1995	33,162	19,316	630,005					4,381	5,521	230,765	224,057													1995
2000		18,900	615,743					5,755	6,923	231,933														2000
2005		18,472	601,053					6,078	6,958	232,813														2005
2010		18,032	585,923					6,392	6,984	233,405														2010
2015		17,578	570,339					6,687	7,000	233,720	224,057													2015
2020		17,110	554,287					6,945	7,012	234,403	414,673													2020
2025		16,629	537,754					7,183	12,732	429,952														2025
2030		16,133	520,635					11,029	12,899	431,822														2030
2035		15,619	503,002					17,064	12,955	427,713														2035
2040		15,090	484,840					22,801	12,831	417,743														2040
2045		14,545	466,133					27,799	12,532	402,476														2045
2047		13,984	446,865					31,780	12,074	382,770														2047
Total	3,236,208	351,303	0	658,624	0	81,305	0	1,446,184	294,830	0	540,675	0	610,679	-301,448	0	1,778,200	2,079,648	0	2,144,976	610,679	-2,079,648	676,007	Total	

Table No. 25

CONSOLIDATED PAYOUT STUDY - PACIFIC SOUTHWEST WATER PLAN - IMMEDIATE AUTHORIZATION
In Thousands of Dollars

Year of Study	POWER						MUNICIPAL & INDUSTRIAL						IRRIGATION						Power			
	Net Operating Revenue	Interest @ 3%	Interest bearing Unpaid Balance	Investment Plant In Service	Non-interest bearing Unpaid Balance	Investment Plant In Service	Allowable Unpaid Balance	Net Credit to Development Fund	Net Operating Revenue	Interest @ 3%	Unpaid Balance	Plant in Service	Payments from Development Fund	Allowable Unpaid Balance	Net Credit to Development Fund	Net Operating Revenue	Unpaid Balance	Plant in Service		Payments from Development Fund	Allowable Unpaid Balance	Net Credit to Development Fund
1 1968																						
2 1969																						
3 1970			7,058	7,058																		
4	270	212	301,864	301,922				456	1,296	44,027	43,187											
5	10,099	9,056	588,627	589,728				597	1,321	47,512	45,948											
6	23,680	17,659	622,871	629,993	72,052	72,052		819	1,425	80,630	78,460				154	69,331	69,485					
7 1975	26,337	18,686	643,851	658,624	77,460	77,460		1,437	2,419	168,323	165,171				614	289,722	290,490					
8	33,162	19,316	630,005		81,305	81,305		3,684	5,050	175,524	171,006				649	318,504	319,921					
9		18,900	615,743					4,216	5,266	184,033	178,465				3,617	330,940	335,974					
10		18,472	601,053					4,381	5,521	230,765	224,057				2,753	336,038	343,825					
11		18,032	585,923					5,755	6,923	231,933					2,630	333,408						
12 1980		17,578	570,339					6,078	6,958	232,813					2,603	330,805						
13		17,110	554,287					6,392	6,984	233,405					2,579	328,226						
14	33,162	16,629	537,754					6,687	7,002	233,720	224,057				2,550	325,676	343,825					
15	33,252	16,133	520,635					6,945	7,012	287,695	277,965				2,527	563,274	583,950					
16		15,619	503,002					7,283	8,631	289,043					2,788	560,486						
17 1985		15,090	484,840					7,552	8,671	290,162					2,763	557,723						
18		14,545	466,133					7,835	8,705	291,032					2,739	554,984						
19		13,984	446,865					8,170	8,731	291,593					2,710	552,274						
20		13,406	427,019					8,491	8,748	291,850					2,686	549,588						
21		12,811	406,578					8,822	8,756	291,784					2,661	546,927						
22 1990	33,252	12,197	385,523					9,160	8,754	291,378					2,637	544,290						
23	42,639	11,566	354,450					9,525	8,741	290,594	277,965				2,610	541,680						
24	47,639	10,634	317,445					9,835	8,718	304,571	293,059				2,589	539,091						
25	47,217	9,523	279,751					10,572	9,137	303,136					2,561	536,530						
26		8,393	240,927					11,196	9,040	299,174					2,543	533,987						
27 1995		7,228	200,938					11,465	8,975	296,684					2,493	528,977						
28		6,028	159,749					11,729	8,901	293,856					2,467	526,510						
29		4,793	117,325					12,263	8,816	290,681					2,444	524,066						
30		3,520	73,628					12,574	8,720	287,138					2,417	521,649						
31		2,209	28,620					12,796	8,614	283,228					2,395	519,254						
32 2000		859	0					13,045	8,497	278,929					2,364	516,890						
33		0	0					13,045	8,368	274,252					2,342	514,548						
34	47,217							13,045	8,228	269,435					2,342	512,206						
35	46,629							13,045	8,083	264,473					2,351	509,855						
36								13,045	7,934	259,362						507,504						
37 2005	46,629							13,045	7,781	254,098						505,153						
38	49,487							13,045	7,623	248,676						502,802						
39								13,045	7,460	243,091						500,451						
40								13,045	7,293	237,339						498,100						
41								13,045	7,120	231,414	293,059					495,749						
42 2010								13,045	6,942	240,624	308,372					493,398						
43	49,487							13,045	6,781	234,798						491,047						
44	48,842							13,045	6,614	228,797						488,696						
45								13,045	6,464	222,616						486,337						
46								13,111	6,289	216,249						483,978						
47 2015								13,185	6,082	209,625						481,619						
48								13,281	5,866	202,729						479,260						
49								13,360	5,644	195,530						476,901						
50								13,453	5,407	188,036						474,542						
51								13,539	5,163	180,224						472,183						
52 2020	48,842							13,644	4,908	172,092						469,824						
53	45,332							13,729	4,644	163,611						467,465						
54	44,684							13,848	4,368	154,790						465,106						
55								13,939	4,080	145,586						462,739						
56									3,785	136,015						293,460						
57 2025									3,480	126,156						264,029						
58									2,529	116,002						247,976						
59									2,187	84,315						240,125						
60									1,835	72,905						237,758						
61									1,471	61,153						235,391						
62 2030	44,684	0	0	658,624	0	81,305	0	44,684	1,097	49,049					233,024							
Total	2,494,346	350,188	0	658,624	0	81,305	0	1,404,229	658,787	395,382	0	308,372	44,967	0	0	142,514	0	583,950	441,436	0	0	1,404,229
Total thru 2047	3,253,974	350,188	0	658,624	0	81,305	0	2,163,857	895,750	395,382	0	308,372	44,967	0	236,963	182,753	0	583,950	441,436	0	40,239	2,163,857

(continued on next page)

Table No. 25

CONSOLIDATED PAYOUT STUDY - PACIFIC SOUTHWEST WATER PLAN - IMMEDIATE AUTHORIZATION
In Thousands of Dollars

POWER				MUNICIPAL & INDUSTRIAL						IRRIGATION						RECAPITULATION - DEVELOPMENT FUND							
Original Investment Plant In Service	Non-interest bearing Unpaid Balance	Investment Plant In Service	Allowable Unpaid Balance	Net Credit to Development Fund	Net Operating Revenue	Interest @ 3%	Unpaid Balance	Plant in Service	Payments from Development Fund	Allowable Unpaid Balance	Net Credit to Development Fund	Net Operating Revenue	Unpaid Balance	Plant in Service	Payments from Development Fund	Allowable Unpaid Balance	Net Credit to Development Fund	Power	M&I	Irrigation	Cumulative Net Balance	Year of Study	
7,058					456	1,296	44,027	43,187															1968
301,922					597	1,321	47,512	43,187															1969
589,728	72,052	72,052			819	1,425	80,630	45,948				154	31,478	31,478									1970
629,993	77,460	77,460			1,437	2,419	168,323	78,460				614	289,722	290,490									1975
658,624	81,305	81,305			3,684	5,050	175,524	165,171				649	318,504	319,921									1980
					4,216	5,266	184,033	178,465				3,617	330,940	335,974									1985
					4,381	5,521	230,765	224,057				2,753	336,038	343,825									1990
					5,755	6,923	231,933					2,630	333,408										1995
					6,078	6,958	232,813					2,603	330,805										2000
					6,392	6,984	233,405					2,579	328,226										2005
					6,687	7,002	233,720	224,057				2,550	325,676	343,825									2010
					6,945	7,012	287,695	277,965				2,527	563,274	583,950									2015
					7,283	8,631	289,043					2,788	560,486										2020
					7,552	8,671	290,162					2,763	557,723										2025
					7,835	8,705	291,032					2,739	554,984										2030
					8,170	8,731	291,593					2,710	552,274										Total
					8,491	8,748	291,850					2,686	549,588										Total thru
					8,822	8,756	291,784					2,661	546,927										
					9,160	8,754	291,378					2,637	544,290										
					9,525	8,744	290,594	277,965				2,610	541,680										
					9,835	8,718	304,571	293,059				2,589	539,091										
					10,572	9,137	303,136					2,561	536,530										
					10,900	9,094	301,330					2,543	533,987										
					11,196	9,040	299,174					2,517	531,470										
					11,465	8,975	296,684					2,493	528,977										
					11,729	8,901	293,856					2,467	526,510										
					11,991	8,816	290,681					2,444	524,066										
					12,263	8,720	287,138					2,417	521,649										
					12,524	8,614	283,228					2,395	519,254										
					12,796	8,497	278,929					2,364	516,890										
					13,045	8,368	274,252					2,342	514,548										
						8,228	269,435					2,342	512,206										
						8,083	264,473					2,351	509,855										
						7,934	259,362						507,504										
						7,781	254,098						505,153										
						7,623	248,676						502,802										
						7,460	243,091						500,451										
						7,293	237,339						498,100										
						7,120	231,444						495,749										
						6,942	240,624						493,398										
						7,219	234,798						491,047										
						7,044	228,797						488,696										
						6,864	222,616						486,337										
						6,678	216,249						483,978										
						6,487	209,625						481,619										
						6,289	202,729						479,260										
						6,082	195,530						476,901										
						5,866	188,036						474,542										
						5,644	180,224						472,183										
						5,407	172,092						469,824										
						5,163	163,611						467,465										
						4,908	154,790						465,106										
						4,644	145,586						462,739										
						4,368	136,015						460,372										
						4,080	126,156						457,912										
						3,785	116,002						455,453										
						3,480	84,315						452,994										
						2,529	72,905						450,535										
						2,187	61,153						448,076										
						1,835	49,049						445,617										
						1,471	36,581						443,158										
658,624	0	81,305	0	44,684	13,939	1,097	0	308,372	23,739	0	0	2,367	0	583,950	228,290	0	0	44,684	- 23,739	-228,290	917,826	2030	
658,624	0	81,305	0	1,404,229	658,787	395,382	0	308,372	44,967	0	0	142,514	0	583,950	441,436	0	0	1,404,229	- 44,967	-441,436	917,826	Total	
658,624	0	81,305	0	2,163,857	895,750	395,382	0	308,372	44,967	0	236,963	182,753	0	583,950	441,436	0	40,239	2,163,857	191,996	-401,197	1,954,656	2047	

Pacific Southwest WATER PLAN

**VIEWS and RECOMMENDATIONS of
AFFECTED STATES and FEDERAL AGENCIES
on AUGUST 1963 REPORT**

VIEWS AND RECOMMENDATIONS OF
AFFECTED STATES AND FEDERAL AGENCIES
ON AUGUST 1963 TASK FORCE REPORT
ON THE PACIFIC SOUTHWEST WATER PLAN

This volume contains the views and recommendations of the States and Federal agencies which would be affected by the Pacific Southwest Water Plan, and our analyses of how the comments were accommodated or otherwise considered in the report.

Views and recommendations were received from the following States and Federal agencies:

State of Arizona
State of California
State of Nevada
Upper Colorado River Basin States
 Colorado
 New Mexico
 Utah
 Wyoming
Department of Agriculture
Department of Army
Department of Commerce
Department of Health, Education, and Welfare
Department of Labor
Federal Power Commission

VIEWS AND RECOMMENDATIONS OF
STATE OF ARIZONA
ON AUGUST 1963 TASK FORCE REPORT
ON THE PACIFIC SOUTHWEST WATER PLAN



Office of The Governor
State House
Phoenix, Arizona

PAUL FANNIN
GOVERNOR

November 27, 1963

Honorable Stewart L. Udall
Secretary of the Interior
Washington, D. C.

My dear Mr. Secretary:

Pursuant to the request contained in your letter of August 27, 1963, directed to the Honorable Edmund G. Brown, Governor of the State of California, the Honorable Jack M. Campbell, Governor of the State of New Mexico, the Honorable Grant Sawyer, Governor of the State of Nevada, the Honorable George D. Clyde, Governor of the State of Utah, and to me, as Governor of the State of Arizona, I have reviewed your Report on the Pacific Southwest Water Plan, dated August, 1963, and the Appendix thereto, and have the following comments to make with respect to such Plan.

I agree with the statement contained in your letter that the Pacific Southwest Water Plan is a very ambitious program, entailing many factors which are complex and far reaching, and of great importance to the States of Arizona, California, New Mexico, Nevada and Utah, and, in fact, to this Nation as a whole. It is stated in your Report that very few of the Second Stage Proposals have been studied in depth, and further that only after the regular processes of exhaustive analysis can any of the long-range proposals, set forth in the Second State, be presented for authorization. It follows that such analysis will probably result in modifications, eliminations, additions and substitutions of component parts of the Plan.

The State of Arizona is vitally interested in the Pacific Southwest Water Plan, since this State is at the crisis point in meeting its present demands for water, and since the Central Arizona Project, a project which is so vital to this State that the construction thereof must be authorized and undertaken at the earliest practicable date, is included in the initial phase of such Plan. Furthermore, the needs of the municipalities in Arizona's northern counties for supplemental municipal water are pressing. These needs should be met at the earliest possible date. In some cases these needs can be met through exchange agreements. In every case where exchanges will meet such needs, exchange agreements, arrived at in due course after the pertinent facts are known, should

be encouraged. Projects to meet such of those municipal needs as can be met through exchanges should be authorized as soon as possible after reports thereon have reached feasibility grade. The needs of municipalities adjacent to the River will have to be met by direct diversion projects. Here again, such projects should be authorized as soon as reports thereon have reached feasibility grade.

Arizona has long sought authorization for the construction of the Central Arizona Project. Now that Arizona's title to an appropriate share of the waters of the Colorado River has been determined by the Supreme Court, no excuse whatsoever can exist for any continued delay in authorizing the construction of such project.

The Honorable Carl Hayden has long and ardently sought to secure authorization for the construction of the Central Arizona Project, and has, on occasions too numerous to mention, pointed out the chaos and calamity which this State faces in the event such project is not promptly authorized and constructed. On August 27, 1963, before the Subcommittee on Irrigation and Reclamation of the Senate Committee on Interior and Insular Affairs, he stated very accurately and succinctly, the crux of Arizona's need for a supplemental supply of water. He said:

"A civilization has grown up in Arizona that has added wealth and strength to our Nation. That civilization, as is true in the rest of the Southwest, is based on water. Today that civilization is threatened. Arizona has only one source of water if that productive civilization is to survive -- that source is the Colorado River." (Printed Hearings on S. 1658, page 8.)

There is every reason why the Central Arizona Project should be immediately authorized and constructed. In the June 7, 1963, Supplemental Report of the Bureau of Reclamation on the Central Arizona Project, Mr. A. B. West, Director of Region 3 of the Bureau of Reclamation, makes the following recommendation:

It is recommended that the works comprising the Central Arizona Project be authorized for construction, operation, and maintenance by the Bureau of Reclamation, Department of the Interior, in accordance with the Federal Reclamation Laws (Act of June 17, 1902, and acts amendatory thereof and supplementary thereto) substantially in accordance with the plan of development set forth in the December 1947 Central Arizona Project report as updated by this supplemental report with such modifications, omissions, or additions as the Secretary of the Interior may find necessary and proper for carrying out the purposes of the project." (Supplemental Report, page 12.)

Mr. Floyd E. Dominy, Commissioner of Reclamation, before the Subcommittee on Irrigation and Reclamation of the Senate Committee on Interior and Insular Affairs, on August 27, 1963, testified as follows:

"The appraisal report of January 1962 clearly brought home to State and Federal officials the fact that the need for water in central Arizona was far greater today than in 1947, when the original report was issued, and that, if additional water were not made available to reduce the rate of depletion of

the groundwater resources, economic retrenchment of the area would be inevitable. The appraisal report also showed that, although the costs of the central Arizona project had risen in accordance with the trend of the times, the benefits accruing to the project and the capacity for repayment of costs by the potential water users had risen at a far greater rate due to the growth and development that had occurred in the area." (Printed Hearings on S. 1658, page 40.)

and

"The Central Arizona project is, today, the same project that was outlined in detail in the Bureau of Reclamation's report of December, 1947. Changes have been made in the project plan only as were necessary to take advantage of development during the last decade, and to modify the location and design of project features as required to meet present conditions." (Printed Hearings on S. 1658, page 34.)

and

"I am in my statement making clear that the central Arizona project embraced by Senate 1658, except for Marble Canyon, Bridge Canyon joint financial structure, is identical with what is proposed in the larger proposal, as one stage of the Southwest water plan. The central Arizona project is one of the strong motivations behind any Southwest water plan. It is a basic ingredient of that plan and ought to go forward at the earliest practicable moment.

"It has been held up for 12 years. The matter was critical when we drafted our 1947 report. It has become seriously critical now with over-drafting of ground water and the only thing that can prevent catastrophe in the Southwest is a real statesmanlike approach to the water problem and the support of the Federal Government in financing it, strictly on a reimbursable basis." (Printed Hearings on S. 1658, page 37.)

and

"From an economic and financial standpoint the present analysis of the central Arizona project shows it to be one of the very best investigated by the Bureau of Reclamation in recent years. The estimated project construction costs subject to allocation to various functions of some \$997 million, with an annual operation maintenance, and replacement cost of \$8,611,000, will generate about \$125 million worth of benefits annually. This results in a very favorable benefit-cost ratio of 3.03 to 1. The benefit-cost ratio in 1947 was only 1.63 to 1, which shows the

project is economically more favorable today than it was 15 years ago, largely because of the changed economic conditions including the increased value of water in the area. However, the present analysis also reflects current procedures set forth by Senate Document 97." (Printed Hearings on S. 1658, page 47.)

The conclusion that you agree that the Central Arizona Project should be constructed without delay finds ample support in the Pacific Southwest Water Plan. At page 1 of the summary of such Report it is stated:

"Arizona urgently needs more water, without which it will face a slowly withering economy as the ground-water bank account shrinks."

and

"Central Arizona for many years has sought to supplement locally available water supplies with Colorado River water. The most recent plan to furnish supplemental water is known as the Central Arizona Project which was developed by the Bureau of Reclamation and published in H.D. 136, 81st Congress, 1st Session. In recent years, the plan has been updated to reflect current costs and conditions. Arizona sought to have the Central Arizona Project authorized more than a decade ago but was forestalled in its attempts to obtain Congressional authorization because of the conflicting claims of the States of the Lower Basin to the use of the waters available from the Colorado River. During the last decade the population of Arizona has doubled and the metropolitan areas of Phoenix and Tucson have grown more than twice as fast as the State as a whole. The water needs of the area have grown proportionately and now far exceed the water supplies available locally." (Page 11-10 of such Report.)

The Central Arizona Project, if constructed today, would fit into the Pacific Southwest Water Plan, and could well be the initial project under such Plan. It would not result in any disruption of the Pacific Southwest Water Plan in the event of the eventual adoption of such Plan and the construction of the worthy and feasible projects included in the initial phase thereof. Neither would it result in any increased cost in the construction of the several projects included in such phase.

You announced the Pacific Southwest Water Plan on the day prior to the commencement of the hearing on S. 1658 before the Subcommittee on Irrigation and Reclamation of the Senate Interior and Insular Affairs Committee on August 27, 1963. In commenting at the hearings, Senator Hayden stated in respect of such Plan:

"I shall be among the first to give earnest consideration to the Interior Department's Pacific Southwest Water Plan. I shall vote to authorize all of those elements of that plan which are meritorious and sound. Such plan, however, shall not be used as an instrument for delaying authorization of

of the central Arizona project..." (Printed Hearings on S. 1658, page 8.)

In respect of S. 1658, the bill introduced by the Honorable Carl Hayden and the Honorable Barry Goldwater to authorize the Central Arizona Project, much has been said about including language providing for a Basin Account. Arizona is in accord in principle with this suggestion. As long ago as May 6, 1960, in a letter to Commissioner Dominy, written in connection with discussions to be held on proposals to re-negotiate Hoover Dam power contracts, I stated:

"The State of Arizona is not opposed to the re-negotiation of existing contracts relating to production and purchase of electrical energy generated at Hoover Dam power plants, provided, however, that rates to be charged therefor shall include a maximum component sufficient, consistent with the marketability of power, to produce revenues wherewith to pay in whole or in substantial part project costs allocated to irrigation beyond the ability of irrigation water users to repay, all in accordance with the established policy of the federal Reclamation Law."

Thus, I have consistently favored the Basin Account approach.

On the 3rd day of May, 1963, you directed a letter to the Honorable Henry M. Jackson, Chairman of the Senate Committee on Interior and Insular Affairs, in which you recommended the enactment of the bills authorizing the construction of the Dixie Project, on condition that certain amendments to the authorizing bills be made. The Dixie Project is one of the projects included in the initial phase of the Pacific Southwest Water Plan. The Honorable Kenneth Holum, Assistant Secretary of the Interior, while testifying at Senate hearings on such Project on May 7, 1963, stated:

"Mention of the problems of the whole area is germane to a discussion of the Dixie project because this is a meritorious unit that can and should be authorized and constructed, whether the authorization is accomplished by special legislation as a separate participating project or as part of a more comprehensive authorizing act that addresses itself to the total problems of the region." (Printed Hearings on S. 26 and S. 655.)

On October 21, 1963, the full Senate Committee on Interior and Insular Affairs reported favorably on the Dixie Project Bill. Included in such bill was provision for financial assistance from a Basin Account. It is reasonable that this State should expect the same departmental support with respect to the Central Arizona Project and S. 1658 as was accorded the Dixie Project.

Included as elements in the initial phase of the Pacific Southwest Water Plan are Bridge Canyon Dam and Marble Canyon Dam and power plants on the main stream of the Colorado River, including transmission and appurtenant facilities. As you are aware, the Arizona Power Authority has pending before the Federal Power

Commission an application for a license to construct a dam and power plant at Marble Canyon damsite. On September 22, 1962, addressing the Arizona State Reclamation Association, I said and I now reiterate:

"There is one overriding principle by which I am guided in all of this, and I think it should be the principle by which every Arizona citizen is guided.

"Water is Arizona's most important resource. It is a limiting factor upon growth in every part of the State. It is a particularly critical problem in that part of the State where people, agriculture and industry have been concentrated to such an extent that available supplies cannot be depended upon to maintain the present economy."

If the inclusion of Marble Canyon in a separate Central Arizona Project, or in any other plan to bring additional water into Arizona will facilitate and result in the early authorization and construction of the Central Arizona Project, then this State should agree to the inclusion of such damsite in such Central Arizona Project, or in any other plan that will produce such result.

Arizona must look for water beyond the 1,200,000 acre-feet of water planned for her under the initial phase of the Central Arizona Project if her economy is to be preserved. In the future, other sources of water for use in this State must be developed. The second phase of your Plan suggests a number of ways and means by which additional water can be developed for use in Arizona. Particularly do I urge you to proceed as promptly as possible to give consideration to every means for developing additional water for use in Arizona, in addition to that which would be provided through the authorization and construction of the Central Arizona Project.

Arizona does not concur in the estimate of water supply contained in the Pacific Southwest Water Plan. Arizona's estimate of the future water supply available in the main stream of the Colorado River is much higher than that presented in the Report. I feel that there would be little to be gained by a discussion by me of the technical aspects of figures as to water supply. This problem was debated at great length during the trial phases of the Arizona v. California, et al., litigation. The Special Master concluded in his Report of December 4, 1960, on page 103:

"The evidence in this case simply does not permit a prediction of future Lower Basin supply with that refined degree of accuracy necessary to show whether existing California uses can be satisfied from the percentage of future supply apportioned to California. On the contrary, the mass of evidence which has been presented shows only that the science of hydrology is not capable of sustaining a prediction accurate enough to shed light on this question."

However, in this instance it is significant that regardless of which forecast of future stream flow be adopted as a premise it is obvious that for many years there will be not only a firm supply of 7,500,000 acre-feet available to the Lower Basin, but also a substantial amount of water in addition, particularly

after Upper Basin reservoirs are filled. Arizona's need for water is so great that Arizona's share of these waters should not be permitted to go unutilized in Arizona even on an interim basis.

If it becomes necessary at some future time to reduce diversions, the problem which must be faced at that time would be no worse than, or for that matter, no different from the problem that must be faced immediately in the absence of such increased diversion. Furthermore, the likelihood of a need for such decreased diversions is reduced in light of proposed water salvage and groundwater recovery projects in Phase I, and of the prospect of Phase II of the Pacific Southwest Water Plan.

Arizona is a pioneer in reclamation and its representatives and officials throughout the years since the principle of reclamation was adopted, have advanced and cooperated in the development of every feasible reclamation project and have, on many occasions, assisted her sister states in acquiring reclamation projects which brought relief to those states, but which to Arizona had little or no significance, except on the broad basis that what is good for one state of this Nation is good for all.

I have no comment to make with respect to the scaling down or the elimination of any of the projects embraced within the initial phase of the Pacific Southwest Water Plan. Whether to construct those projects constituting a part of such Plan and lying beyond the boundaries of this State should be determined by the respective officials of the states in which such projects are located and the Department of the Interior, so long as such projects do not adversely affect any rights of this State. In this connection, however, it is my opinion that the desalting plant which, under the Plan would be constructed on the seacoast in Southern California would be in the nature of research rather than reclamation and I doubt that the cost of any such plant should be construed to be a cost of reclamation. The desalination of water is a matter important to every citizen of the United States and not alone to those residing within the Pacific Southwest.

The Pacific Southwest Water Plan should be further developed and further studies made of the Projects and elements thereof insofar as such studies do not delay construction of the Central Arizona Project.

As you stated on pages VIII-1 and VIII-2 of your Report on the Pacific Southwest Plan:

"The Pacific Southwest Water Plan provides the framework under which projects to provide for present and future needs may be coordinated and constructed with proper timing. Many of the presently planned projects, such as Central Arizona, California Aqueduct Enlargement, Southern Nevada, Dixie, and the water salvage and conservation projects, must be initiated now in order to provide for urgent needs, while other features of the proposed plan may be initiated at later times to satisfy anticipated future demands. Timing is an important aspect of the plan because of the long period that must elapse between authorization of projects of this magnitude, and the time that water is made available. Each separate project must be started in sufficient time to permit the delivery of water when needed."

Honorable Stewart L. Udall

Page 8

Arizona's view, with respect to any program for the development of additional water resources in the Southwest , must be and is that such program shall provide relief to Arizona and to her sister states. Arizona and its cities and towns cannot continue to maintain their present economy, much less prosper and grow , unless supplemental waters are immediately provided.

We are running out of water and we are running out of time.

You may be assured that it is my wish to work with you on what, to me, is the greatest problem facing Arizona and the Pacific Southwest today. I trust that we may go forward with unity in a common search for a solution to this problem.

Sincerely,

A handwritten signature in cursive script that reads "Paul Fannin". The signature is written in dark ink and is positioned above the printed name.

Paul Fannin

Discussion of Comments of the State of Arizona

Authorization of the Central Arizona Project is currently being sought in the Congress by the State of Arizona. A Bureau of Reclamation report demonstrating the financial and engineering feasibility of this project is attached as supplemental information supporting the report on the Pacific Southwest Water Plan. This project is included without change in the principal physical works involved for immediate authorization as an integral part of the Initial Pacific Southwest Water Plan which provides at the same time for the establishment of the Pacific Southwest Development Fund and for incorporation of this project in the Plan. Thus, the Pacific Southwest Water Plan is a vehicle designed for the early authorization of the Central Arizona Project and a limited number of other worthy projects in the Pacific Southwest.

The report recognizes the pressing needs of the municipalities in Arizona's northern counties for supplemental water. It proposes a priority planning program for the preparation of feasibility reports on such projects so that the Congress may consider authorization measures as early as possible. The report also recognizes the need for water exchange agreements that will be necessary to provide a water supply for many such projects and proposes that the Secretary of the Interior be authorized to require such agreements in contracts for supplemental water.

The report recognizes that the Initial Pacific Southwest Water Plan will only partially meet Arizona's present deficiencies of water supply. A major objective of long-range planning will be to develop additional water supplies to erase Arizona's present deficiencies and meet its growing water needs as well.

The desalting plant has been eliminated from the Initial Plan with the expectation that research in desalting techniques will be carried forward aggressively under other Federal-State programs.

VIEWS AND RECOMMENDATIONS OF
STATE OF CALIFORNIA
ON AUGUST 1963 TASK FORCE REPORT
ON THE PACIFIC SOUTHWEST WATER PLAN

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA



COMMENTS OF THE STATE OF CALIFORNIA
ON THE
"PACIFIC SOUTHWEST WATER PLAN"

December, 1963

EDMUND G. BROWN
Governor
State of California

WILLIAM E. WARNE
Director
Department of Water Resources

RALPH BRODY
Chairman
California Water Commission

M. J. DOWD
Chairman
Colorado River Board

WALTER T. SHANNON
Director
Department of Fish and Game

DeWITT NELSON
Director
Department of Conservation

CHARLES DeTURK
Director
Department of Parks and Recreation

HUGO FISHER
Administrator
The Resources Agency of California

KENT SILVERTHORNE
Chairman
State Water Rights Board

IRVING GOLDFEDER
Chairman
State Water Quality Control Board

S. W. KRONICK
President
State Reclamation Board

THE RESOURCES AGENCY OF CALIFORNIA

COMMENTS OF THE STATE OF CALIFORNIA
ON THE
"PACIFIC SOUTHWEST WATER PLAN"

December, 1963

EDMUND G. BROWN
Governor
State of California

HUGO FISHER
Administrator
The Resources Agency of California

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EDMUND G. BROWN
GOVERNOR

State of California

GOVERNOR'S OFFICE
SACRAMENTO 95814

Honorable Stewart L. Udall
Secretary of the Interior
Washington, D. C.

Dear Mr. Udall:

I am pleased to transmit, as requested, the official comments of the State of California on the Pacific Southwest Water Plan as proposed by your office last August.

These comments were prepared by the Resources Agency which, through a special task force, reviewed the plan and prepared the suggested additions and deletions.

I would call to your attention the fact that each of the recommendations deals with the question of *how* to achieve a truly regional approach to the water problems of the Pacific Southwest and that none raises the question of whether it should be done.

I endorse these recommendations. I also commend you for taking the initiative in moving toward a regional concept for the development of water resources in the Pacific Southwest.

Sincerely

A handwritten signature in cursive script that reads "Edmund G. Brown".

EDMUND G. BROWN, Governor



THE RESOURCES AGENCY OF CALIFORNIA
STATE CAPITOL, SACRAMENTO

December 3, 1963

The Honorable Edmund G. Brown
Governor of California
State Capitol
Sacramento, California

Dear Governor Brown:

At your request, the Resources Agency of the State of California has reviewed the proposed report of the Department of the Interior entitled "The Pacific Southwest Water Plan," and at your instruction has drafted California's official comments on the Plan.

In preparing those comments, the Resources Agency established an agency-wide task force, under the chairmanship of Mr. Wesley Steiner, which has carefully considered the views of all public and private agencies which are involved in water development in California. All official comments by the various departments, boards and commissions of State government have been collected and will be forwarded to you under separate cover as an appendix to the enclosed comments.

One over-riding impression emerges from the Agency's review: The major water needs of the Pacific Southwest can be met only by a regional plan. We believe Secretary of the Interior Stewart Udall is to be commended for advancing the regional concept in such a bold and imaginative manner. We believe that his proposal marks a starting point for which the southwestern United States will one day be genuinely grateful.

Our comments include both recommendations for major changes in certain elements of the Secretary's proposal and for inclusion of necessary additional elements not covered in the initial proposal. In my judgment the plan, if modified to incorporate California's suggested additions and modifications would provide a sound basis for future water development in the Pacific Southwest.

The comments prepared by the Resources Agency are transmitted herewith and it is my recommendation that you adopt them as the official comments of the State of California for transmittal to the Secretary of the Interior, pursuant to the Flood Control Act of 1944 (58 Stat. 887).

Very sincerely yours,

A handwritten signature in cursive script that reads "Hugo Fisher".

Administrator

COMMENTS OF THE STATE OF CALIFORNIA ON THE "PACIFIC SOUTHWEST WATER PLAN"

A PROPOSED REPORT BY
THE UNITED STATES DEPARTMENT OF THE INTERIOR
(August, 1963)

INTRODUCTION

By letter dated August 26, 1963, the Honorable Stewart L. Udall, Secretary of the Interior, transmitted to the Governor of the State of California the proposed report of the Department of the Interior, entitled "Pacific Southwest Water Plan," dated August, 1963. The proposed report was transmitted for the views and recommendations of the State of California, in accordance with provisions of Section 1(c) of the Flood Control Act of 1944 (58 Stat. 887).

The Governor assigned the task of coordinating review and preparing the official state comments on the Pacific Southwest Water Plan to the Administrator of the Resources Agency. In recognition of the extraordinary nature of the Report and the need for unusual review procedures, a special review task force was established in each of the constituent departments and boards of the Resources Agency affected by the proposed plan. Comments were also requested from the Department of Justice, Division of Highways, State Lands Division, and Department of Public Health. An overall agency review committee, comprised of representatives from each of the affected departments and boards of the Resources Agency, was formed to review all comments on the Plan received by the Governor and the Agency, including those received from legislative committees, local government, water agencies, and interested associations and citizens. The Agency Review Committee was also charged with drafting the official state comments.

The California Water Commission received information at its September 6 meeting and thereafter held two public hearings on the Pacific Southwest Water Plan. At the first of these hearings held in Sacramento on October 18, Secretary Udall appeared before the Commission and water leaders from throughout the State to explain the Plan and to respond to questions directed to him by members of the Commission. At the second hearing on November 1, agencies and associations interested in water development in California submitted oral and written statements regarding the Plan. Major objections to the Plan expressed at the November 1 meeting were summarized and presented along with the Commis-

sion's conclusions and recommendations in a report to the Governor, dated November 22, 1963. The Commission found the Pacific Southwest Water Plan unacceptable to California agencies in present form, but concluded that a regional program is desirable and suggested an alternate plan.

The Senate Fact Finding Committee on Water Resources and the Assembly Interim Committee on Water held a joint hearing on October 31 to receive testimony from representatives of the Department of the Interior and the Department of Water Resources. The Senate Fact Finding Committee on Water Resources adopted a resolution on November 1 urging that the Plan be rejected. The Assembly Interim Committee on Water on November 8 released a committee report urging that no commitment to the Plan be made without the express approval of the Legislature.

On November 12, the Governor held a conference in Sacramento to consider the impact of the United States Supreme Court's decision in *Arizona v. California* and alternative solutions to the water supply problems which this decision poses for California. Representatives of the agencies directly affected by the Court's decision and water leaders from throughout the State presented oral and written statements. While the majority of those who commented, did not support the regional plan in the form proposed by the Secretary, they did, nevertheless, acknowledge the desirability or necessity of a regional approach to solution of the water problems of the Pacific Southwest.

The instant report, prepared by the Resources Agency of California after careful review of all comments submitted to the Governor, the Resources Agency, the Department of Water Resources and the Water Commission, constitutes the comments of the State of California on the Pacific Southwest Water Plan pursuant to the Flood Control Act of 1944 (58 Stat. 887), and the major recommendations of the Department of Fish and Game pursuant to the Fish and Wildlife Coordination Act, 60 Stat. 1080 (1946).

GENERAL CONSIDERATIONS

Secretary Udall, both in his letter to the Governors of the affected states, and before the California Water Commission in Sacramento on October 18, advised that he had made no final judgments concerning the component parts of the Plan, and that it had not been submitted on a "take it or leave it basis" but rather with the hope that it would stimulate constructive thinking and criticism.

California's comments are offered in full appreciation of the spirit of the Secretary's request. We view Secretary Udall's regional concept as a bold, imaginative, and creative contribution to solution of water problems faced by California and her sister states of the Pacific Southwest. California, nevertheless, believes that the proposed plan of development does not fully meet the Secretary's own stated objectives and raises new problems for states and areas of origin which have not been adequately recognized or dealt with in his proposed report. Our suggested additions to and modifications of the Report are advanced as constructive criticisms in furtherance of our conviction that regional planning holds the key to resolution of the water problems of the entire west.

The shortcomings of the Plan do not negate the basic concept that regional planning for water development is both desirable and necessary. All of the states of the Region have in common the problem of water deficiency. Now is the time when we must consider a regional approach to water development to meet this problem.

As shown by the California Water Plan, the State has long recognized that the water supplies available within the Pacific Southwest (as defined in the proposed Plan) are inadequate to meet expanding demands and that the importation of new supplies would be essential to continued economic development of the Region. Thus, the initial features of the State Water Project, now under construction, include facilities to bring water from Northern California into Southern California.

We believe that solution of the regional water problem is beyond the financial ability of the individual areas and states and endorse federal implementation of the regional planning and development fund concept, provided the modifications in principle and plan proposed in the recommendations that follow are adopted.

SUMMARY OF RECOMMENDATIONS

The four essential elements of a regional program which must be established initially are: (1) the philosophy and principles that will govern formulation and operation of the regional program, including use of the Regional Development Fund; (2) the projects to be initially authorized as the first phase so that immediate problems of shortage can be relieved; (3) a comprehensive federally financed study of all potential sources of new water supply for the Region; and (4) a Regional Water Commission, which would have as one of its major functions the guidance of the comprehensive study.

Based upon this concept, we make the following recommendations:

1. Rather than providing a direct subsidy to municipal and industrial water users, the Pacific Southwest Development Fund should be used to fund the following three basic guarantees:

- a. A guarantee that a basic supply, which permits a beneficial consumptive use of 7.5 million acre-feet per annum, will be maintained in the Region and will be available to the States of Arizona, Nevada, and California, either in the Colorado River or from other sources at costs not in excess of what the costs would have been from the Colorado River, with the annual beneficial consumptive use of 7.5 million acre-feet to be divided 4.4 million acre-feet to California, 2.8 million acre-feet to Arizona, and 0.3 million acre-feet to Nevada.
- b. A guarantee that costs of water development in the areas of origin will not be greater than they would have been had there never been an export from these areas under the Pacific Southwest Water Plan.
- c. A guarantee that costs of water development to users within the states of origin will not be increased because of effectuation of the Plan.

2. Use of the Pacific Southwest Development Fund should be extended so as to afford the areas of origin of such imported water supplies the same opportunities for financial assistance as are to be provided the tributary areas of the lower Colorado River. The Pacific Southwest Region should be extended, with all attendant benefits, to include those areas which contribute water for operation of the Plan.

3. A Regional Water Commission should be established, composed of representatives of the federal government and the governments of the affected states, to advise concerning the development of the Region and to coordinate regional project planning. Federal approval of this commission should be sought and the California Legislature should be requested to authorize participation by the State of California. California recommends that the Secretary of the Interior call an early conference of the governors of the west-

ern states to consider establishment of such a commission.

4. Phase I should be modified to (a) exclude the second 1.2 million acre-foot enlargement of the California Aqueduct from Wheeler Ridge to Pearblossom as it prematurely and unnecessarily commits the Plan to an exportation to Arizona of water from Northwestern California; (b) exclude the 50-million gallon-per-day sea-water conversion plant, providing, however, that a combination desalting and power generation plant, using a nuclear reactor as a heat source be financed and constructed immediately as a part of some general federal program with the State Department of Water Resources cooperating; (c) exclude the unidentified tributary projects in Arizona, New Mexico, and Utah; (d) include the two Trinity River projects, or appropriate alternatives with the qualification that construction not be initiated until completion of feasibility studies and review by the State; and (e) include the lining of canals in the Imperial and Coachella Valleys.

5. The Congress should be requested during the 1964 session to appropriate investigation funds for initiation of cooperative planning studies essential to formulation of Phase II, including a thorough and comprehensive investigation of all potential sources of new water for the Region. In this investigation, sea-water and brackish water conversion, waste water reclamation, watershed management, and importations from the Pacific Northwest, Northwestern California, and other areas of surplus should be considered as potential sources of new water for the Region.

6. The Plan at all times should be designed to provide for integrated development of water and all other related resources in accordance with the Presidential memorandum of May 15, 1962 (SD 97).

7. Watershed management and protection should be planned and undertaken as an integral part of the Plan. Where the primary beneficiaries of watershed management programs cannot be identified and isolated, the Development Fund should bear the costs. Financial assistance also should be provided from the Development Fund for support of basic data acquisition programs needed to meet management objectives.

8. A five-year cooperative federal-state investigation should be authorized and initiated with federal financing to develop a basic fish and wildlife protection and enhancement program for inclusion as an integral part of the Plan.

9. Fish, wildlife, and recreational water requirements along the Colorado River in excess of those recognized in the Plan should be considered as new demands on the regional water supply, and be included as a part of the program for fish, wildlife, and recreation.

10. Fish, wildlife, recreation and watershed management and protection features and programs found to be justified as a result of studies proposed for immediate initiation in the Report should be constructed or instituted concurrently with other features of the Plan.

11. The "Lower Colorado River Land Use Plan" should be subjected to early federal and state review so that worthy components may be incorporated in the regional plan.

12. Authorization should include the proposed ground water recovery and water salvage (phreato-phyte control) programs contingent, however, upon the submission of detailed plans for each component part or subunit to the affected states for review and approval.

13. The Plan should deal with the water quality, fish and wildlife, and sea-water intrusion problems of the Sacramento-San Joaquin Delta, and should provide for (a) establishment of a minimum outflow from the Delta for sea-water repulsion, in accordance with findings of joint committees now at work in the Delta; (b) additional outflow found necessary to meet the needs of fish, wildlife, recreation, and public health by the United States Public Health and Fish and Wildlife Services; (c) concurrent construction of the Delta facilities to be jointly recommended by the United States Bureau of Reclamation, the United States Army Corps of Engineers, and the State; and (d) early completion of studies of the Kellogg Project so that, contingent upon favorable findings and compatibility with the physical works recommended in (c) above, said project may be authorized and constructed as a feature of the Central Valley Project concurrently with implementation of the Plan.

14. Federal participation in enlargement of the California Aqueduct must be restricted to financing, subject to appropriate repayment arrangements, so that the State would continue to be able to meet its responsibilities to its own water supply contractors for the design, construction, operation, and extension of the California Water Facilities. The State must retain the exclusive responsibility for marketing all waters transported through the aqueduct for sale in Southern California, and must not be required to compete with the United States in the State's service area. Likewise, the water produced from any salt-water conversion plant for use in that area must be marketed by the State through its operation of the State Water Project.

15. The extent of financial participation by the United States in enlargement of the California Aqueduct must be determined in accordance with the proportionate use formula of Article 24(b) of the State's Standard Provisions for Water Supply Contracts.

16. Every effort should be made to obtain authorization of financing of enlargement of the California

Aqueduct from Wheeler Ridge south through the Tehachapi Mountains to Perris Reservoir during the next session of the Congress, but no later than July 1964.

17. Intensive studies should be initiated immediately by Region 2 of the Bureau of Reclamation, in cooperation with the Department of Water Resources to further examine alternative conveyance from the Delta to Wheeler Ridge, with particular emphasis on the proposed Eastside Division of the Central Valley Project.

18. Consideration should be given to extension of the water and financing pool concept to include the creation of a power pool into which the Pacific Northwest Intertie and federal or state steam generation might be integrated to meet project pumping needs.

19. Power rates should be the subject of continuing consideration as project pumping loads and financial requirements become better defined.

20. Contracts of the Metropolitan Water District of Southern California for energy generated at Hoover Dam and Parker Dam powerplants should be amended to permit transfer of energy no longer required for pumping on the Colorado River Aqueduct to the State for use in pumping the Metropolitan Water District's state water supply through the California Aqueduct with a consequent cost benefit to the Metropolitan Water District.

21. Regional water requirements and supply should be subjected to a continuing cooperative study by the federal government and the affected states, such study to be initiated immediately and to be continued as the program unfolds. This continuing analysis might include reference of the water supply issue to the United States Geological Survey or to a special board of consultants for an impartial determination of the present and anticipated supplies, both surface and ground water, available in the Lower Colorado River Basin.

22. Water quality management must be an integral part of the scheme of operation of any regional water program. Specific planning following authorization should encompass water quality management studies and include evaluation of specific costs for necessary physical control, maintenance, and monitoring of salt balances throughout the Lower Colorado River Basin.

23. Recognition should be given to the fact that water salvaged through the lining of canals, laterals, and improved farm practices can be used in the areas in which the salvage occurs, may be necessary to sustain the economies of those areas, and may be water to which those areas are already legally entitled.

24. Consideration should be given to the possibility that water conservation programs proposed in the plan might adversely affect the Salton Sea as a fishing and recreational area.

DISCUSSION AND FULL RECOMMENDATIONS

Adoption of the additions and modifications proposed herein would provide, we believe, a proper and equitable basis for establishment of a regional development fund, implementation of a first stage of regional development, and for future expansion of the regional program to include additional phases of development and other areas of the West.

The modifications proposed in Items 1 through 4, which follow, are advanced, fully recognizing that the financial feasibility of a regional program that embraces the concepts set forth herein, is dependent upon many factors which either are not now fully determined or resolved. These factors include such inescapable issues as the physical availability of water from the Colorado River, the source of additional supplies for the region and resulting construction costs, the rate of build-up of water demands, the rates to be established for water and power sales, and the sources of financing. For example, we believe that the forecasts of Colorado River mainstream water supply, upon which the Secretary has based his proposed program for development of new water supplies for the Region, are overly optimistic.

The forecasts used by the Secretary indicate the annual availability of approximately 1.0 million acre-feet more water than do water supply studies of the State of California. It appears that both of our studies employ the same legal assumptions concerning the Colorado River Compact i.e., that the Upper Basin may continue to develop and increase its annual rate of depletion of flow of the Colorado River subject to the Compact limitation of 7.5 million acre-feet per annum of beneficial consumptive use, and to the Compact requirements that the Upper Basin release to the Lower Basin 75 million acre-feet in any consecutive ten year period (only a portion of which is available for consumptive use in the Lower Basin), and that the Upper Basin share with the Lower Basin the burden of meeting Mexican Treaty requirements in the event that these requirements cannot be met from surpluses.

In the analyses of both the Department of the Interior and the State of California, the availability of Colorado River water to the three Lower Basin states was forecast to year 2000. In both cases the average annual supply released by the Upper Basin exceeded at all times a level of 7.5 million acre-feet plus one-half of the Mexican Treaty requirement ($7.5 + 0.75 = 8.25$ million acre-feet per annum). Hence, in neither case, for the period studied, was it necessary to assume a legal interpretation of Article III(c) of the Colorado River Compact, concerning the relative responsibilities of the Upper and Lower Basins in meeting water requirements of the Mexican Water Treaty.

Every major decision in the history of the Colorado River has been based upon over-optimism as to the water supply of the river. Nothing in the current

studies justifies repeating this error. Obviously, the magnitude of water supply assumed to be available to the Region in the Colorado River will have a material effect on the quantity of new water to be developed and the resulting cost of the program. Similarly, there are numerous sources of new water for the Region, all at varying costs. These sources of supply include sea-water conversion, water salvage, waste water reclamation, and importation from Northern California, the Pacific Northwest, or some other area of surplus. The other factors cited above as influencing financial feasibility of the program are by their very nature speculative at this stage of program development.

Despite the above areas of doubt, we believe that the program principles of the additions and modifications we propose are equitable and should guide any choices among the various alternatives. We, therefore, recommend that the Department of the Interior and the affected states develop cooperatively, for submission to the Congress for authorization, a regional program which encompasses the following principles and modifications in the plan of development.

1. Municipal and Industrial Water Users Pay Full Costs. The Secretary proposes the use of a substantial portion of the Pacific Southwest Development Fund to directly subsidize the cost of municipal and industrial water supplies. In general, under the Reclamation program municipal and industrial users have been required to repay at least the allocated costs of providing their supplies, together with interest on the unpaid balance, and frequently have been required to pay in excess of these costs to provide assistance to irrigation users. Under any of the modes of allocation in common use, it seems that the municipal and industrial users in the Pacific Southwest Region would be able to pay their share of the costs of the facilities proposed in the Report.

These allocations, however, cannot be made in the abstract without regard to the rights of the three states to waters of the Colorado River for such an allocation would, in effect, deny the existence of such rights. As a means of providing recognition of the rights of the three states, it is recommended that in lieu of a direct subsidy to municipal and industrial water users, the Development Fund be used to fund the three basic guarantees discussed in the succeeding paragraphs.

2. Guarantee of Basic Supply of 7.5 Million Acre-feet. One of the primary objectives of the Secretary's regional proposal is to bring to an end the long period of distrust and conflict over rights to water in the Lower Colorado River Basin by uniting the opponents in support of a program that would eliminate

controversy by providing water for all economically justified demands within the Region.

The Supreme Court of the United States concluded, in *Arizona v. California*, 373 U.S. 546 (1963), that the Congress, in authorizing the Boulder Canyon Project, had vested in the Secretary of the Interior authority to apportion the water of the Lower Colorado River in the event that the annual supply is less than 7.5 million acre-feet. By making additional water available to the Region, the Plan as proposed might forever obviate the need, from a water supply standpoint, for the Secretary of the Interior to exercise this authority. Nevertheless, from a financial standpoint, the proposed program is inadequate because the Secretary would still have to define the relative rights of the three Lower Basin States in the event of shortage on the main stream of the Colorado River, if he were to allocate properly the costs of the more expensive imported supplies.

Certainly the era of conflict over rights in the Lower Colorado River will persist, if the Secretary of the Interior is not relieved of the necessity of exercising his responsibility to apportion shortages of supply of the Lower Colorado River for either reason. The Secretary's proposed program would only shift the conflict from water supply to water project financing.

Hence, it is our recommendation that the Plan be modified to provide for inclusion of a guarantee to the states of Arizona, Nevada, and California, that a basic supply which permits a beneficial consumptive use of 7.5 million acre-feet per annum will be maintained in the Region and will be available to the three states either in the Colorado River or from other sources at costs not in excess of what the costs would have been from the Colorado River.

The 7.5 million acre-feet available to the Region would be divided among the states, in accordance with the opinion of the Court in *Arizona v. California*, *supra*, as follows: California, 4.4 million acre-feet; Arizona, 2.8 million acre-feet; and Nevada 0.3 million acre-feet. Should any state, in the interest of development of the optimum regional program reduce its use from the Colorado in order to permit another state to use the Colorado, an equivalent substitute supply must be made available to the state relinquishing its use of the Colorado. The cost of the substitute supply to the relinquishing state must not exceed the cost to it of its Colorado River supply. The substitute supply, must, of course, not only be equal to the Colorado River relinquishment in quantity, but must also be at least equal in quality and dependability.

A portion of the Development Fund must be dedicated to guarantee the continuous provision of a basic supply of 7.5 million acre-feet per year to be divided among the three Lower Basin States.

The guarantee we require does not replace the supplies California has lost above the basic 4.4 million acre-feet. California is now using about 5.1 million acre-feet per year of Colorado River water, and by this guarantee we recognize that California may eventually be required to reduce its uses from the Colorado to 4.4 million acre-feet, in strict accordance with the California Limitation Act.

We propose the guarantee as an instrument to insure the states of the Lower Colorado River Basin enjoyment of the amount of water to which the Court says each is entitled. Without this kind of a guarantee *all Lower Basin States* face an eventual physical shortage below their theoretical entitlements if one postulates the adoption of the Special Master's formula of apportioning shortages.

3. Guarantee of Protection for Areas of Origin. It is proposed in the Report that areas of present surplus, the so-called "areas of origin" within the states, and the states of origin themselves, be afforded the protection of legislative policies analogous to those recently adopted by the Congress for the New Melones Project in California, authorized by the Flood Control Act of 1962, 76 Stat. 1173.¹ The Plan would provide, then, that exportations of water from areas of present surplus to areas of deficiency would be subordinate to all existing and *anticipated* future needs in the areas and states of origin.

California must reject the New Melones provisions as inadequate. California's goal is twofold: (1) exports from the areas and states of origin must not deprive either of the legal opportunity to develop in the future whether or not such development can presently be anticipated; and (2) such opportunity must be genuine and not illusory; i.e., the areas of present surplus must not only have the legal right to develop, but this at no greater cost than they would have borne had no exports therefrom been made. To accomplish these two objectives, language must be drawn in substitution of the suggested "New Melones" clause.

It has become abundantly clear that a legal reservation of a "water right" does not afford an area or state of origin sufficient protection. As water supply development proceeds, the least expensive sources are developed first, leaving the more expensive sources for later development; thus the problem of providing adequate protection to the later users involves economics as well as bare legal water rights. The development of water supplies outside of the Pacific Southwest Region, first to maintain a basic supply of 7.5 million acre-feet per annum and then to meet existing deficiencies and growth requirements in the Region, must not force the people of the areas of origin and of the

¹"... That before intitating any diversions of water from the Stanislaus River Basin in connection with the operation of the Central Valley Project, the Secretary of the Interior shall determine the quantity of water required to satisfy all existing and anticipated future needs within that basin and the diversions shall at all times be subordinate to the quantities so determined."

states of origin to meet their local needs from more expensive future developments than would have been necessary in the absence of exportation under the regional program.

Resolution of the problems of financially protecting the areas of origin necessitates two modifications in the Plan: (1) a dedication of the Development Fund to assure that costs of water development in the areas of origin will not be greater than they would have been had there never been an export from these areas under the Pacific Southwest Water Plan or some other regional program; and (2) an extension of the use of the Pacific Southwest Development Fund so as to benefit the areas of origin by giving them the same opportunities for financial assistance as are to be provided the tributary areas of the lower Colorado River.

The Pacific Southwest Region should be extended, with all attendant economic benefits, to include not only the area where regional waters are used, but also those areas which contribute water for operation of the Plan. Under this modification, agricultural water in the areas of origin, for example, might be made available within the repayment ability of the farmers.

4. Guarantee of Protection for States of Origin. Potential water users in the states of origin should be afforded economic protection against being forced into more expensive developments owing to the Plan. Otherwise, the exportation of supplies, whether to guarantee the basic supply of 7.5 million acre-feet per annum, or to meet existing deficiencies or growth requirements in areas outside the state of origin would result in increased costs to future users in the state of origin. Hence, it is essential that the Development Fund be used to provide safeguards to avoid adverse economic effects on the states of origin.

For example, the Secretary has tentatively proposed development of the Lower Eel River in California as the source of an export supply to Arizona. This same supply is programmed into California's own development plan to meet requirements within the State around the turn of the century. Should the Department of the Interior develop the Lower Eel River for export prior to its development to meet needs in California, California's water users will be forced to a more expensive development.

The question is not essentially one of water supply but of economics, for additional water supplies exist but at greater cost. In addition to the assurance of the legal right of full development it would be the responsibility of the Development Fund (under the modification here proposed) to pay the difference in cost between the water supply of the more expensive source and the water supply developed for export.

5. Establishment of a Regional Commission. A Regional Water Commission, composed of representatives of the federal government and of the govern-

ments of the affected states should be established. This commission should advise concerning the water and related resource development of the Region, and should coordinate regional project planning. Federal approval of this commission should be sought and the California Legislature should be requested to authorize participation by the State of California. We recommend that the Secretary of the Interior call an early conference of the governors of the western states to consider establishment of such a commission.

6. Study of Alternative Sources of Supply. The projects included in Phase I do not create sufficient new water supply to erase existing water deficiencies, let alone to meet growth requirements. An immediate need is for a thorough comprehensive investigation, in cooperation with the affected states, of all potential sources of new water for the Region, including seawater and brackish water conversion, waste water reclamation, watershed management and importations from the Pacific Northwest, Northwestern California, and other areas of surplus.

The studies called for above should be initiated by the federal government in cooperation with the affected states and under the guidance of a regional water commission. The Congress should be requested during the 1964 session to appropriate investigation funds for this purpose.

Inability at this time to make final judgments on later phases of a regional plan does not diminish the value or necessity of the initial program of development. Current water deficiencies in the Pacific Southwest are of critical proportions and dictate an early start on feasible features of a regional program. We have time to develop subsequent phases of the program and can safely afford to do so provided a regional water commission and principles of operation of the development fund are established at the outset.

7. Deletion of Export Capacity From Phase I. The Plan includes in Phase I a second enlargement of the California Aqueduct in the reach from Wheeler Ridge to Pearblossom to facilitate a Phase II importation of an additional 1.2 million acre-feet to the Region via enlargement and extension of the proposed East Side Division of the Central Valley Project and the proposed Lake Havasu Aqueduct.

Although this second enlargement of the Tehachapi crossing features would benefit to some extent from cost savings due to scale considerations, we believe that because of the uncertainties involved this second incremental enlargement should be eliminated from consideration in Phase I. Except for the possibility that the enlargement might afford some opportunity for improved operation, this second increment could not be utilized until the remaining conveyance and certain conservation facilities were constructed under Phase II. Phase II planning and delivery schedule commitments for this additional import supply are

too indefinite at this time to warrant crystalizing these future facilities through premature action.

In this regard, our analyses of large-scale sea-water conversion possibilities in the vicinity of Imperial Dam have indicated that favorable economic comparisons for municipal and industrial water supplies between conversion and extensive imports from Northern California may be achieved by projects to be constructed about 25 years hence. Furthermore, studies have been made that suggest the economic superiority of an importation from the Columbia River drainage basin.

Hence, there is reason to believe that a more economical source of supply to meet Phase II requirements may be available and the large-scale importation of surface water supplies to the Region from Northwestern California tentatively proposed in the Report may not be necessary. On this basis, the risk associated with the large investment required for the second Tehachapi Crossing enlargement would appear too great to warrant a commitment as to source or route at this time.

Should further investigation of sources of additional water supply for the Region confirm Northwestern California as the best source of this supply, consideration should then be given to providing the new supply to California agencies in exchange for a Colorado River entitlement of equal magnitude. Such an exchange would appear to be more economical than direct importation of the new supply to the Colorado River.

8. Total Resource Development. The Plan should integrate development of water and all related resources in accordance with current concepts of basin-wide development and within the spirit of the Presidential memorandum of May 15, 1962 (SD 97), which requires the coordination of resource development between the Departments of the Interior, Agriculture, Defense, and Health, Education and Welfare.

9. Watershed Management. Watershed management and protection should be planned and undertaken as an integral part of the Plan. Where the beneficiaries of watershed management programs cannot be identified and isolated, the Development Fund should bear the costs. Watershed management and protection programs should not be limited to the Pacific Southwest region, but should also be included in the areas of origin of exported water supplies. The Development Fund should provide financial assistance to the support of basic data acquisition programs needed to meet watershed management objectives.

10. Fish, Wildlife, and Recreation Considerations. The Plan endorses a program for fish, wildlife and recreation, but is indefinite and deficient with respect to scope, policy, and implementation. For example, (a) no specific plans are included for protection of

the important and very substantial salmon and steelhead resources of the Eel and Trinity Rivers in California; (b) the impact of the Plan on fish and wildlife resources of the Delta and Sacramento and San Joaquin Valleys is not considered; (c) the proposals contained in the Report for study of the complex fish and wildlife problems created by the Plan in California are inadequate; (d) there is no assurance that the effects on fish, wildlife, and recreation of the water salvage, ground water recovery, and channelization programs will be assessed and protective measures included prior to initiation of construction; and (e) the Report is silent on the provision of water supplies for proposed new wildlife areas along the Colorado River.

A five-year cooperative state-federal investigation should be authorized and initiated to develop a basic fish and wildlife protection and enhancement program for inclusion as an integral part of the Plan. This cooperative state-federal study should be federally financed as a part of the regional program, and should be carried out by the Fish and Wildlife Service and the fish and game agencies of the affected states.

Acquisition of wetlands, provision of other protective measures for waterfowl in the San Joaquin Valley and Delta areas and development of fishing access and recreation facilities along the enlarged California Aqueduct should be considered in these studies as possible mitigation for losses elsewhere in the program.

Fish, wildlife, and recreational water requirements, both consumptive and nonconsumptive, along the Colorado River must be recognized as constituting legitimate demands on the water supply of the Region. Requirements in excess of those recognized in the Plan should be considered as new demands on the regional supply and be included as a part of the program for fish, wildlife, and recreation.

Fish, wildlife, recreation, and watershed management and protection features and programs found to be justified as a result of studies proposed for immediate initiation in the Report should be constructed or instituted concurrently with other features of the Plan.

The economic and social benefits to be derived from enhancement of recreational opportunities and from protection and enhancement of fish and wildlife resources would provide significant contributions to the economy and welfare of the nation, as well as the area directly affected by the Plan. Hence, the costs of recreational development and of planning, construction, and operation of fish and wildlife protection and enhancement programs included in the Pacific Southwest Water Plan should be financed by the federal government on a non-reimbursable basis.

11. Lower Colorado River Land Use Plan. A draft report, entitled "Lower Colorado River Land Use Plan", based upon extensive planning efforts by

federal, state, and local agencies was recently submitted to the Secretary of the Interior by the Lower Colorado River Land Use Committee. The land use plan presented in this draft report should be considered in revising, refining, and extending the regional plan of development.

The "Lower Colorado River Land Use Plan" should receive early federal and state review so that worthy components may be adopted and incorporated in the regional plan of water development and sufficient flexibility should be retained in the regional plan to permit this incorporation.

12. Consideration of Sacramento-San Joaquin Delta Problems. The Plan must deal with problems of the Sacramento-San Joaquin Delta where water quality, fish and wildlife, and sea-water intrusion are critical concerns. Water development in the Central Valley of California has resulted in a gradual and progressive depletion of water available to keep ocean salts from San Francisco Bay out of the Delta. It is recommended that a minimum outflow be established in accordance with findings of joint committees now at work in the Delta. A program of surveillance of water quality in the Delta should be continued.

In addition to the minimum outflow, a multipurpose regional plan should provide for additional outflows when necessary to meet the needs of fish, wildlife, recreation, and public health. Any such additional outflow should be provided through non-reimbursable federal contributions. The United States Public Health Service and Fish and Wildlife Service, in cooperation with the State, should immediately undertake studies to determine the levels of additional outflow required. These cooperative studies should also have as their objective an agreement between the state and federal governments regarding the program to be adopted for fish and wildlife protection and enhancement in the Delta, including the elements of water supply, facilities, and financing.

Due to the interrelationship of established federal and state programs in the Delta, the Corps of Engineers, the Bureau of Reclamation, and the Department of Water Resources have integrated their planning activities to develop a joint recommendation for a plan of physical works for the Delta. Preliminary findings will be available in September of 1964, and a final report will be completed by January of 1965. The Pacific Southwest Water Plan will depend, in part, upon the ability of these physical works in the Delta to transfer water across the Delta without depriving Delta water users of supplies of suitable quality; hence, the Plan should bear its allocated share of the cost of the necessary physical works in the Delta.

The local water supply of established industry, agriculture, and of the associated economy of Contra Costa County is presently dependent upon usable offshore water and high quality water made available

through the Contra Costa Canal. Protection of that economy must be an essential part of any plan of water transfer across the Delta. Recent studies by the Bureau of Reclamation, Region II, tend to indicate the desirability of construction of a dam and canal facility designated as the Kellogg Project.

We urge that studies of this project be completed at an early date so that, contingent upon favorable findings and compatibility with the physical works to be recommended for construction in the Delta, the Kellogg Project may be authorized and constructed as a unit of the Central Valley Project concurrently with authorization and implementation of the Plan.

13. Further Study of Available Water Supply. The report presents estimates of water requirements for different service areas within the Region in dissimilar terms, such as diversions, farm deliveries, consumptive use, and stream depletions. Similarly, total regional water supply has been determined as the sum of yield estimates in terms of consumptive use in some areas and in terms of diversions or farm deliveries in others. The values so determined are both confusing and misleading, and would appear to substantially overstate both requirements and the magnitude of available supplies.

A thorough understanding of water supply and requirements is essential to informed, competent planning. Effective regional planning involves full recognition of changing conditions, and implies that estimates of water supply and water requirements will be perfected, and maintained on a current basis.

It is recommended that these basic elements be subjected to a continuing cooperative study by the federal government and the affected states, such a study to be initiated immediately and to be continued as the program unfolds. This continuing analysis might include reference of the water supply issue to the United States Geological Survey or to a special board of consultants for an impartial determination of the present and anticipated supplies, both surface and ground water, available in the Lower Colorado River Basin.

14. Water Salvage Program. We recommend that the proposed series of water salvage and water conservation programs within the Region be implemented prior to or during Phase I of the Plan. The suggested programs included under the Plan are: ground water recovery, control of phreatophyte growth, further re-regulatory control by additional storage near Imperial Dam, and river channelization. The channelization and regulatory control programs have been initiated under existing programs. Certain aspects of the ground water recovery program have also been initiated.

The lining of the canals in the Imperial and Coachella Valleys is proposed as a part of Phase II of

the Plan. We recommend that this water conservation measure be advanced to Phase I.

We endorse the main stream salvage programs because they will produce the cheapest water in the Plan even if the quantity recovered only approached half that estimated in the Report. It is our belief, however, that the net gain in Colorado River main stream supply available for diversion as a result of the proposed programs may not be nearly as great as the Report indicates.

The water salvaged will be of value but, from a practical standpoint, we believe that the apparent savings from channelization and phreatophyte control could well be offset by future increases in phreatophyte growth in areas not controlled and by future needs for recreation and fish and wildlife purposes.

Relative to savings resulting from the lining of canals in California, it should be recognized that as the salt content of Colorado River water increases in the future, the dependent agricultural areas will have to apply greater quantities of water to the land to maintain proper salt balance. All of the potential salvage from the canal lining program may be required to maintain the existing agricultural economy without increasing the demand on the river.

Although recommended for authorization, the ground water recovery and water salvage (phreatophyte control) programs are vague in definition and, therefore, any authorization should require that detailed plans be developed for their component parts or subunits and that such detailed plans be submitted to the affected states for review in a manner comparable to that now provided under the provisions of the Flood Control Act of 1944 and the Fish and Wildlife Coordination Act.

In connection with conservation proposals within the Imperial and Coachella Valleys, consideration must be given to possible deterioration of the Salton Sea as a fishing and recreation area. No such consideration is apparent from the Report.

15. Improvement in Efficiency of Use. It is proposed in the Report to effect, at the expense of private landowners, a material improvement in efficiency of use of water on existing irrigated lands through the lining of canals, laterals, and improved farm practices, while at the same time denying those landowners the opportunity to benefit from the water salvaged. Certainly a concerted effort should be made to achieve optimum practicable efficiency of use.

But it must be recognized that the water which will be salvaged can be used in the areas in which the salvage occurs, may be necessary to sustain the economies of those areas, and may be water to which those areas are legally entitled. Therefore, the mere fact that water can be salvaged does not necessarily mean that the salvaged water can be made available for use elsewhere.

16. Enlargement of Conveyance Facilities to Southern California. Several considerations still under study by the State are not only important in their own right, but also have a definite bearing on the choice of alternatives for conveyance of the initial 1.2 million acre-foot supply from the Sacramento-San Joaquin Delta into the Pacific Southwest Region. We concur in the apparent conclusion of the Bureau of Reclamation that those alternatives (nos. 4 through 7) set forth in the Appendix Report which are predicated upon extensive exchanges in the San Joaquin Valley should be eliminated from further consideration at this time. However, information contained in the Report and in the Bureau of Reclamation Appendix does not fully document or support, on the basis of engineering and economic considerations, the selection among alternatives 1, 2, and 3.

One consideration involves the construction schedule of the California Aqueduct which is controlled by the delivery schedules under the State's water supply contracts. The State will not permit enlargement of the California Aqueduct to delay the dates of initial delivery. If the contract delivery schedules are to be met and the paralleling of additional reaches of the aqueduct is to be avoided, a decision to enlarge the aqueduct in the San Joaquin Valley and the Tehachapi Tunnels must be made by July, 1964. If the decision is not made by that time, it will probably be necessary to parallel additional reaches of the California Aqueduct in those areas, and to pay the resulting increases in the costs of importing the initial 1.2 million acre-feet into the Pacific Southwest.

If the alignment of the proposed East Side Division aqueduct were used, scheduling in the San Joaquin Valley reaches north of Wheeler Ridge would not be critical at this time. Current cost comparisons by the State indicate an approximate capital cost differential of only \$54 million between alternatives 1 and 2, as compared to the Report estimates of \$70 million. Any need to parallel additional reaches of the California Aqueduct within the San Joaquin Valley would reduce this cost differential.

The comparison of alternatives set forth in the Report is based upon estimated incremental costs only, and does not reflect an actual allocation of costs. A study of cost allocation, particularly within the North San Joaquin Division of the California Aqueduct, may result in a further reduction in the apparent margin of economic superiority of California Aqueduct enlargement, as opposed to enlargement of the East Side Division Aqueduct.

The conveyance features from Wheeler Ridge south are common to alternatives 1, 2, and 3. Every effort should be made to obtain authorization of financing of enlargement of the California Aqueduct from Wheeler Ridge south through the Tehachapi Mountains during the next session of the Congress, but no

later than July, 1964. It is further recommended that intensive studies be initiated immediately by Region 2 of the Bureau of Reclamation in cooperation with the Department of Water Resources to further examine alternative conveyance from the Delta to Wheeler Ridge, including provisions for future service to areas on the east side of the San Joaquin Valley.

17. Federal Participation in Enlargement of California Aqueduct Limited to Financing. The report does not clearly show the manner in which the federal government would participate in enlargement of the California Aqueduct. The State must be assured that federal participation would be only by financing, subject to appropriate repayment arrangements, so that the State would continue to be able to meet its responsibilities to its own water supply contractors for the design, construction, operation, and extension of the California Water Facilities.

The State must retain the exclusive responsibility for marketing all waters transported through the aqueduct for sale in Southern California, and must not be required to compete with the United States in the State's service area. Likewise, of course, the water produced from any salt water conversion plant must be sold to the State for marketing through its operation of the State Water Project.

18. Extent of Federal Financial Participation in California Aqueduct Enlargement. The costs of enlarging the California Aqueduct are presented in the Report on an incremental cost basis, although the probability that actual costs of water would reflect use of appropriate cost allocation procedures is recognized. The extent of financial participation by the United States in enlargement of the California Aqueduct must be determined in accordance with the proportionate use formula of Article 24(b) of the State's Standard Provisions for Water Supply Contracts.

19. Inclusion of Trinity Projects in Initial Authorization. The new water supplies to be imported to the Region from Northern California under Phase I should represent a complete water resources development involving both conveyance and conservation features. This would necessitate the inclusion of Phase I of the Trinity Diversion and South Fork Trinity Projects. Project planning for these future North Coastal projects has not yet been performed at feasibility level.

It is recognized, also, that inclusion of these conservation features in Phase I would materially increase the scale of appropriations required for the initial program. However, the two Trinity River projects, although proposed as features of Phase II, are scheduled for initiation of construction in 1969 and 1973, early in the construction period of Phase I. It follows that the two Trinity Projects can be included

in Phase I without increasing the program funding requirements for the Phase I construction period.

It is recommended that the Trinity Diversion and South Fork Trinity Projects, or suitable alternatives, be authorized as features of Phase I, with the restriction that construction may not be initiated until feasibility studies have been completed and the projects have been demonstrated to be acceptable to the State of California.

Consideration should be given to pooling those portions of supplies presently developed or to be developed by federal and state projects in California that are in excess of the growth requirements of the specific service areas which these projects were designed to meet. Interim use of these temporary surpluses as a source of supply for the Pacific Southwest Region would enhance economic justification and financial feasibility of the individual projects and, while not eliminating the need for immediate authorization of the Trinity Diversion and South Fork Trinity Projects, would permit several years delay in construction of these features of the Plan.

20. Construction of Desalting Plant Under Some Other Federal Program. The Plan anticipates the funding of construction in Phase I of a prototype 50-million gallon-per-day flash evaporation desalting plant from the Pacific Southwest Development Fund. It is our recommendation that this plant be constructed at the earliest practical date as a combination desalting and power generation plant with a nuclear reactor serving as the heat source.

One of the primary functions of the proposed seawater conversion installation would be to serve as a large-scale production pilot model in the development of plants with capacities of 150 million or more gallons per day. In view of the universal need for the information that would be so developed and the general applicability of research in the field of desalinization, it is recommended that this development be undertaken in the Pacific Southwest Region, but not be made a part of the Pacific Southwest Water Plan. Rather, it is recommended that this feature be financed and constructed as a part of a more general program of the federal government, with the State Department of Water Resources cooperating.

21. Deletion of Unidentified Tributary Projects from Phase I. The projects proposed for construction on the tributaries of the Lower Colorado River in Arizona, New Mexico, and Utah should be omitted from Phase I until such time as they can be identified and their engineering feasibility and economic justification can be demonstrated.

22. Power Considerations. The Report states that saleable energy from the existing Hoover, Parker, and Davis Power Plants was assumed to be 4 mills per kilowatt hour for Hoover energy, and 4.7 mills per

kilowatt hour for Parker-Davis energy after payout of existing costs and obligations. The Report also states that the power rates were assumed for purposes of financial analyses and demonstration of program payout, and that as development of water and power resources of the Pacific Southwest proceeds and the pumping loads and financial requirements become better defined, the matter of power rate determination will be under continuing consideration. Certainly, no attempt should be made at this time to peg future rates at the levels employed in the economic analyses.

The Report proposes, in effect, the establishment of a water pool and of a financing pool, but it does not consider power in a similar fashion. The very large demand for power for project pumping and the sensitivity of water cost to the price of power for pumping justify careful consideration of the possibility of expanding the pooling concept to embrace a project power pool and of integrating the Pacific Northwest Intertie and federal or state steam generation into the Pacific Southwest Water Plan for project pumping purposes.

The contracts of the Metropolitan Water District of Southern California for power generated at the Hoover Dam and Parker Dam powerplants limit the use of the power to pumping the District's water through the Colorado River Aqueduct. If the water supply available to the Metropolitan Water District for diversion through the Colorado River Aqueduct is insufficient to require the entire power entitlement, the State should be allowed to use the surplus power entitlement for pumping the Metropolitan's State water supply

through the California aqueduct. It is recommended, therefore, that the Metropolitan Water District contracts be amended to permit such a transfer at no increase in unit power cost and a consequent reduction in cost of State water to the Metropolitan Water District, exclusively.

23. Water Quality Management. Water quality management must be an integral part of the scheme of operation of any regional water program. Although the problems of maintaining salt balance are recognized in the Report, estimates of costs for necessary salt management are not included. These costs could become significant in the future. The specific planning that follows authorization should encompass water quality management studies including over-all salt routing studies which provide for evaluation of specific costs for necessary physical control, maintenance, and monitoring of salt balances throughout the Lower Colorado River Basin. It will be necessary, also to establish policy regarding cost sharing for such salinity management activities.

Several problems of public health significance must also be considered. The problems of sewage disposal become more acute as additional reservoirs are constructed. Sewage will have to be treated to a higher degree and extensive collection and transportation systems may be required in some instances to convey sewage away from the immediate reservoir sites. Adequate regulation pertaining to all aspects of health and safety associated with recreational use of water impoundments must be established.

CONCLUSION

In conclusion we believe that the Pacific Southwest can no longer afford the luxury of uncoordinated water development on a competitive project by project approach with each project depending on an admittedly insufficient stream.

The major needs of the region can only be served by a regional program. With the additions and modifications we have suggested to the Proposed Plan we believe the Congress would be justified in proceeding with authorization of the total program including the Dixie, Central Arizona, Marble Canyon, Bridge Canyon and Southern Nevada projects each of which must be modified accordingly.

Until the interested parties agree on a truly regional approach we think the Congress should shelve all project by project authorizations in the Lower Basin of the Colorado River. To do otherwise is either to provide for an expensive shifting of already acute deficiencies or to build substantial projects which will inevitably run short of water. Such an approach raises more problems than it solves.

The time, then, has come to accept Secretary Udall's invitation to engage in water statesmanship. If the federal government and the states feeling the pinch of shortage do their work with energy, intelligence and goodwill we may well lay the cornerstone of future water development in the west.

Discussion of Comments of the State of California

Recommendation 1: Rather than providing a direct subsidy to municipal and industrial water users, the Pacific Southwest Development Fund should be used to fund the following three basic guarantees:

a. A guarantee that a basic supply, which permits a beneficial consumptive use of 7.5 million acre-feet per annum, will be maintained in the Region and will be available to the States of Arizona, Nevada, and California, either in the Colorado River or from other sources at costs not in excess of what the costs would have been from the Colorado River, with the annual beneficial consumptive use of 7.5 million acre-feet to be divided 4.4 million acre-feet to California, 2.8 million acre-feet to Arizona, and 0.3 million acre-feet to Nevada.

b. A guarantee that costs of water development in the areas of origin will not be greater than they would have been had there never been an export from these areas under the Pacific Southwest Water Plan.

c. A guarantee that costs of water development to users within the states of origin will not be increased because of effectuation of the Plan.

Comment: The direct subsidy to municipal and industrial water users has been eliminated as recommended. The guarantees suggested are provided.

Recommendation 2: Use of the Pacific Southwest Development Fund should be extended so as to afford the areas of origin of such imported water supplies the same opportunities for financial assistance as are to be provided the tributary areas of the Lower Colorado River. The Pacific Southwest Region should be extended, with all attendant benefits, to include those areas which contribute water for operation of the Plan.

Comment: The requested financial assistance to watersheds of origin has been provided.

Recommendation 3: A Regional Water Commission should be established, composed of representatives of the Federal Government and the governments of the affected states, to advise concerning the development of the Region and to coordinate regional project planning. Federal approval of this commission should be sought and the California Legislature should be requested to authorize participation by the State of California. California recommends that the Secretary of

the Interior call an early conference of the governors of the western states to consider establishment of such a commission.

Comment: Adopted.

Recommendation 4: Phase I should be modified to (a) exclude the second 1.2 million acre-foot enlargement of the California Aqueduct from Wheeler Ridge to Pearblossom as it prematurely and unnecessarily commits the Plan to an exportation to Arizona of water from north-western California; (b) exclude the 50-million gallon-per-day sea-water conversion plant, providing, however, that a combination desalting and power generation plant, using a nuclear reactor as a heat source be financed and constructed immediately as a part of some general Federal program with the State Department of Water Resources cooperating; (c) exclude the unidentified tributary projects in Arizona, New Mexico, and Utah; (d) include the two Trinity River projects, or appropriate alternatives with the qualification that construction not be initiated until completion of feasibility studies and review by the State; and (e) include the lining of canals in the Imperial and Coachella Valleys.

Comment: Items (a), (b), and (c) were adopted. In relation to item (d), the two reservoirs have been included in the Initial Plan, with authorization to be sought promptly upon completion of feasibility studies. Item (e) was not adopted for the reasons outlined in the report of the Commissioner of Reclamation.

Recommendation 5: The Congress should be requested during the 1964 session to appropriate investigation funds for initiation of cooperative planning studies essential to formulation of Phase II, including a thorough and comprehensive investigation of all potential sources of new water for the Region. In this investigation, sea-water and brackish water conversion, waste water reclamation, watershed management, and importations from the Pacific Northwest, Northwestern California, and other areas of surplus should be considered as potential sources of new water for the Region.

Comment: Investigation funds necessary to carry forward the program objectives should be provided as early as possible.

Recommendation 6: The Plan at all times should be designed to provide for integrated development of water and all other related resources in accordance with the Presidential memorandum of May 15, 1962 (SD 97).

Comment: Such integrated development is contemplated.

Recommendation 7: Watershed management and protection should be planned and undertaken as an integral part of the Plan. Where the primary beneficiaries of watershed management programs cannot be identified and isolated, the Development Fund should bear the costs. Financial assistance also should be provided from the Development Fund for support of basic data acquisition programs needed to meet management objectives.

Comment: While watershed management and protection should, of course, be planned and undertaken as part of the Plan, there is no precedent or evident need for including related programs for participation in a development fund. Similarly, existing programs for basic data collection do not appear to require development fund assistance.

Recommendation 8: A five-year cooperative Federal-State investigation should be authorized and initiated with Federal financing to develop a basic fish and wildlife protection and enhancement program for inclusion as an integral part of the Plan.

Comment: This is consistent with the planning objectives outlined in the report.

Recommendation 9: Fish, wildlife, and recreational water requirements along the Colorado River in excess of those recognized in the Plan should be considered as new demands on the regional water supply, and be included as a part of the program for fish, wildlife, and recreation.

Comment: Such water requirements to the extent they are not presently provided should be considered as new demands when water supply is available under controlling water rights.

Recommendation 10: Fish, wildlife, recreation and watershed management and protection features and programs found to be justified as a result of studies proposed for immediate initiation in the Report should be constructed or instituted concurrently with other features of the Plan.

Comment: This is anticipated.

Recommendation 11: The "Lower Colorado River Land Use Plan" should be subjected to early Federal and State review so that worthy components may be incorporated in the regional plan.

Comment: There will be full coordination of the Lower Colorado River Land Use Plan with the Pacific Southwest Water Plan.

Recommendation 12: Authorization should include the proposed ground water recovery and water salvage (phreatophyte control) programs contingent, however, upon the submission of detailed plans for each component part or subunit to the affected states for review and approval.

Comment: Authorization of ground-water recovery and water salvage programs is recommended in the report. Details on these programs are contained in the attachment to this report, entitled "Lower Colorado River--Supplemental Information on Water Salvage." The ground-water recovery and phreatophyte control programs in Arizona and California will be coordinated with the officials of the State wherein such programs are being undertaken.

Recommendation 13: The Plan should deal with the water quality, fish and wildlife, and sea-water intrusion problems of the Sacramento-San Joaquin Delta, and should provide for (a) establishment of a minimum outflow from the Delta for sea-water repulsion, in accordance with findings of joint committees now at work in the Delta; (b) additional outflow found necessary to meet the needs of fish, wildlife, recreation, and public health by the United States Public Health and Fish and Wildlife Services; (c) concurrent construction of the Delta facilities to be jointly recommended by the United States Bureau of Reclamation, the United States Army Corps of Engineers, and the State; and (d) early completion of studies of the Kellogg Project so that, contingent upon favorable findings and compatibility with the physical works recommended in (c) above, said project may be authorized and constructed as a feature of the Central Valley Project concurrently with implementation of the Plan.

Comment: Proposals for handling these problems of the Delta are discussed in the report of the Commissioner of Reclamation in connection with the plans for the East Side Division enlargement.

Recommendation 14: Federal participation in enlargement of the California Aqueduct must be restricted to financing, subject to appropriate repayment arrangements, so that the State would continue to be able to meet its responsibilities to its own water supply contractors for the design, construction, operation, and extension of the California Water Facilities. The State must retain the exclusive responsibility for marketing all waters transported through the aqueduct for sale in Southern California, and must not be required to compete with the United States in the State's service area. Likewise, the water produced from any salt-water conversion plant for use in that area must be marketed by the State through its operation of the State Water Project.

Comment: As discussed in the report of the Commissioner of Reclamation, Recommendation 14 has been adopted insofar as it relates to the marketing of water through the enlarged California Aqueduct.

Recommendation 15: The extent of financial participation by the United States in enlargement of the California Aqueduct must be determined in accordance with the proportionate use formula of Article 24(b) of the State's Standard Provisions for Water Supply Contracts.

Comment: It is contemplated that an equitable sharing of costs will be negotiated with the State. For purposes of the report, the State's formula was used.

Recommendation 16: Every effort should be made to obtain authorization of financing of enlargement of the California Aqueduct from Wheeler Ridge south through the Tehachapi Mountains to Perris Reservoir during the next session of the Congress, but no later than July 1964.

Comment: This is highly desirable.

Recommendation 17: Intensive studies should be initiated immediately by Region 2 of the Bureau of Reclamation, in cooperation with the Department of Water Resources, to further examine alternative conveyance from the Delta to Wheeler Ridge, with particular emphasis on the proposed East Side Division of the Central Valley Project.

Comment: Significant progress on joint studies of the Bureau of Reclamation with the State Department of Water Resources resulted in the proposal in the Initial Plan for the East Side Division enlargement; further cooperative studies will be continued.

Recommendation 18: Consideration should be given to extension of the water and financing pool concept to include the creation of a power pool into which the Pacific Northwest Intertie and Federal or State steam generation might be integrated to meet project pumping needs.

Comment: Further consideration of power system integration will be given as the plan unfolds. Construction of Federal steamplants has not been considered.

Recommendation 19: Power rates should be the subject of continuing consideration as project pumping loads and financial requirements become better defined.

Comment: This is anticipated.

Recommendation 20: Contracts of the Metropolitan Water District of Southern California for energy generated at Hoover Dam and Parker Dam powerplants should be amended to permit transfer of energy no longer required for pumping on the Colorado River Aqueduct to the State for use in pumping the Metropolitan Water District's state water supply through the California Aqueduct with a consequent cost benefit to the Metropolitan Water District.

Comment: The proposed transfer of use does not appear to be detrimental to the United States as long as revenues to the United States are unchanged, the transmission of power and energy continues to be accomplished at no expense to the United States, and the concurrence of the other California allottees is obtained. If such concurrence can be obtained, such transfer appears desirable.

Recommendation 21: Regional water requirements and supply should be subjected to a continuing cooperative study by the Federal Government and the affected states, such study to be initiated immediately and to be continued as the program unfolds. This continuing analysis might include reference of the water supply issue to the United States Geological Survey or to a special board of consultants for an impartial determination of the present and anticipated supplies, both surface and ground water, available in the Lower Colorado River Basin.

Comment: It is agreed that such a continuing cooperative study between the parties directly involved should be initiated and continued, with periodic revisions as may be found appropriate being made as bases for planning future successive steps in advancement of the Water Plan.

Recommendation 22: Water quality management must be an integral part of the scheme of operation of any regional water program. Specific planning following authorization should encompass water quality management studies and include evaluation of specific costs for necessary physical control, maintenance, and monitoring of salt balances throughout the Lower Colorado River Basin.

Comment: This is anticipated.

Recommendation 23: Recognition should be given to the fact that water salvaged through the lining of canals, laterals, and improved farm practices can be used in the areas in which the salvage occurs, may be necessary to sustain the economies of those areas, and may be water to which those areas are already legally entitled.

Comment: This problem is discussed in the report of the Commissioner of Reclamation.

Recommendation 24: Consideration should be given to the possibility that water conservation programs proposed in the plan might adversely affect the Salton Sea as a fishing and recreational area.

Comment: Appropriate consideration will be given to possible effects on the Salton Sea during future planning of specific features which might involve such effects.

VIEWS AND RECOMMENDATIONS OF
STATE OF NEVADA
ON AUGUST 1963 TASK FORCE REPORT
ON THE PACIFIC SOUTHWEST WATER PLAN



GRANT SAWYER
GOVERNOR

THE STATE OF NEVADA
EXECUTIVE CHAMBER
CARSON CITY, NEVADA

November 1, 1963

The Honorable Stewart L. Udall
Secretary of the Interior
Washington 25, D. C.

My dear Mr. Secretary:

By letter dated August 26, 1963, you transmitted to me your report on the Pacific Southwest Water Plan pursuant to Section 1 (c) of the Flood Control Act of 1944 (58 Stats. 887). In transmitting your report to me for review and comment you requested recommendations and suggestions that might scale down the size of the initial phase proposal to be presented to the Congress while accomplishing the purpose of the plan. You further stated that you have made no final judgment concerning the component parts of the plan and that you are keeping an open mind on all major issues and expect to weigh carefully the major recommendations of the various interested States. The State of Nevada appreciates the opportunity to review the report and to make recommendations which we hope will be given serious consideration before your final report is prepared for submission to Congress in support of any proposed legislation to authorize such an extensive plan.

Frankly, the State of Nevada is disappointed that your report does not indicate more benefit to Nevada from the plan. I hope this lack of consideration was an oversight due to the press of time. We are vitally interested in any regional plans that make possible increased supplies of water to this State. However, your report does not make reference to any increased supplies to Nevada over and above those now available to us. We assume that the additional needs in southern Nevada could be met from the Colorado River under water salvage, groundwater recovery, and import plans. We will appreciate the final report specifically providing for this.

Your task force recommends authorization of only the first stage of the Southern Nevada Water Supply Project. In the report on this project your Regional Director West has recommended the entire project be authorized as a large share of the initial investment in the project is to provide sufficient capacity in certain features for the ultimate project. We urge that your report remain consistent with Mr. West's recommendations and the entire project be shown as recommended for authorization, with specific authorization for construction of the first stage.

We were disappointed to find that the very important Moapa Valley Pumping Project is not included in your Pacific Southwest Water Plan. An excellent reconnaissance report has already been pre-

pared on this project and since the local area has given unanimous support to finalizing plans for development, we strongly urge that this small project be included as an element of the first phase. Surely studies are at least as far advanced on this project as on some of the other developments proposed for inclusion in the initial phase.

The report does not indicate how the additional waters created by the groundwater recovery and water salvage programs will be allocated between the States. This should be spelled out in the report with Nevada getting its fair and equitable portion of the increased water supplies made available from these programs.

We are concerned regarding your departure from past policy and law with regard to the repayment of the costs allocated to municipal and industrial water supply works. Your consolidated payout study shows assistance from power revenues to repayment of municipal and industrial water supply works in an amount of \$1,387,363,000. You have shown a water rate for the California Aqueduct Increment of \$40 an acre foot when, in fact, the annual cost of water from this increment is estimated to be \$48 per acre foot. The price for water to southern California from its own California Water Project is about \$63 an acre foot. Your report also indicates that you propose to construct a \$37,000,000 Desalinization Plant to create only 30/40,000 acre feet of new water at a cost of over \$100 an acre foot. You propose to charge only \$63 an acre foot for the water so developed, which you consider to be the alternative cost. This leads one to the conclusion that the Desalinization Plant is uneconomic as a water-producing facility. It would appear to us that this then is purely a research project and, in our opinion, should be so financed and not considered part of the Southwest Water Plan. The large subsidy required to repay the municipal and industrial water supply costs is also, we understand, caused from underpricing the water imported into Lake Havasu by about \$10 an acre foot.

As the price for water to repay the municipal and industrial water supply investment is well within the repayment ability of the municipal and industrial users we strongly urge that you forego any further consideration of subsidizing the municipal and industrial water function. I believe that you are placing the authorization of the entire plan in grave jeopardy by giving consideration to subsidizing this function. Certainly the State of Nevada is not only willing but is desirous of repaying any and all costs of the Southern Nevada Water Supply Project with interest.

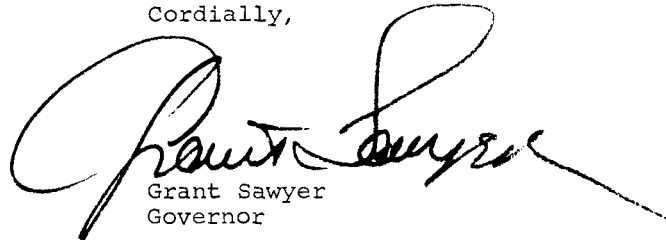
Your report recommends the "enlargement of the California State Water Project Aqueduct" as an element in the initial phase plan. However, the storage works required to create the additional water supply for delivery through this unit are shown to be included in the continuing program. It appears to us that it would be prudent to include the storage works associated with "enlargement of the California

State Water Project Aqueduct" in the plan proposed for immediate authorization in order to assure that the necessary new water will be created to insure the financial solvency of works costing \$475,000,000. The need for additional water supplies for our rapidly growing Southern Nevada areas is so urgent that we must proceed with all diligence to obtain authorization and construction of the Southern Nevada Water Supply Project. We are facing a water crisis in that area in that we are depleting a limited ground water basin about 75,000 acre feet a year. Experts have informed us that by 1967 we are in grave danger of depleting our ground water supply. If the Southern Nevada area is not to face disaster the Southern Nevada Water project must be authorized in the next session of Congress.

I want to make it plain that I fully endorse the principles of regional development set forth in your report to import into the water deficient areas of the Southwest water that is surplus to the needs of other areas.

I take this opportunity to make available to you the leading water resource development personnel in this State to give you any and all possible assistance you desire in finalizing regional plans of development which will result in additional water supplies available to this State and the bordering States of California and Arizona.

Cordially,



Grant Sawyer
Governor

GS:dkm
CC: Honorable Alan Bible
Honorable Howard Cannon
Honorable Walter S. Baring
Mr. Hugh Shamberger
Mr. Pat Head

Discussion of Comments of the State of Nevada

The revised report includes a proposal for immediate authorization for all three phases of the Southern Nevada Water Supply Project, as Nevada recommended, with construction of some features staged to correspond with water demand.

The Moapa Valley Pumping Project is proposed for immediate authorization, as Nevada recommended.

Nevada would share in the water made available by the proposed water salvage programs on the Lower Colorado River to the extent that such salvaged water assures the availability of 7.5 million acre-feet annually for consumptive use to meet each State's water entitlement.

The subsidy for municipal and industrial water has been eliminated from the plan.

The desalting plant has been deleted from the plan with the expectation that desalting research will be expedited under other Federal-State programs.

Storage facilities on streams in the northern California coastal area to develop additional water supply have been included in the Initial Plan but not in the immediate authorization program. A request for authorization of these features would be made upon completion of feasibility studies.

VIEWS AND RECOMMENDATIONS OF
UPPER COLORADO RIVER BASIN STATES
(COLORADO, NEW MEXICO, UTAH, AND WYOMING)
ON AUGUST 1963 TASK FORCE REPORT
ON THE PACIFIC SOUTHWEST WATER PLAN



State of Colorado

EXECUTIVE CHAMBERS

DENVER

JOHN A. LOVE
Governor

November 27, 1963

Honorable Stewart L. Udall
Secretary of the Interior
Interior Building
Washington, D. C. 20425

RE: Pacific Southwest Water Plan.

Dear Secretary Udall:

In response to your letter of August 26, 1963, and pursuant to the applicable provisions of the Flood Control Act of 1944, the State of Colorado has reviewed your report on the Pacific Southwest Water Plan, dated August 1963. The report presents a vast and comprehensive plan of water development in the southwestern portion of the United States, and it has not been possible for us to fully analyze in detail all the ramifications of the proposed development or to adequately assess its future impact upon the states of the Colorado River Basin. Our comments on the plan that are submitted herewith are conditioned upon our assumed right to review and comment on more detailed plans as they are developed, either for the Pacific Southwest Water Plan or for its component parts.

At the outset of these comments I wish to emphasize that we here in Colorado fully comprehend the urgent need for developing additional water supplies in the Pacific Southwest. I wish to impress you with our earnest desire to cooperate in every manner with your department and with the states of the southwest towards a solution of the future critical water shortages of that area. Such cooperation, however, must be consistent with our own needs, objectives and legal rights here in Colorado.

Under the plan presented to us, there is proposed a comprehensive region-wide development of water resources to be financed through the operation of a basin fund in a manner similar to the Upper Colorado River Basin Fund of the Colorado River Storage Project. Based upon our own experience, we can

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heartily concur with this concept of resource development. However, it is our unalterable position, for the mutual protection of all Colorado River Basin states, that any and all projects utilizing waters from or tributary to the Colorado River in the United States, whether existing or proposed, must be operated in accordance with the provisions of the Colorado River Compact of 1922. While there is nothing in your proposed plan to indicate a contrary intention, there is also nothing to indicate an affirmative intention.

To be specific, the Colorado River Compact provides by Article III(d) that the states of the Upper Division will not cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet for any period of ten consecutive years reckoned in continuing progressive series. It is our firm position, substantiated by historic records, that this required delivery, together with tributary waters below Lee Ferry, is sufficient to furnish the Lower Basin states with the consumptive use of 7,500,000 acre-feet of water annually specified in Article III(a) of the compact and with the consumptive use of 1,000,000 acre-feet of water set forth in Article III(b), along with the Mexican Treaty requirements of 1,500,000 acre-feet of water annually. We deem such division of Colorado River System water to be in accord with the clearly declared provisions of the Colorado River Compact.

Our pointed reference to this situation originates from the assertion of the State of Arizona in the pending Supreme Court case of Arizona vs. California that the Lower Basin tributaries, including the Gila River, are not subject to the terms of the Colorado River Compact. While it may be that the State of Arizona will not attempt to assert such a claim against the Upper Basin states, we are not prepared to accept this risk. If Arizona's usage of waters of the Colorado River and its tributaries can be predicated upon the untenable theory that the waters of the Lower Basin tributaries are not subject to the terms of the compact, then such a theory will have the effect of asserting an additional potential draft of water against the Upper Basin for delivery to the Republic of Mexico.

In order to eliminate any future doubt on the foregoing issue, it is our position that any legislation, either for the Pacific Southwest Water Plan or any of its component parts, which utilize waters of the Colorado River system, must provide that any

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proposed project shall be operated in such a manner that all uses of water in the Lower Basin from the Colorado River, or any of its tributaries, must be accounted for as uses under the terms of Articles III(a) and III(b) of the Colorado River Compact.

While I realize that any authorizing legislation is solely the responsibility of the Congress, I am not able to approve the proposed plan without being advised as to how it will be implemented. Our eventual approval will depend upon proposed legislative action consistent with the policy contained in the foregoing paragraph.

There are other aspects of your report which are of vital interest to us. The feasibility of the proposed plan is apparently predicated on deliveries of water by the Upper Basin to the Lower Basin in excess of the deliveries required by the Colorado River Compact. We do not disagree that these deliveries will occur as set forth in the report. However, we cannot be placed in the position that some future administrative official or court may decide that Congress by authorizing the Pacific Southwest Water Plan intended to modify the terms of the Colorado River Compact.

We feel therefore that any authorizing legislation for the Pacific Southwest Water Plan, or any of its component parts, must contain a provision that nothing in such legislation shall be construed as modifying the terms of the compact or limiting the development contemplated under the Colorado River Storage Project Act. We submit that the contemplated future releases from Glen Canyon Reservoir should not be so inflexible as to limit a more rapid development of the Upper Basin projects, if the need occurs.

Further comments on the proposed plan are itemized as follows:

1. Reservoir Evaporation.

In the proposed plan reservoir evaporation has been recognized in analyzing the Lower Basin water supply. While this procedure is obviously proper, our comment goes to the point that such reservoir losses in the Lower Basin must be charged to

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that basin as a beneficial consumptive use under the terms of the Colorado River Compact.

2. Lower Basin Tributaries.

The proposed plan contains an evaluation of the contribution of Lower Basin tributaries to the available water supply. While we do not either agree or disagree with the stated tributary contributions, we realize the tremendous difficulty in computing consumptive uses from those tributaries on a yearly basis. It may be that it would be desirable to arrive at a mutual agreement among the basin states as to the safe annual yield of those tributaries and assess consumptive uses among the user states accordingly. Such consumptive uses, of course, must be charged under the terms of the Colorado River Compact.

3. Water Salvage.

The water supply studies contained in the proposed plan show a considerable volume of salvage water which historically has been non-beneficially consumed. Much of this non-beneficial consumption results from the activities of man in the Lower Basin. It should be understood that the use of this salvage water must be accounted for as a part of the Lower Basin's compact allocation.

4. Water Unaccounted For.

In the past, large amounts of water have been beneficially consumed in the Lower Basin, and more particularly along the Colorado River below Hoover Dam, which have been historically accounted for as "regulatory wastes". We are referring specifically to the diversions of water from the Colorado River by illegal occupants of federal lands. The illegal occupation of these lands is not of any consuming interest to us, but the consumption of water is. Our only point is that if this consumption is to continue, then it must be charged against the state in which the water is used.

5. Return of Upper Basin Power Revenues.

The filling criteria for Lake Powell provide that the Colorado River Storage Project shall either advance moneys to

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purchase substitute power for or deliver power to the Lower Basin because of diminution of Hoover power production resulting from the initial filling of Glen Canyon Reservoir. While we have steadfastly maintained that this diversion of funds from the Upper Basin to the Lower Basin is improper, we have not pressed the issue because of the further provision in the filling criteria that the funds so diverted would be returned to the Upper Basin immediately subsequent to 1987. The exact procedure for returning said funds is to be determined in 1987 or thereafter according to the filling criteria. If a Pacific Southwest development fund should be established, we believe that the authorizing legislation should provide a method for complete reimbursement to the Upper Basin Fund of the cost of energy, replacement power, and interest in connection with meeting Hoover power deficiencies under the filling criteria.

6. Combined Glen Canyon-Marble Canyon-Bridge Canyon Operations.

Under the plan as presented to us, a payment of \$185,000 annually would be made to the Upper Basin Fund as compensation for encroachment by Marble Canyon Reservoir on power generation at Glen Canyon Dam. While this sum may be appropriate as damages, it has also been stated by a member of your department, in Senate hearings on S. 1658, that the generating capacity at Bridge Canyon can be doubled because of the river regulation provided by Glen Canyon Dam. It would seem appropriate, therefore, that some of the downstream monetary benefits attributable to the Glen Canyon operation should be transferred to the Upper Basin Fund.

Your report contemplates a much more comprehensive water supply than can be developed from the Colorado River. Except to commend your approach towards a solution to an almost overwhelming problem, I am in no position to analyze those aspects of the plan that do not involve the use of the Colorado River or its tributaries. It is to the advantage of every part of the United States that the Pacific Southwest shall grow and prosper. I can therefore assure you that in general the proposed water plan will have our support.

The foregoing comments are not offered for the purpose of impeding or preventing the realization of the water resource projects as contemplated. We must insure, however, that the part of the plan which involves the use of waters from the Colorado River, or its tributaries, be executed in accordance with the terms of the Colorado River Compact.

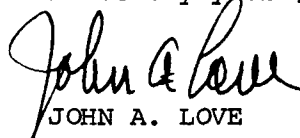
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In 1923, the Honorable Carl Hayden, then a member of Congress from Arizona, directed a series of questions to the Honorable Herbert Hoover, Chairman of the Colorado River Commission, requesting Mr. Hoover's interpretation of various portions of the Colorado River Compact. While Mr. Hoover was not able to assess all the affects of a possible future Mexican treaty, his answers were clear and unambiguous to the effect that the waters allocated to the Lower Basin by paragraphs (a) and (b) of Article III of the Compact were inclusive of any and all usages from Lower Basin tributaries. (The Congressional Record, January 30, 1923, pp. 2710-2713).

If there are portions of the Colorado River Compact which now appear ambiguous or unacceptable to other states, then these issues must be resolved at this time. On this point there should be no misunderstanding as to our position.

I appreciate the opportunity to review your proposed Pacific Southwest Water Plan. I commend both the tremendous effort and imaginative approach which has been directed to a most perplexing water problem. It is my sincere hope that the problems raised in this reply can be speedily resolved, and that the State of Colorado can join in a needed solution to the critical water supply problem of the Pacific Southwest.

Sincerely yours,


JOHN A. LOVE
Governor

JAL:lk



STATE OF NEW MEXICO
OFFICE OF THE GOVERNOR
SANTA FE

JACK M. CAMPBELL
GOVERNOR

November 27, 1963

The Honorable Stewart L. Udall
Secretary of the Interior
Interior Building
Washington, D. C.

Dear Mr. Secretary:

Your letter of August 26, 1963 forwarded the proposed Pacific Southwest Water Plan report for comment by the State of New Mexico, pursuant to the Flood Control Act of 1944. I appreciate this opportunity to present the views of the State of New Mexico on your proposal.

I concur in the concept of a comprehensive basinwide plan of development as a solution to the existing and imminent water supply problems of the Pacific Southwest. As you suggest, such a plan appropriately includes water importation and exchange, conversion of saline water, recovery of water presently lost by waste to the sea and by non-beneficial evaporation and transpiration and the creation of a basin fund from water and power revenues to finance the needed water resource projects. This concurrence should not be construed to foreclose the possibility that I would support separate legislation such as S. 1658, which would authorize the Central Arizona project, including the Hooker dam and reservoir in New Mexico, or S. 26, which would authorize the Dixie project in Utah, as initial steps of a comprehensive water resources development program in the Pacific Southwest.

Your report recognizes the potential for the construction of works to improve and increase the use of waters of the tributaries of the Colorado River System in New Mexico, with the effects of such increased use on users in Central Arizona being offset

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by water imported to Central Arizona from the main stream of the Colorado River. The report recommends authorization of the Hooker dam and reservoir and other tributary projects in New Mexico as a part of phase 1 of the Pacific Southwest Water Plan. I concur in this recommendation.

The Hooker dam and reservoir should be constructed to the maximum practicable capacity to meet projected increased water requirements in the Gila River basin in New Mexico. Hooker dam and reservoir and other projects to be constructed on the Gila-San Francisco River system in New Mexico could be operated so that the amount of water arriving at the diversions of users in the Virden valley in New Mexico and the Duncan and Safford valleys in Arizona would not be reduced below the amount that these users could have diverted under the Gila decree (Globe Equity No. 59, Federal District Court, District of Arizona) had Hooker dam and reservoir and these other projects not been constructed and operated. Thus the increased uses in New Mexico would not affect the amount of water available to users above San Carlos reservoir. The effect of the diminution of the amount of water arriving at San Carlos reservoir on the water supply of the San Carlos irrigation project would be offset by water imported to that project from the main stream of the Colorado River through the works of the Central Arizona Project.

It is not possible at this time to state reliably the amount of increased use that it will be practicable to make in New Mexico or the amount of the effect of this increased use on the water supply of the San Carlos irrigation project. The Bureau of Reclamation is cooperating with the State of New Mexico in studies directed toward a determination of these amounts. It can be said with assurance that the new depletions in New Mexico will cause a reduction of the natural, non-beneficial losses of the flows of the Gila River and, therefore, that the effect on the water supply of the San Carlos

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project some 270 miles down stream will be materially less than the amount of the new depletions in New Mexico. Thus if water is stored and used in the upper reaches of the Gila River system and the effect of such use on the San Carlos project is offset by imported water the total amount of water put to beneficial consumptive use in the basin will be increased.

Increased use of waters of the Gila River system in New Mexico would require amendment of the decree recommended by the special master in *Arizona v California*. The recommended decree would limit New Mexico to the present uses determined by the special master on the basis of a stipulation between Arizona and New Mexico. However, in presenting its case in *Arizona v California*, New Mexico submitted evidence to show that if certain facilities were constructed it would be possible to increase the use of water from the Gila and San Francisco Rivers in New Mexico without reducing the supply to users in Arizona. On the basis of this evidence New Mexico argued that the decree should permit increased uses from the Gila-San Francisco River system in New Mexico. In discussing this point the special master said:

"New Mexico seeks to mitigate the effect of her claim by attempting to establish that, should additional water storage facilities be constructed sometime in the uncertain future, increased uses in New Mexico would not diminish the supply for downstream Arizona users. To formulate a decree on the basis of such hypothetical facts would not be prudent. In *Nebraska v Wyoming*, supra, at 620, the court said:

'There is no reliable basis for prediction. But a controversy exists; and the decree which is entered must deal with conditions as they obtain

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today. If they substantially change, the decree can be adjusted to meet the new condition.'

"Of course, the decree will provide for modification should a change of condition warrant it." (Special Master's Report, December 5, 1960, pg 331).

Article IX of the proposed decree reads as follows:

"Any of the parties may apply at the foot of this decree for its amendment or for further relief. The Court retains jurisdiction of this suit for the purpose of any order, direction, or modification of the decree, or any supplementary decree, that may at any time be deemed proper in relation to the subject matter in controversy."

I am optimistic that an agreement between the United States, Arizona, and New Mexico providing for increased depletions of the Gila-San Francisco River system in New Mexico can be reached under the provisions of Article IX. New Mexico has initiated with Arizona negotiation of such an agreement.

The contemplated exchange of main stream water for Gila River water on the San Carlos project may require also an adjustment in the administration and possibly amendment of the Gila Decree. Amendment of the decree might involve extensive legal work but would not pose an insurmountable obstacle.

As your report recognizes, a comprehensive water development plan for the Pacific Southwest should include projects for the use of the waters of the Little Colorado River. There are potentialities for the use of waters of the Little Colorado River and its tributaries in New Mexico for municipal, industrial,

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irrigation, recreation, and fish and wildlife purposes. The Bureau of Reclamation has initiated studies of these potentialities and it is my hope that these studies can be carried forward in cooperation with appropriate officials of the State of New Mexico without delay.

Analysis of the report on the Pacific Southwest Water Plan by the staff of the New Mexico Interstate Stream Commission reveals a need for adjustment and clarification of the water supply data in the tables and text at several points. Conferences with personnel of the Bureau of Reclamation indicate that these discrepancies will be satisfactorily adjusted in the final draft of the report. Therefore, detailed discussion of the water supply and other engineering details is reserved.

The New Mexico State Game and Fish Commission has studied the plan and has coordinated its activities with the Fish and Wildlife Service, United States Department of the Interior. Specific requests of the New Mexico Game and Fish Commission are contained in the Fish and Wildlife Service Appendix to the report at page 11 and should be considered a part of my comments on the report.

It is apparent that the report has advisedly been framed to avoid interpretations of the Colorado River Compact of 1922. It may be that such interpretations, in the context of the report, would be hypothetical and premature. Nonetheless, I am constrained to state New Mexico's position on several points related to the Colorado River Compact and other matters affecting New Mexico's interests in the Upper Basin of the Colorado River: 1) Evaporation of water impounded for use in the Lower Basin is chargeable against the beneficial consumptive use apportioned to the Lower Basin by the Colorado River Compact; 2) Beneficial consumptive use of the waters of the tributaries of

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the Colorado River system in the Lower Basin is chargeable to the beneficial consumptive use apportioned to the Lower Basin by the Colorado River Compact; 3) Table 16 of the report reflects scheduled releases from Upper Basin reservoirs averaging 8.6 million acre feet annually by the year 2000. Bureau of Reclamation representatives advise that this projection is based on estimated depletion in the Upper Basin averaging 5.4 million acre feet annually at that time. Such a projection is not inappropriate for planning purposes but should not be construed or used in any way to limit the rate of development in the Upper Basin. The water resources of the Upper Basin states must be developed, within the limitations of the Colorado River Compact, at the rate required to meet the growing water needs in those states. Legislation authorizing the Pacific Southwest Water Plan should include language fully safeguarding the rights of the Upper Basin states under the Colorado River Compact, but, of course, not limiting in any way the rights and opportunities for water development and use in the Lower Basin; 4) The report proposes that power revenues from the Boulder Canyon and Parker-Davis projects surplus to costs of operation, maintenance and replacement for these projects be credited to the Pacific Southwest Development Fund after the construction costs of these projects have been repaid. The criteria for the filling of the storage units of the Colorado River Storage Project provide that any deficiency in power production at Hoover dam resulting from such filling shall be met with power from units of the Colorado River Storage Project or the purchase of replacement power with money from the Colorado River Storage Project Fund and that the cost of meeting such deficiency shall be returned to the Colorado River Storage Project Fund from Hoover power revenues after 1987. This commitment of Boulder Canyon project revenues should be taken into account in planning the financing of the Pacific Southwest Water Plan. Legislation authorizing

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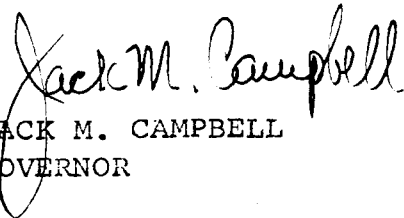
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the Pacific Southwest Water Plan and establishing a Pacific Southwest Development Fund should provide for complete reimbursement to the Upper Basin Fund of the cost of energy, replacement power and interest in connection with meeting Hoover power deficiencies under the filling criteria.

I appreciate the attention which your report gives to the need for water resources development in the Lower Basin of the Colorado River in New Mexico and this opportunity to comment on your farsighted and imaginative approach to the very difficult water problems of the Pacific Southwest.

Sincerely yours,

A handwritten signature in cursive script that reads "Jack M. Campbell". The signature is written in dark ink and is positioned above the typed name and title.

JACK M. CAMPBELL
GOVERNOR



STATE OF UTAH
OFFICE OF THE GOVERNOR
SALT LAKE CITY

GEORGE D. CLYDE
GOVERNOR

November 21, 1963

Honorable Steward L. Udall
Secretary
Department of the Interior
Washington 25, D. C.

Dear Mr. Secretary:

In reply to your letter of August 26, 1963 and pursuant to the provisions of Section I(c) of the Flood Control Act of 1944 (58 Stat. 887), I wish to state that Utah, with full concurrence of its Water and Power Board, endorses in principle the Pacific Southwest Water Plan as proposed in your report dated August 1963, but submits the following comments and recommendations relative thereto:

Under the Pacific Southwest Water Plan, you are proposing a comprehensive, region-wide development of water resources to be financed through a Basin Fund to operate in a manner somewhat similar to the Upper Colorado River Basin Fund of the Colorado River Storage Project. We concur with this concept of resource development because we believe it can provide logical and practicable solutions to regional, water-supply problems.

For the purpose of accounting under the terms of the Colorado River Compact of 1922, and for determining the Mexican Treaty burden at Lee Ferry, we believe that uses of water on the tributaries in the lower basin must be considered as a part of the river flow.

Likewise, we consider evaporation from the lower basin reservoirs as being part of the chargeable consumptive uses just as reservoir losses upstream are part of our stream depletions.

We recommend that the authorizing legislation for any Pacific Southwest Water Plan be prepared in such a manner that there can be no misunderstanding by future administrative officials or

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courts that future water resource development of the Upper Colorado River Basin must be protected up to the limit included in the terms of the Colorado River Compact.

It is noted that your report shows the feasibility of the Pacific Southwest Water Plan to be predicated on deliveries of water from the Upper Basin to the Lower Basin far in excess of Compact requirements for a period of years. Such excess flows temporarily used for large populations of the Pacific Southwest, may be extremely difficult to recover when development in the Upper Basin requires it. Therefore, in order to preclude any permanent use of such water, we recommend that authorizing legislation specify that, notwithstanding the assumptions in your report of the deliveries of Upper Basin water, the Upper Basin states shall never be precluded from developing their water resources nor restricted in time of development within the Compact apportionment as a result of construction and operation of the facilities under the Pacific Southwest Water Plan.

Your report states that "squatters" along the Colorado River between Davis Dam and Mexico are diverting about 200,000 acre-feet of water per year. The introduction of legislation to authorize the Pacific Southwest Water Plan might provide an opportunity to have Congress direct the Secretary of the Interior to either enter into water contracts with these "squatters" and charge their uses against the apportionment of the State in which used, or to provide enforcement in some manner to prevent further illegal uses of water.

The construction and operation of Glen Canyon Reservoir, a part of the Colorado River Storage Project, greatly enhances the feasibility of the Bridge Canyon and Marble Canyon dams and reservoirs, which are parts of the proposed Pacific Southwest Water Plan. Downstream benefits could be determined in much the same manner as the Federal Power Commission computes upstream benefits under Section 10(f) of the Federal Power Act; although specific legislation would be necessary for the Marble - Bridge - Glen Canyon case in order to have the compensation accrue to the Upper Basin Fund.

While discussing the Pacific Southwest Water Plan and our entire Colorado River development, we wish to call your attention to the reimbursement for diminution of Hoover Power revenues. It is our understanding that statements have already been made in committee reports and on the floor of Congress that both principal and interest paid from the Upper Basin fund for diminution of Hoover Power revenues will be refunded following payout of Hoover Dam. We believe this to be a legitimate charge on any Lower Basin Fund.

Your Pacific Southwest Water Plan report suggests considerable subsidy of municipal and industrial water from power revenues.

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This new idea in the reclamation field should be given careful consideration as a matter of resource development policy.

Senate Bill 26 to authorize the Dixie Project, Utah, has already been approved by the Senate and is before the House. We urge this project be authorized at the earliest possible date. S. 1658 for the Central Arizona Project is also pending before Congress. In the event that either or both of these bills are approved by the Congress before authorization of the Pacific Southwest Water Plan, steps should be taken to integrate these projects into the plan as participants in the development fund and operation of the river. However, we feel that we would have to oppose any delay in authorizing the Dixie Project simply to have it made a part of the Southwest Water Plan.

We heartily agree with the Study and Research program to help meet the water needs of our future populations which you have outlined in Chapter IX of your report. We believe that the detailed inventory of water supply uses and wastes must be continued so that we can have a complete log of water resources in the basin.

We appreciate the opportunity to comment and offer recommendations on a matter so important to our Nation, the Pacific Southwest, and to our State. Utah stands ready and willing to discuss any elements of the PSWP with you or representatives of your department, or to aid in drafting legislation to accomplish the necessary purposes. We fully realize that a development of the type encompassed by the PSWP will have far-reaching operational and legal implications involving all geographical and political areas of the Colorado River Basin.

May I emphasize that while we approve this Plan in principle, we wish to reserve the right to review and comment on more detailed plans as they are developed, either for a general Pacific Southwest plan or for various parts.

Sincerely,



George D. Clyde
G o v e r n o r

GDC/mw



WYOMING
EXECUTIVE DEPARTMENT
CHEYENNE

CLIFFORD P. HANSEN
GOVERNOR

PAUL R. HOLTZ
ADMINISTRATIVE ASSISTANT

November 26, 1963

The Honorable Stewart L. Udall
Secretary of the Interior
Washington, D.C. 20425

Dear Secretary Udall:

As Governor of the State of Wyoming, I am writing in reply to your letter of August 26, 1963, and pursuant to Section 1(c) of the Flood Control Act of 1944 (58 Stat. 887), submitting herewith the following views, comments and suggestions relative to the Pacific Southwest Water Plan as proposed in your report dated August, 1963.

The Pacific Southwest Water Plan as proposed in the report constitutes in general terms a comprehensive region-wide plan for development of water resources to be financed by the operation of a basin fund in a manner similar to the Upper Colorado River Basin Fund of the Colorado River Storage Project. This concept of resource development appears to us to provide a practicable solution to a serious regional water supply problem and we concur in this approach. Therefore, in principle, we approve the Pacific Southwest Water Plan, with reservation of the right to review and comment on certain aspects of the present proposal, the more detailed plans as they are developed and any proposed legislation designed to bring the plan to realization.

It is my recommendation that any authorizing legislation for the proposed Pacific Southwest Water Plan should contain provisions to insure protection of future water resources development of the Upper Colorado River Basin under the terms of the Colorado River Compact. My recommendation is to include language similar to that of the last sentence in Section 4 and Sections 7, 9 and 14 of the Colorado River Storage Act (70 Stat. 105) (copies attached). Such provisions would protect the terms of pertinent compacts.

The figures used in Table 16 of the Pacific Southwest Water Plan show estimated releases from Glen Canyon Dam to be 10.35 maf at present, diminishing to 8.6 maf in the year 2000. Under the Colorado River

continued:

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Compact, the Upper Basin deliveries at Lee Ferry (Glen Canyon Dam) must not drop below 75 maf in any 10-year period, or an average of 7.5 maf per year. This brings up the important question of whether or not allowances have been made for a realistic rate of water resource development in the Upper Basin between now and the year 2000. We in Wyoming are mindful of the possibility that our future development might be restricted by the estimates of water deliveries at Glen Canyon Dam contained in the Pacific Southwest Water Plan. Provision must be made for their flexibility to meet circumstances actually encountered or anticipated upon the basis of a safe annual yield.

It is our feeling that any authorizing legislation should contain assurances that, notwithstanding the estimates of deliveries of water by the Upper Basin in the Pacific Southwest Water Plan report, the Upper Basin states shall never be precluded from developing their water resources within their Compact apportionments as a result of construction and operation of the facilities of the Pacific Southwest Water Plan. The Upper Basin states must be permitted to go forward at once with development involving beneficial use of any or all the water allotted to them by the Colorado River Compact.

Evaporation losses are recognized as one of the factors in accounting for the total water supply. Responsibility for such losses must be distributed equitably among the users.

The Pacific Southwest Water Plan mentions that "Squatters" along the Colorado River between Davis Dam and the Mexican boundary are diverting about 200,000 acre feet of water per year. We feel that this use must be charged against the apportionment of the state in which it is used, and it appears that the authorizing legislation should provide some manner of enforcement or the state itself must provide some means to prevent these illegal uses of water if it wishes to avoid chargeability for the water so diverted.

While the Supreme Court in Arizona v. California declares that the use of water from tributaries of the Colorado River is not chargeable to Arizona under the Project Act, Wyoming - of the Upper Basin - takes exception to this as any general approach to the Colorado River Compact of 1922 and the Upper Colorado River Compact dated October 11, 1948, each of which clearly states that the river system includes

continued:

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tributary as well as main stem water. In accounting for water uses under the terms of the compacts, we feel that tributary uses must be included along with the main stream uses and that this principle should apply to the Lower Basin as well as the Upper Basin. Consumptive use of the Gila River must be charged to the Lower Basin.

Construction and operation of Glen Canyon Dam and Reservoir, a part of the Colorado River Storage Project, greatly enhances the power potential production at the proposed Bridge Canyon and Marble Canyon Dams and Reservoirs which are units of the Pacific Southwest Water Plan, by virtue of the upstream regulation provided by Glen Canyon Dam. It is recommended that serious consideration be given by the Department of the Interior to a provision for compensation to the Upper Colorado River Basin Fund for the benefits to these downstream power plants at Bridge Canyon and Marble Canyon, created by Glen Canyon.

Any observations here made should not be construed as an interpretation of the Colorado River Compact or the Upper Colorado River Compact. Those documents and their legislative history are considered clear. The views of Wyoming as set out in this letter are considered to be applicable to any phase of the Pacific Southwest Water Plan or any modification of such plan to a lesser or greater extent.

I agree with the study and research program outlined in Chapter IX of your report. In order to meet the needs of our increasing population, further knowledge is vital in all the fields there discussed.

The opportunity to review, comment and offer recommendations on a plan so important to a rapidly expanding Pacific Southwest and to our state and nation is greatly appreciated. We are certainly aware that a development of the magnitude of the Pacific Southwest Water Plan could have far-reaching operational and legal implications for all areas in the Colorado River Basin, so we want you to know that Wyoming stands ready to participate and aid in the realization of this great effort, within the limitations set out.

Sincerely,



Clifford P. Hansen
Governor

Laws governing.

SEC. 4. Except as otherwise provided in this Act, in constructing, operating, and maintaining the units of the Colorado River storage project and the participating projects listed in section 1 of this Act, the Secretary shall be governed by the Federal reclamation laws (Act of June 17, 1902, 32 Stat. 388, and Acts amendatory thereof or supplementary thereto): *Provided*, That (a) irrigation repayment contracts shall be entered into which, except as otherwise provided for the Paonia and Eden projects, provide for repayment of the obligation assumed thereunder with respect to any project contract unit over a period of not more than fifty years exclusive of any development period authorized by law; (b) prior to construction of irrigation distribution facilities, repayment contracts shall be made with an "organization" as defined in paragraph 2 (g) of the Reclamation Project Act of 1939 (53 Stat. 1187) which has the capacity to levy assessments upon all taxable real property located within its boundaries to assist in making repayments, except where a substantial proportion of the lands to be served are owned by the United States; (c) contracts relating to municipal water supply may be made without regard to the limitations of the last sentence of section 9 (c) of the Reclamation Project Act of 1939; and (d), as to Indian lands within, under or served by any participating project, payment of construction costs within the capability of the land to repay shall be subject to the Act of July 1, 1932 (47 Stat. 564): *Provided further*, That for a period of ten years from the date of enactment of this Act, no water from any participating project authorized by this Act shall be delivered to any water user for the production on newly irrigated lands of any basic agricultural commodity, as defined in the Agricultural Act of 1949, or any amendment thereof, if the total supply of such commodity for the marketing year in which the bulk of the crop would normally be marketed is in excess of the normal supply as defined in section 301 (b) (10) of the Agricultural Adjustment Act of 1938, as amended, unless the Secretary of Agriculture calls for an increase in production of such commodity in the interest of national security. All units

43 USC 371
note.
Repayment
contracts.

43 USC 485a.

53 Stat. 1194,
1195.

25 USC 386a.
Restriction.

63 Stat. 1051.
7 USC 1441
note.

52 Stat. 41.
7 USC 1281.

and participating projects shall be subject to the apportionments of the use of water between the Upper and Lower Basins of the Colorado River and among the States of the Upper Basin fixed in the Colorado River Compact and the Upper Colorado River Basin Compact, respectively, and to the terms of the treaty with the United Mexican States (Treaty Series 994).

46 Stat. 3000;
45 Stat. 1057.
63 Stat. 31.
59 Stat. 1219.

SEC. 7. The hydroelectric powerplants and transmission lines authorized by this Act to be constructed, operated, and maintained by the Secretary shall be operated in conjunction with other Federal powerplants, present and potential, so as to produce the greatest practicable amount of power and energy that can be sold at firm power and energy rates, but in the exercise of the authority hereby granted he shall not affect or interfere with the operation of the provisions of the Colorado River Compact, the Upper Colorado River Basin Compact, the Boulder Canyon Project Act, the Boulder Canyon Project Adjustment Act and any contract lawfully entered into under said Compacts and Acts. Subject to the provisions of the Colorado River Compact, neither the impounding nor the use of water for the generation of power and energy at the plants of the Colorado River storage project shall preclude or impair the appropriation of water for domestic or agricultural purposes pursuant to applicable State law.

Power plant
operations.

70 Stat. 109.
70 Stat. 110.
45 Stat. 1057.
43 USC 617 note.
54 Stat. 774.
43 USC 618o.

SEC. 9. Nothing contained in this Act shall be construed to alter, amend, repeal, construe, interpret, modify, or be in conflict with the provisions of the Boulder Canyon Project Act (45 Stat. 1057), the Boulder Canyon Project Adjustment Act (54 Stat. 774), the Colorado River Compact, the Upper Colorado River Basin Compact, the Rio Grande Compact of 1938, or the Treaty with the United Mexican States (Treaty Series 994).

Saving provision.
43 USC 617
note.
43 USC 618o.
53 Stat. 785.
59 Stat. 1219.

Operation and
maintenance,
compliance.

70 Stat. 110.

70 Stat. 111.

63 Stat. 31.

45 Stat. 1057;

54 Stat. 774.

43 USC 617

note, 618o.

59 Stat. 1219.

Sec. 14. In the operation and maintenance of all facilities, authorized by Federal law and under the jurisdiction and supervision of the Secretary of the Interior, in the basin of the Colorado River, the Secretary of the Interior is directed to comply with the applicable provisions of the Colorado River Compact, the Upper Colorado River Basin Compact, the Boulder Canyon Project Act, the Boulder Canyon Project Adjustment Act, and the Treaty with the United Mexican States, in the storage and release of water from reservoirs in the Colorado River Basin. In the event of the failure of the Secretary of the Interior to so comply, any State of the Colorado River Basin may maintain an action in the Supreme Court of the United States to enforce the provisions of this section, and consent is given to the joinder of the United States as a party in such suit or suits, as a defendant or otherwise.

Discussion of the Comments of the
Upper Colorado River Basin States

The Upper Colorado River Basin States, while all agreeing on the regional concept of water resource development, are all consistent in their views as they pertain to the Colorado River Compact of 1922.

The Pacific Southwest Water Plan will not encroach upon the water rights of the Upper Colorado River Basin as defined by the Colorado River Compact. The Compact provisions are not at issue and are not discussed or interpreted by implication. The Water Plan fundamentally provides for the construction and implementation of those engineering and financial facilities necessary to the development and delivery of a water supply to meet the needs of the Pacific Southwest. Because the Upper Colorado River Basin States have not as yet implemented those projects to fully utilize their allocated share of Colorado River water and because deliveries of Colorado River water at Lee Ferry to date have generally far exceeded required deliveries as set forth in the Compact, it was necessary to assume, for planning purposes, some rate of river depletion as Upper Basin uses develop. This assumption will not inhibit or accelerate Upper Basin development but merely is the basis for estimates of water quantities that might be available at Lee Ferry under a projected rate of Upper Basin development. Approval of the Plan by the Congress should in no way be construed as legislative sanction for any magnitude of delivery of water to the Lower Basin.

The Upper Basin States all propose that the Upper Colorado River Basin Fund be reimbursed with interest for revenues lost under the Glen Canyon filling criteria. Inasmuch as the Pacific Southwest Water Plan does not alter the conditions under which the filling criteria were developed, provision for reimbursement goes only to the extent provided by the filling criteria.

The benefits to the Marble Canyon and Bridge Canyon Projects from operation of Glen Canyon Dam were not transferred to the Upper Basin Fund. This was not considered appropriate, as all structures involved are Federal undertakings, and there is no precedent or apparent need for such a transfer.

Hooker Dam and Reservoir, as requested by New Mexico, are included for immediate authorization under the Initial Plan as part of the facilities proposed for the Central Arizona Project. New Mexico

further states that the dam and reservoir should be constructed to the maximum practical capacity. This possibility is already under study for maximum water resource development.

Authorization of the Dixie Project is currently being sought in the Congress by the State of Utah. A Bureau of Reclamation report demonstrating the financial and engineering feasibility of this project has been printed as House Document No. 86, 86th Congress, and is referred to as supplemental information supporting the report on the Pacific Southwest Water Plan. This project is included without change in the principal physical works involved for immediate authorization of the Initial Pacific Southwest Water Plan, which provides at the same time for the establishment of the Pacific Southwest Development Fund and for incorporation of this project in the Plan. Thus, the Pacific Southwest Water Plan is a vehicle designed for the early authorization of a limited number of worthy projects in the Pacific Southwest, including the Dixie Project.

VIEWS AND RECOMMENDATIONS OF
DEPARTMENT OF AGRICULTURE
ON AUGUST 1963 TASK FORCE REPORT
ON THE PACIFIC SOUTHWEST WATER PLAN



DEPARTMENT OF AGRICULTURE
WASHINGTON 25, D.C.

January 21 1964

Honorable Stewart L. Udall
Secretary of the Interior

Dear Mr. Secretary:

This is in reply to your letter of August 26, 1963, transmitting for our review and comment your proposed report on the Pacific Southwest Water Plan.

The Pacific Southwest area as considered in the report contains 190,000 square miles. It includes the southern portion of California, most of the State of Arizona, the southern portions of Nevada and Utah, and a portion of western New Mexico. The plan presented provides for stage developments of the works which are characterized in the report as Phases 1 and 2. Phase 1 consists of the feasible units which the Bureau of Reclamation feels should be initiated now to meet the most urgent needs at the earliest possible date. It is estimated to cost about \$1,900,000,000. Phase 2 is a multiple-purpose plan proposal, including units which will require additional investigation prior to authorization and which could be initiated at appropriate later dates. The total plan is estimated to cost \$4,085,344,000.

The report recommends that the initial phase plan include the following:

- a. Bridge Canyon and Marble Canyon Dams and Powerplants on the main stream of the Colorado River, including transmission and appurtenant facilities;
- b. Enlargement of the California State Water Project aqueduct;
- c. The Central Arizona Project;
- d. Authorization of a large desalting plant on the seacoast in southern California and intensified studies under the Anderson-Aspinall Act on the feasibility of more such plants;
- e. The Southern Nevada Water Supply Project, first stage, to provide up to 90,000 acre-feet annually by 1968 for the growing Boulder City, Henderson, and Las Vegas areas by pumping from Lake Mead to the service areas;

- f. The Dixie Project in southwestern Utah to provide about 60,000 acre-feet annually, starting in 1970, for irrigation and municipal and industrial purposes;
- g. The Hooker Dam Project in New Mexico (a unit of the Central Arizona Project), with completion by 1974, to control and regulate erratic storm and winter season runoff, to stabilize flows for downstream agricultural purposes, and for municipal and industrial uses in the Silver City and Tyrone areas;
- h. Expansion of Indian Irrigation Project facilities on the Colorado River, Fort Mohave and Chemehuevi Reservations, to be completed by 1970;
- i. Water salvage and ground-water recovery projects along the main-stream Colorado River to begin the conservation of river flows now being consumed for nonbeneficial purposes, such as growth of useless shrubs and trees, and percolation out of areas of use;
- j. Initial programs of fish and wildlife, recreation, and other related functions associated with this Pacific Southwest Water Plan.

The report presents a case for development and conservation of water resources of the area. It estimates a composite benefit-cost ratio of 2.1 to 1.0 for the \$4,085,344,000 water plan based on a 100-year period of analysis and a 3 percent interest rate.

Irrigation benefits of \$428,075,000, as shown in the report, represent about 42 percent of the total benefits. The report does not provide adequate information on the methods used in calculating irrigation benefits or sufficient data to permit an evaluation of the irrigation proposal. The report stresses that the agricultural economy of the area must be maintained because of its contribution of specialty crops, such as winter vegetables, field-grown cut flowers and citrus fruit to the Nation's tables; and because it supplies livestock products for growing metropolitan areas. The report states, "Cost of shipping such supplies from other remote areas of the Nation would probably be prohibitive."

A stated major objective of the plan is to maintain irrigated agriculture near its present level. It is not clear if this objective relates to insuring an ample irrigation water supply for remaining acreages or if zoning regulations would also be used to prevent encroachment of urban and industrial developments on irrigated lands, or whether it is planned to develop new land to replace the acreages which may be lost through urban and industrial developments. We believe that any substantial additional irrigation development should be appraised carefully in the light of national food and fiber requirements.

The report estimates that area redevelopment benefits of \$487,000 annually are expected to accrue through construction of a number of projects. The report does not present information on the current rate of unemployment and the effect of the projects on current and future employment in the area.

The report defines the future needs and deficiencies of the Pacific Southwest region on the basis of demand and supply relationships but does not clearly identify the demand of individual water-using entities. The general lack of detail inhibits an appraisal of many segments of the plan.

The plan appears to be sound in its general approach to the subject of power development. However, it does not furnish adequate detail with respect to installed and firm capacity, average annual energy production, and transmission facilities for evaluation of its contribution to area power supply. There are several REA-financed systems in or near the project area which, together with other preference agencies, could use power developed at the projects included in the plan.

Review of the payout schedule indicates repayment of costs allocated to power within a 32-year period. It is also noted that surplus power revenues to be deposited in the proposed Development Fund would be available to assist in the amortization of other project purposes and other projects authorized by the Congress. These factors would tend to operate against the maintenance of power rates at the lowest feasible levels which we believe desirable and in accord with existing Federal power marketing policies.

The report does not contain, even in the section entitled "Study and Research" (Chapter 9), any reference to needs for improved water management based on carefully detailed soil surveys. The report seems to assume that maximum efficiency now has been reached in the use of present irrigation water supplies and will be applied in the use of those proposed for development in the future. This Department is constantly engaged in assisting farmers to improve their lands and water distribution systems for more efficient use of their irrigation water. In many cases water use efficiencies have been remarkably improved by land leveling, ditch lining, modern irrigation methods, and other practices included in improved water management. We recognize, too, in spite of the accomplishments in this area, that a great deal remains to be done before the use of irrigation water has reached optimum levels of efficiency.

The report does not recognize the need for owners and operators of farms, ranches, and forests and for local organizations to participate in upstream watershed conservation and improvement such as might be carried out with assistance from this Department under the provisions of the Watershed Protection and Flood Prevention Act.

Chapter VIII of the report declares the plan to be "a comprehensive coordinated plan." This appears to be true only in relation to the major structural phases and then only so far as these have been considered by agencies of the Department of the Interior. Little or no contribution to the plan has been made by other agencies of Federal or State Government, and the potentials of their programs have not been included in determining alternatives.

For example, according to statistics from "Ten Rivers in America's Future," approximately 75 percent of the water yield of the entire Colorado River Basin comes from the approximately one-third of the land area in forest and associated cover types. Nearly one-half of these forested lands, including most of the highest water-yielding areas, are under the jurisdiction of the Forest Service of this Department. Research and newly developed management techniques have demonstrated that it is possible to significantly modify water yields by delaying runoff, reducing sedimentation and increasing the total volume of runoff through manipulation of vegetative cover and snowpack management. Any comprehensive analysis of water resource potential and development should consider possible contributions from modifications in forest land management, yet these elements have apparently not been considered. The watersheds of the California rivers that will be involved in Phase 2 of the plan contain a much higher proportion of forested lands than those involved in Phase 1 and presumably their management will also be a highly significant feature of any water resource development plan.

A second example relates to the very close association which agencies of this Department have maintained with the studies on phreatophyte control since their earliest inception. The Department considers that it can make important contributions to the analysis of possible benefits and associated hazards in this program.

Management of National Forests in Arizona, California and throughout the entire drainage basin of the Colorado River can have major effects on many elements of the Pacific Southwest Water Plan. Under provisions of the Multiple Use Act of 1960 (16 USC 475), these forests are administered for outdoor recreation, range, timber, and watershed and wildlife purposes. Conduct of these programs may significantly influence the proposals for recreation development, for management of range and forest lands, and for watershed improvement envisioned in the report. Implementation of the structural and other features proposed in the plan would in turn create major impacts on many planned National Forest programs. These impacts and influences, both beneficial and adverse, must be considered in any thorough analysis of potential costs and benefits attributed to the plan. In some instances modification of location, design and operation of project developments may be required if they are to harmonize with National Forest programs and produce maximum public benefits.

Phase 1 of the plan includes recommendation for construction (among others) of the Maxwell and Hooker Reservoirs. Construction of these reservoirs would create serious impacts on the management, protection and use of considerable acreages of National Forest land in Arizona and New Mexico, including a portion of the Gila Wilderness Area. Time has not permitted a detailed study of these impacts and determination of recommended measures necessary to assure coordination of the reservoir construction, use and operation with the multiple use of adjoining National Forest resources and lands.

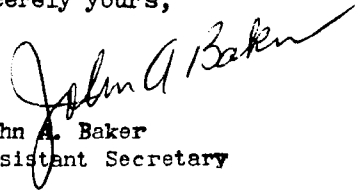
In view of the magnitude and scope of the plan, a comprehensive study encompassing the coordinated participation of all Federal and non-Federal interests as provided for in Senate Document 97 would be most desirable. If the exigencies of the situation will not permit such consideration, we then recommend the following:

- a. The authorizing legislation should include a directive requiring the preparation of a comprehensive development plan by the concerned Federal agencies, in cooperation with State and local agencies, that will integrate Phase 1 projects and the projects and program of all agencies into a comprehensive regional water resource development plan, thus providing a coordinated basis for the proposals that will be later advanced in Phase 2. This comprehensive plan should be completed prior to requests for authorization of any part of Phase 2 of the plan.
- b. Since projects that would be authorized under Phase 1 of the plan will have impacts on the National Forest System, the authorizing legislation should contain provisions covering administrative arrangements comparable to those most recently developed for similar situations. These should include provisions for the inter-change of jurisdiction of affected lands between the Departments of the Interior and Agriculture; for the construction, operation and maintenance of recreational facilities within or adjoining National Forest boundaries by the Forest Service; for definition of the project purposes for which the Department of the Interior will maintain jurisdiction over certain lands and waters regardless of their location; and for establishment of arrangements for collaboration between the Departments of the Interior and Agriculture to mitigate the adverse impacts that any Phase 1 project may have on resources, improvements and programs associated with the National Forest System.

We believe that a coordinated and balanced program of water and related land resource development is essential for continued growth of the water-scarce Southwest region. This Department stands ready to participate in comprehensive water and related resources development planning for the Southwest to the extent that needed funds and personnel are made available.

We appreciate the opportunity afforded us to review the report.

Sincerely yours,


John A. Baker
Assistant Secretary

Discussion of Comments of the Department of Agriculture

With respect to the Assistant Secretary's belief that any substantial additional irrigation development should be appraised carefully, it will be noted that the Initial Plan contemplates, to the extent practical, the maintenance of existing irrigation levels, rather than any substantial additional irrigation development.

The REA-financed power systems in this area will have the opportunity, along with all other preference customers, to apply for purchase of the commercial power which will become available. In regard to the Assistant Secretary's comment about use of surplus power revenues to support other project purposes, this is the conventional procedure for all the great multiple-purpose Federal basin programs of the West and the only sound way to achieve well-rounded development of the region. It is anticipated that the power rates under the Pacific Southwest Water Plan will be low enough to be quite attractive, as is the case in the other great basins of the West, to REA-financed and other preference customers.

On the matter of irrigation efficiencies, it is agreed that there still remains considerable opportunity for improving efficiency in on-farm use of water for irrigation. Continued and accelerated programs for improvement of on-farm water management efficiency is essential to the full success of the Plan in meeting future needs of the area.

With respect to the Assistant Secretary's comments on recognition of companion upstream programs and contributions which should be made to the overall regional program by other Federal and State agencies, it is agreed that these will be essential as the program develops beyond the Initial Plan recommended herein as the basic foundation. These are provided for in the recommendations for immediate and long-range planning and the establishment of a regional water commission as modeled, insofar as appropriate, along the lines of that set forth in S. 1111.

It is anticipated that mutually satisfactory arrangements will be worked out as the needs arise relative to the land and project jurisdictions between Interior and Agriculture and collaboration on various items in the two Departments' programs.

VIEWS AND RECOMMENDATIONS OF
DEPARTMENT OF THE ARMY
ON AUGUST 1963 TASK FORCE REPORT
ON THE PACIFIC SOUTHWEST WATER PLAN



IN REPLY REFER TO
ENGCGW-PD

HEADQUARTERS
DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF ENGINEERS
WASHINGTON 25, D.C.
20315

3 December 1963

The Honorable Stewart L. Udall

The Secretary of the Interior

Dear Mr. Secretary:

Reference is made to your letters of 26 August 1963 to the Secretary of the Army and to the Chief of Engineers transmitting for review and comment the proposed report of the Department of the Interior on the Pacific Southwest Water Plan.

The report on the Pacific Southwest Water Plan has been reviewed without the benefit of previous coordination or joint considerations in connection with this particular plan. It would be very difficult to make, at this time and under these circumstances, an objective appraisal of the merits of its proposals, particularly, in view of the nature and extent of detail and substance presented therein. Those making an examination of this initial version of the report possibly would benefit from an opportunity to consider the results of the close scrutiny given, by your Department, to the plan and its details during the 90-day review period. It is my view that more detailed analyses of water needs and supplies than those now available and studies of alternative uses of available water supplies are needed before conclusions can be reached on a plan of development of this magnitude and importance.

Only the most general comments can be made with regard to the adequacy and practicability of the proposed physical improvements and funding arrangements. Information in the report does not permit a clear and consistent understanding of the present water uses, inter-changes, and supplies in the vast Pacific Southwest region and its major drainage areas or basins. The report indicates water deficiencies at the present time may be as high as 1,340,000 acre feet annually which takes into account depletions, evaporation losses and conveyance losses totalling 4,100,000 acre feet annually or about 23 percent of the indicated total annual usage of 17,750,000 acre feet. The estimated 1,730,000 acre feet of conveyance losses alone are about 88 percent of the estimated present total regional use for municipal and industrial water supplies. Perhaps a specific plan for the reduction of the depletions, evaporation and

The Honorable Stewart L. Udall

conveyance losses would go far in alleviating the present groundwater over-drafts, estimated at 2,400,000 acre feet annually in Arizona and 500,000 acre feet annually in southern California.

With respect to estimated projected water uses, it is noted that, of the indicated increases at year 2000, about 48 percent are attributed to increased uses in the California coastal drainage of Ventura, Los Angeles, Orange, San Bernardino, Riverside and San Diego Counties and about 23 percent are attributed to increased uses in the Central Arizona Project. Since these two areas account for a major portion of the expected total increase of water usage in the Pacific Southwest region it would appear that studies leading to future action programs to meet the increased usage logically could address themselves initially to the problems within these separate areas. In such studies consideration of inter-basin exchanges could be limited to general appraisals of the potentials unless further inter-basin analyses and studies of alternative use result in a conclusion that one major drainage basin is the logical water supply area for support of the economy of another basin or area.

It is suggested in the report that in all water diversions from areas of surplus to areas of deficiencies the areas of origin could be protected in accordance with policies recently established in connection with the New Melones Project wherein diversions would be subordinate at all times to the existing and anticipated quantities of water needed within the basin of origin. While this normally would be construed to mean the present and anticipated needs within the individual river basins being considered as sources of surplus water, question arises as to the extent that such limitation could logically be applied to the over-all needs within major economic entities such as Northern California and within entire States of the Pacific Southwest Region as implied in your report. This further supports my view that the assessment of potential water supplies; the appraisal of water needs for all purposes, including recreation, fish and wildlife enhancement, and agricultural and rural supplies, in addition to the municipal and industrial needs which already have been studied in considerable detail; and the study of alternative uses of water should be made for separate economic, hydrologic, or water related areas of the affected States, for example, the northern portions of California, as the initial steps in the definition of the water plan for the region. With such analyses at hand the problems of inter-regional diversions between the major drainage areas of California and the Colorado Basin could be resolved with confidence.

The establishment of an extensive basin account procedure wherein the proposed Pacific Southwest Water Plan would be financed through a Pacific Southwest Development Fund may present an apparent solution for some of the financing problems. Also, it may create some problems.

ENGCW-PD

The Honorable Stewart L. Udall

Careful consideration should be given to the geographic area to be served by a single fund of this nature to avoid or minimize inter-regional conflicts over use of surpluses to finance or subsidize the non-reimbursable or partially reimbursable purposes included in the plan of development. Also, if such a fund has merit for use in funding projects by the Department of the Interior perhaps its advantages should be made available to others. This could be accomplished by placing the fund under an administrative control that would permit all water resources developments in the region by all levels of government and by all interested agencies to participate in these advantages. Regardless of its administration and the extent of participation, the fund should never be used to include in the over-all plan of development any individual projects or increments that are not justified on an individual basis.

The report on the Pacific Southwest Water Plan that has been furnished for review indicates that the present requirement for additional water in the region stems, primarily, from a need for replacement water to alleviate groundwater over-drafts that have been going on for a number of years. I agree that relief from this practice is desirable but I believe it would be most prudent to approach this matter and the satisfaction of future needs on the basis of careful appraisals of the engineering, economic and social factors that contribute to the water problems in this large and important section of our nation. Such appraisals will take time and should be fully coordinated among all interested agencies with a view to establishing equitable and soundly formulated water resource plans that will contribute in an optimum manner to the economy of all portions of the Pacific Southwest.

Sincerely yours,



R. G. MacDONNELL
Major General, USA
Acting Chief of Engineers

Discussion of Comments of the Department of the Army

The plan recommended is consistent with the basic broad resource planning objectives and suggestions advanced by the Acting Chief of Engineers.

His view that more detailed studies of water needs and supplies are needed before conclusions can be reached on a plan of this magnitude is applicable to those features of the Initial Plan listed as requiring more detailed study and to the additional features which may be found desirable as additions to the plan in the future. However, previous and current investigations and planning programs of Department of the Interior bureaus, particularly Reclamation, in the Colorado River Basin (where Congress historically has assigned the primary water resources development responsibility to Interior) and in its service area have provided sound bases to support the recommendations for immediate authorization of a limited number of features in these areas. Also, Bureau of Reclamation planning programs in the Central Valley of California and the California North Coast area, and California Water Resources Department planning programs provide a sound basis for the proposals with respect to transfer of surplus North Coast water to southern California.

The Department of the Interior cannot agree with the suggestion that studies proceed independently for separate areas of the region. Good progress has already been made along such lines, but the time has now arrived for consideration of the problems and opportunities of the region as a whole simultaneously with consideration of future needs of the various component areas.

All practical objectives of the Acting Chief of Engineers' suggestions of a specific plan for the reduction of depletions, evaporation, and conveyance losses are included as a part of the recommended plan.

Careful consideration has been given to the area to be served by the development fund. Extension of support from the fund to additional features in the future, as the plan unfolds, of course, will be dependent upon recommendations by the Secretary of the Interior and approval by the Congress. It is visualized as probable that such extension of support may be recommended for certain features to be constructed by other resource agencies.

The Department of the Interior fully concurs with the Acting Chief of Engineers' comment that careful appraisals of the engineering, economic, and social factors that contribute to the water problems should be bases for future consideration. The proposals and recommendations herein are founded on this premise.

VIEWS AND RECOMMENDATIONS OF
DEPARTMENT OF COMMERCE
ON AUGUST 1963 TASK FORCE REPORT
ON THE PACIFIC SOUTHWEST WATER PLAN

U.S. DEPARTMENT OF COMMERCE

BUREAU OF PUBLIC ROADS

WASHINGTON ~~20~~D.C. 20235

Nov. 4, 1963

IN REPLY REFER TO:

32-03

Honorable Stewart L. Udall
Secretary of the Interior
Washington, D. C. 20240

Dear Mr. Secretary:

As requested in your letter of August 26, 1963, I am transmitting herein the comments of the interested Department of Commerce agencies on your proposed report titled "The Pacific Southwest Water Plan."

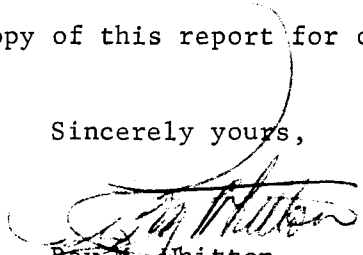
The Coast and Geodetic Survey advises that horizontal and vertical geodetic control have been established in the project area. The Coast and Geodetic Survey's review of the report indicates that additional control may be needed to determine seismic and other earth movements. If additional control is needed, the Coast and Geodetic Survey would appreciate receiving advance notice of the need so that cost estimates can be furnished.

The Area Redevelopment Administration notes that 70 percent of the work proposed for immediate action is fully or partially within and directly affects areas falling within the scope of the Area Redevelopment and Accelerated Public Works Acts, and feels that the construction of these projects would have a beneficial effect on the economy of these areas. The Area Redevelopment Administration is of the opinion that the economic effect of these projects on these areas should be considered in developing the construction priority schedule.

Neither the Bureau of Public Roads nor the Weather Bureau have any comments on the proposed overall plan as such. They would, however, appreciate being kept advised of the detailed planning of the individual projects so that the planning of these projects can be coordinated with the programs under their cognizance.

Your courtesy in providing a copy of this report for our review is appreciated.

Sincerely yours,



Rex M. Whitton

Federal Highway Administrator

Discussion of Comments of the Department of Commerce

The Department of Commerce comments that additional horizontal and vertical control may be needed to determine seismic and other earth movements and that area redevelopment benefits should be evaluated more fully. This program would be accomplished under normal agency responsibilities as part of interagency cooperation if future engineering analysis indicates desirability of additional control. Area redevelopment benefits are evaluated in accordance with latest ARA criteria.

VIEWS AND RECOMMENDATIONS OF
DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
ON AUGUST 1963 TASK FORCE REPORT
ON THE PACIFIC SOUTHWEST WATER PLAN



DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

PUBLIC HEALTH SERVICE

WASHINGTON 25, D. C.

BUREAU OF STATE SERVICES

Refer to:

December 5, 1963

Honorable Stewart L. Udall
Secretary of the Interior
Washington 25, D. C.

Dear Mr. Secretary:

This letter is in response to your request of August 26, 1963, for review and comments on your Department's Pacific Southwest Water Plan.

Your analysis of the problem from a regional standpoint is meritorious. The report reflects much insight on many aspects of probable economic growth and change in the area. The need for additional water to meet future economic growth is well demonstrated.

The proposed plan, however, does not give adequate consideration to the necessity of reuse of water as a means of meeting the future growth requirements. Reuse is directly dependent on quality, a situation already of problem proportions in the area. Quality can be maintained and improved by controlling water use and disposal practices. We believe that in planning for further water resources development primary consideration should be given to reuse and the quality factors adversely affecting reuse. The proposed plan defers these quality considerations to future examination and study.

It appears to us that a basic premise of the plan is that all the waters allocated by the Colorado Compact will be available for consumptive use. This premise accepts that all costs incurred because of quality diminution from uses in the upper reaches should be imposed on users in the lower reaches. Included among these costs are desalting, operation and maintenance in community systems, reduced satisfaction in households and other personal uses, increases in agricultural expenses necessitated by purchase of larger quantities of water to maintain functional soil properties, decreases in crop yields, and increases in drainage operation expenses.

While it may be feasible in the future to meet aspects of this situation through large-scale desalinization projects, this will not provide an acceptable answer to the problem unless satisfactory disposal is provided for the concentrated brines which remain when the separation of low solids water from brackish or saline waters is accomplished.

We believe that one of the most pressing needs is for a detailed investigation of the long-range municipal, industrial, and agricultural waste disposal requirements in the Southwest. Such an investigation is now underway in a part of the area--the Department of Health, Education, and Welfare Colorado River Basin Project. We suggest that water quality should be the subject of continuing conferences between our Departments in the preparation of water resource development plans for the Southwest.

We appreciate the opportunity to review your Southwest Water Plan, and we will be pleased to consult further on your request.

Sincerely yours,

A handwritten signature in cursive script that reads "G. E. McCallum". The signature is written in dark ink and is positioned above the typed name.

G. E. McCallum
Assistant Surgeon General
Chief, Division of Water Supply
and Pollution Control

Discussion of Comments of the
Department of Health, Education, and Welfare

The Department of Health, Education, and Welfare comments that inadequate consideration is given to the necessity of reuse of water as a means of meeting future growth requirements. Primary consideration should be given to this and the quality factors adversely affecting reuse. It also comments that a detailed investigation of the long-range municipal, industrial, and agricultural waste disposal requirements in the Southwest is needed. It suggests that water quality should be the subject of continuing interdepartmental conferences.

The Pacific Southwest Water Plan recognizes the urgent need for utilization of waste waters. While assuming this to be an area in which local agencies can be highly effective, it suggests that the role of the Federal Government should be delineated as early as possible.

Further and continuing intensive programs to investigate all aspects of waste disposal and reuse problems are integral parts of the Pacific Southwest Water Plan. Interdepartmental cooperation in respect to water quality considerations and programs is anticipated.

VIEWS AND RECOMMENDATIONS OF
DEPARTMENT OF LABOR
ON AUGUST 1963 TASK FORCE REPORT
ON THE PACIFIC SOUTHWEST WATER PLAN



U. S. DEPARTMENT OF LABOR

OFFICE OF THE SECRETARY

WASHINGTON

December 16, 1963

Honorable Stewart L. Udall
Secretary of the Interior
Washington 25, D. C.

Dear Mr. Secretary:

This is in further reference to your letter of August 26, 1963, requesting Department of Labor comments on the proposed report of the Pacific Southwest Water Plan.

We have reviewed the proposed report in the light of the impact the additional water supply will have on job opportunities. It is estimated that the proposed project would provide only limited employment opportunities in New Mexico and Utah, but would be of paramount importance to California, Arizona, and Nevada, where adequate water supply is crucial to continued economic expansion.

In view of all considerations, the Department of Labor is pleased to inform you that it endorses the Pacific Southwest Water Plan. This assumes the project is otherwise economically sound and feasible and meets the standards set forth in the pertinent laws.

Thank you for the opportunity to review your report on this project.

Yours sincerely,

W. Willard Wirtz
Secretary of Labor

Discussion of Comments of the Department of Labor

The Secretary of Labor is in agreement with the intent of the Pacific Southwest Plan and has realistically and objectively evaluated the impact of the plan on the economy of the area.

VIEWS AND RECOMMENDATIONS OF
FEDERAL POWER COMMISSION
ON AUGUST 1963 TASK FORCE REPORT
ON THE PACIFIC SOUTHWEST WATER PLAN

FEDERAL POWER COMMISSION
WASHINGTON 25, D.C. 20426

November 26, 1963

Honorable Stewart L. Udall
Secretary of the Interior
Washington, D. C. 20240

Dear Mr. Secretary:

In response to your letter of August 26, 1963, we present herein the Commission's comments with respect to your proposed report on the Pacific Southwest Water Plan.

The proposed report, dated August 1963, sets forth in broad outline a long-range water plan for the Pacific Southwest, comprising the lower Colorado River drainage basin and the southern portion of California. The proposed plan is divided into Phase I - Immediate Action Program, having an estimated construction cost of \$1.9 billion; and Phase II - Continuing Project Development, having an estimated construction cost of \$2.2 billion. The report recommends authorization of the initial phase of the plan. To assist in repaying the costs of the initial phase projects, and to provide funds for future water development programs, the report also recommends establishment of a Pacific Southwest Development Fund. For financial assistance, some of the revenues from water and power sales, including those from Hoover and Parker-Davis dams, would flow into the Fund.

Although few project details are given in the proposed report, it appears that the following hydroelectric power developments are included in the recommended improvements: The Marble Canyon and Bridge Canyon projects located on the main stem of the Colorado River; three small plants planned in connection with the Central Arizona Project; and three small plants in connection with the Dixie Project, Utah. The total installed capacity of the proposed projects would be in excess of 2,100,000 kilowatts. In addition to furnishing some power for pumping purposes, the Bridge Canyon and Marble Canyon power projects would provide revenues which would be used in repaying the cost of water facilities included in the proposed plans.

The Commission has previously given consideration to the Central Arizona Project and to the Dixie Project. In its letter of May 21, 1948 to your Department, the Commission indicated that the principal reason for including the Bridge Canyon development in the Central Arizona Project plans appeared to be that of providing means for repayment of a large percentage of the reimbursable costs of the diversion project chargeable

to irrigation. The letter noted that the proposed installation of 750,000 kilowatts at Bridge Canyon represented the minimum capacity that should be provided at that project. In its letter of May 17, 1962 regarding the Dixie Project, the Commission concluded that the proposed hydroelectric power development, providing 13,200 kilowatts in three plants, was a desirable feature of the plans.

Applications for license are pending before the Commission for both the Marble Canyon and Bridge Canyon power projects. Application for Project No. 2248 by the Arizona Power Authority includes both projects. The application for Project No. 2272 by the City of Los Angeles covers only the Bridge Canyon project. Hearings have been held with respect to the Marble Canyon portion of Project No. 2248 and the examiner's initial decision thereon was issued on September 10, 1962. By order issued August 16, 1963, the Commission reopened the record to permit you to file a plan for development of the Colorado River.

In view of the pending license applications, the Commission does not deem it appropriate to comment on the proposal for Federal development of the Marble Canyon and Bridge Canyon projects. However, studies by the Commission staff indicate that these projects are economically justified.

It is noted that with the planned normal water surface at elevation 1866, the Bridge Canyon reservoir would back water into the Grand Canyon National Monument and the Grand Canyon National Park. The Commission could not issue a license for a project to that height without further authorization by the Congress. Your proposed report states that the Kanab tunnel diversion is not included as a part of the Marble Canyon project. It would seem appropriate that the final report indicate the consideration given to such a diversion plan.

When your proposed report has been completed in final form, it presumably will be filed with the Commission as a part of the record regarding the application for license for the proposed Marble Canyon development in Project No. 2248. In the event the report in final form is not filed with the Commission by January 15, 1964, the parties may, on or before February 14, 1964, file comments on your report of August 1963 insofar as it concerns the Marble Canyon project.

Sincerely,



Joseph C. Swidler
Chairman

Discussion of Comments of the Federal Power Commission

The views of the Federal Power Commission are self-explanatory. The Department of the Interior has no comments to make concerning them.

