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STATE OF COLORADO  
COLORADO WATER CONSERVATION BOARD  
212 State Office Building  
Denver, Colorado

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COMMENTS, VIEWS AND RECOMMENDATIONS OF THE  
STATE OF COLORADO

concerning

Project Report No. 34-8-2 of the Bureau of  
Reclamation, dated March, 1946

entitled

"A Comprehensive Report on the Development of  
the Water Resources of the Colorado River  
Basin for Irrigation, Power Production, and  
Other Beneficial Uses in Arizona, California,  
Colorado, Nevada, New Mexico, Utah and Wyoming"

December, 1946

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December, 1946

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STATE OF COLORADO  
COLORADO WATER CONSERVATION BOARD  
212 State Office Building  
Denver, Colorado

December 17, 1946

THE SECRETARY OF THE INTERIOR

Sir,

On behalf of the State of Colorado, and pursuant to Section 1 of the Act of December 22, 1944 (58 Stat. 887), there is herewith transmitted the comments, views and recommendations of the State of Colorado concerning project planning Report 34-8-2 of the Bureau of Reclamation, Department of Interior, dated March 1946, and entitled; "A Comprehensive Report on the Development of the Water Resources of the Colorado River for Irrigation, Power Production, and Other Beneficial Uses in Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming."

These comments, views and recommendations are submitted under the authority of Chapter 265, Session Laws of Colorado of 1937, creating the Colorado Water Conservation Board and defining its functions and in accordance with the designation of such Board by the Governor, pursuant to Section 1 of the Act of December 22, 1944, (58 Stat. 887), as the official state agency to act in such matters.

Respectfully submitted,

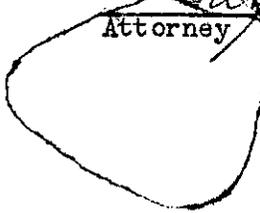
*John L. Vroman*  
Governor and Chairman of the Board

*Robert W. Rose*  
Director of the Board

*G. L. Peterson*  
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Consulting Engineer

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COMMENTS, VIEWS AND RECOMMENDATIONS  
OF THE STATE OF COLORADO  
CONCERNING THE PLANS AND PROPOSALS OF  
PROJECT PLANNING REPORT NO. 34-8-2  
OF THE BUREAU OF RECLAMATION  
DEPARTMENT OF INTERIOR  
ON THE COLORADO RIVER BASIN

DECEMBER, 1946

TO THE SECRETARY OF THE DEPARTMENT OF THE INTERIOR;

Pursuant to the Act of December 22, 1944 (58 Stat. 887), the State of Colorado herewith submits its comments, views and recommendations concerning the plans and proposals of Project Planning Report No. 34-8-2, of the Bureau of Reclamation, Department of Interior, dated March, 1946, and entitled: "A Comprehensive Report on the Development of the Water Resources of the Colorado River Basin for Irrigation, Power Production, and other Beneficial Uses in Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming." In submitting these views and recommendations, consideration has been given to the Regional Directors' report, conclusions, recommendations and substantiating materials, data, statement and appendices, together with the Letter of Transmittal dated June 6, 1946 from the Commissioner of the Bureau of Reclamation to the Secretary of the Interior.

Summary of Comments, Views and Recommendations

Colorado objects to the Report in its present form and to the conclusions and recommendations therein contained and recommends that it not be transmitted to the Congress unless and until the requisite corrections, modifications and additions are made in accordance with these views and recommendations. As a summary of the detailed views and recommendations hereinafter contained, Colorado submits;

1. The Report improperly treats the Upper Basin differently from the Lower Basin in the following particulars:

(a) It includes areas located outside the natural basin of the river but within the states of the Lower Basin which are now or shall hereafter be beneficially served by water diverted from the Colorado River System and at the same time excludes similar areas in states of the Upper Basin;

(b) It ignores the allocations of water made by the Colorado River Compact, the provisions of the Boulder Canyon Project Act and the California Self-Limitation Act, and contemplates

increased uses of water by existing projects and additional uses of water by projects yet to be constructed, contrary to the provisions of the Compact and the above mentioned statutes;

(c) In estimating available water supplies and depletions it utilizes methods in the Lower Basin which differ from those applied to the Upper Basin.

2. By failing to interpret and construe the contracts between the Secretary of the Interior and the states and water users of the Lower Basin for the delivery of water from Lake Mead, the Report engenders further interstate controversy in that;

(a) It endeavors to impose upon the states the burden of interpreting, construing and applying these contracts;

(b) It fails to disclose that any "surplus" water delivered to California water users under these contracts is not firm water since surplus water as defined under the Compact may not be apportioned between the two basins by interstate compact before 1963;

(c) It fails to disclose that the aggregate amounts of water for delivery to the states and water users of the Lower Basin from Lake Mead under the contracts are inconsistent with the allocations of water made to the Lower Basin by the Colorado River Compact, because in the contracts with Arizona and Nevada recognition is made of reservoir and channel conveyance losses while in contracts with California water users such losses are ignored.

3. The Report is inconsistent in that water supplies for existing and potential projects for the diversion of water from the natural basin of the Colorado River for use in other basins in Colorado are estimated as sums or totals from one basin to another, whereas in other states of the Upper Basin the estimates include descriptions of individual projects.

4. The Report is misleading and inconsistent in that it lists individual projects and presents estimates of construction costs, benefits to the Nation, and collectible revenues based upon the assumption that all of such projects will be constructed and operated to the limits of their ultimate capacities. At the same time the Report concludes that inadequate water supplies will prohibit the construction of some of these projects. Thus in the total figures for costs, returns and benefits, consideration is given to projects which cannot be constructed.

5. The Report is unsound in that it fails to give consideration to the desirability and feasibility of individual projects and thus fails to furnish any true and usable guide for a development program.

6. The Report is unsound in that it attempts to present a comprehensive development plan, but ignores the elementary fact that the desired

orderly development will result from the construction from time to time of individual projects which upon full and complete investigation prove to be feasible, justified and needed and which will be desired by local beneficiaries after their repayment obligations are known.

7. The Report is unsound in recommending that all seven of the states of the Colorado River Basin jointly agree upon a determination of their respective rights to deplete the flow of the Colorado River before major development may proceed. The Colorado River Compact apportions water between the Upper Basin and the Lower Basin. Neither basin is concerned with the apportionment between states of the share allocated to the other basin and neither basin should be restricted or delayed in its development by the failure of the other basin states to divide the water apportioned to that basin by the Colorado River Compact. Colorado recognizes the desirability of an allocation of water to the individual states comprising the Upper Basin. While it is true that compact negotiations are in progress among the states of the Upper Basin and that the construction of additional major projects should await allocation of water to the states, there are projects which will assuredly use water falling well within the equitable share of the state where located and which should not be made to await any final allocation of water.

8. The Report is unsound in implying that each individual state should allocate water to specific projects within such state. Colorado adheres to the appropriation doctrine of water law and thereunder water users are entitled to water in accordance with the priority of their individual appropriations. Any change in such system in Colorado will require a constitutional amendment.

9. The Report is unsound in that it recommends that the states approve projects for the so-called initial stage of development without there being available at the same time adequate data and information for the determination of the desirability, economic feasibility or probability of authorization and construction of individual projects. Only in instances where detailed investigations are completed and individual project reports are available can there be a worthwhile selection of any projects.

10. The Report is unsound in that it contemplates a general group authorization of projects for construction rather than a specific authorization of individual projects.

Colorado believes that each and all of the foregoing views are fundamental and important and recommends that the Report be modified to conform therewith. The Report is a good inventory of development potentialities, as known at the present time, and it contains much valuable engineering data and factual information. It must be recognized that as a complete list of all construction potentialities or possibilities of using Colorado River water, the Report is far from complete.

Upon the making of the Report as modified in accordance with the objections, views and recommendations noted above, Colorado believes that the Bureau of Reclamation will have satisfied the requirements of Section 15 of the Boulder Canyon Project Act. There will remain, however, for the future, the task of investigating and reporting on individual projects for construction.

There follows a detailed statement of the comments, views and recommendations of the State of Colorado. Reference is there made in Paragraph 12 to particular projects in Colorado for consideration as near-future development probabilities.

#### Detailed Views and Recommendations

1. Introduction. The Report contains much valuable engineering data and factual information concerning the resources, needs and problems of the territory covered by it. This information concerns the waters of the Colorado River and its tributaries in the United States and includes estimates of the existing and present status of water utilization in each of the affected states, and of power production in the region therein designated the Colorado River Basin. The Report also contains a list of so-called potential projects or units of projects considered possible of future construction, together with preliminary estimates of their probable construction costs under both pre-war and current conditions, and with estimates (expressed as totals, rather than by individual projects) of the aggregate benefits to the Nation, of the total revenues probably collectible from combined water and power users, and of total depletions, reported in part as sub-totals by states and in part unallocated among the states.

Colorado appreciates the value of this factual information, and recognizes that much labor, time and money has been devoted to the preparation of the Report. However, after a careful consideration of its contents, and its plans and proposals, the view reached by the State of Colorado is that the Report should be modified, to eliminate its inconsistencies, improve its accuracy and completeness, and increase its utility and value to the affected states and to the Congress. To such ends, Colorado respectfully recommends that the Report be modified before being adopted by the Secretary of the Interior, and before being transmitted to the President and to the Congress. These comments shall be deemed objections to the plans and proposals of the Department of Interior and the Bureau of Reclamation unless and until the Report shall have been modified in accordance with these views and recommendations as hereinafter outlined.

2. Inconsistent treatment of areas outside of natural basin. The so-called comprehensive Report purports to cover the Colorado River Basin. Considered in the light of the proposal of the Report that affected states

make determinations consistent with the Colorado River Compact, the Report is neither comprehensive nor consistent with the Colorado River Compact, since it relates to and covers a territory which differs from the Colorado River Basin as defined in the Compact. The Colorado River Compact, negotiated at Santa Fe, New Mexico, November 22, 1922, divides the Colorado River Basin at Lee Ferry into an Upper Basin and a Lower Basin, and in Article II thereof defines the Colorado River Basin to include all the drainage area tributary to the Colorado River System in the United States, and also all parts of the states of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming which (though outside of said natural basin) "are now or shall hereafter be beneficially served by waters diverted from the Colorado River System." The territory covered by the Report conforms to the Compact definition in the Lower Basin, but departs therefrom in the Upper Basin. It includes areas outside the natural basin in California, but excludes similar areas in Colorado, and in other states of the Upper Basin, which are parts of the Colorado River Basin as defined in the Colorado River Compact. This different treatment of the Upper and Lower basins, and of the states of California and Colorado, is a matter to which the State of Colorado heretofore has objected, for the reason that such different treatment is not conducive to amicable relations and understandings between the two basins and the two states. The State of Colorado urges and recommends that the Report be modified so as to treat both basins and all states alike, and to make it consistent in all respects with the Colorado River Compact.

3. Inconsistent treatment of out-basin projects in Utah and Colorado. With respect to enterprises and projects which divert water from the Colorado River System above Lee Ferry for use outside the natural basin, the states of Utah and Colorado are not treated alike in the Report. Such diversion enterprises and projects in Utah are listed by name and individually, each with specified depletion estimations. Similar diversion enterprises and projects in Colorado are not listed by name or individually, and their estimated depletions are reported merely as aggregate diversions by tributary stream basins. Colorado urges again that the Report be modified so as to treat all affected states alike in the above mentioned and all other respects.

4. As a comprehensive plan for development the Report is incomplete and misleading. The Report contains a list of so-called potential projects. Actually, this list constitutes an inventory of development possibilities which in most instances await detailed investigations and individual project reports. It presents estimates of construction costs, benefits to the Nation, probable collectible revenues from combined water and power users, and water supply depletions, for what is described as a stage of ultimate development. These estimates are based on the assumption, among others, that all the so-called potential projects listed in the Report will be constructed and operated to the limits of their assumed ultimate capacities. At the same time the Report concludes that inadequate water supplies will prohibit the construction of some of the so-called potential

projects. Thus, these conclusions are inconsistent with each other, in that the reported total construction costs include estimates for projects which, if not constructed, will require no financing, and the reported total benefits and collectible revenues are misleading, since they include items that cannot be realized. The assumption of the Report that all the so-called potential projects, or their alternates, will be constructed, disregards the findings which ultimately must be made as to individual project desirability, financial feasibility and economic justification, and hence disregards the probability of authorization and appropriations by the Congress, which must be based on subsequent detailed investigations and reports on each project possibility. It likewise entirely overlooks the possibility of private development.

Upon investigation, some of the so-called potential projects will no doubt be discarded as undesirable or infeasible, and those which are financed and constructed will have been designed upon a basis which, instead of ultimate and largest possible capacities, will give consideration to essential needs and to proper and more economical capacities. The Report speaks of "full development in the United States," -- meaning a stage of development which is fixed by available water supplies, and which is something less than the ultimate stage for which estimates of construction costs, benefits and collectible revenues are presented, but the Report fails to submit information or estimates as to the supplies of water to become available for use with full development in the United States, or as to the construction costs to be encountered, or the benefits and collectible revenues to result from that stage of development.

5. Channel losses in the Upper Basin must be estimated and used in computations of water supply and depletions. The Report contains estimates of so-called "present" uses or depletions. Included in the reported "present" totals are items representing the present uses by existing in-basin and diversion enterprises. Colorado notes that the existing total depletions summarized in the Report for the Upper Basin are not in agreement with the depletions employed in Appendix I to estimate the water supplies at Lee Ferry.

The Report also contains allowances for future uses of water by projects now under construction or authorized, and for future increased uses by reason of assumed expansions to ultimate limits under existing projects. Together, the estimated existing uses, plus the above mentioned allowances, represent the so-called "present" status of utilization or depletion of Colorado River water. Colorado notes that the water utilization and depletion estimates of the Report are in terms which are not consistent throughout both basins and in all states. Although the reported depletion quantities are said to represent the resulting effects upon outflows from the Upper Basin at Lee Ferry, and from the Lower Basin at the International Boundary, that rule appears to have been applied only on the Lower Gila River at and below the Phoenix vicinity in Arizona. All other

depletion estimates presented in the Report are based on the rule of evaluation at-the-site, and, to indicate their resulting effects upon outflows at Lee Ferry or the International Boundary, it becomes necessary to allow for and subtract the losses which the water, if not consumed at the site, would suffer incident to its conveyance to Lee Ferry or the International Boundary.

To make the necessary corrections in reported depletion quantities, information is necessary concerning channel conveyance losses. The Report contains estimates of channel conveyance losses under virgin conditions on the Gila River below Phoenix, which appear to have been employed to estimate the depletions in Arizona shown in the Report. It also contains estimates of channel conveyance losses under virgin conditions on the Lower Colorado River below Boulder Dam. These appear to have been employed to calculate the outflows to Mexico across the International Boundary, but to have been disregarded in estimating the depletions in California. The Report contains no information concerning channel conveyance losses along the Colorado River and its tributaries above Boulder Dam, or in the Upper Basin above Lee Ferry.

Colorado recommends, since this information is essential for the determinations of water supplies available for utilization, and for the appropriate adjustment and maintenance of interstate relations, that the Report be modified to include estimations of channel conveyance losses under virgin, present (existing), and full development conditions.

6. Water supplies and depletions should be presented in terms comparable to those of the Colorado River Compact. In order that affected states may make use of, so far as possible, the plans, proposals and recommendations of the Report, it is essential that all determinations and estimations of water supplies, streamflow depletions and water utilization and disposal be in terms directly comparable with apportionment provisions of the Colorado River Compact. A necessary first step, in order that both basins may know what further developments are possible, and what further uses of water are permissible, within presently authorized limits, is a comparison between present uses or depletions within each basin and the quantities of water heretofore apportioned to each basin by the Colorado River Compact.

While there may be disagreement among individual states concerning interpretations of some provisions of the Compact, there appears to be no basis for dispute between the two basins concerning these facts: (1) by Articles III (a) and (b) thereof, the Colorado River Compact apportioned 7,500,000 acre feet of water per annum to the Upper Basin, and 8,500,000 acre feet per annum to the Lower Basin; and (2) by Article III (f) the Compact specified that, at any time after October 1, 1963, if and when either basin shall have reached the total beneficial consumptive use of said quantities of water, further equitable apportionment may be undertaken of the surplus water over and above the quantities heretofore

apportioned, and over and above the surplus awarded to Mexico by the treaty between the United States and Mexico.

According to the Report the so-called "present" depletions or uses, in the two basins, may be summarized as follows: Upper Basin, existing 2,200,000 acre feet, increase allowance 556,000 acre feet, total "present" 2,756,000 acre feet; Lower Basin, existing 4,918,000 acre feet, increase allowance 3,583,000 acre feet, total "present" 8,501,000 acre feet. Under the apportionment provisions of the Colorado River Compact, and upon the findings of the Report, as to present depletions of streamflows or uses of water, it is apparent that new and additional projects may be constructed in the future in the Upper Basin, with aggregate uses or depletions up to 4,744,000 acre feet annually, without thereby exceeding the apportionment to the Upper Basin heretofore made by the Compact. In the Lower Basin, however, no new or additional projects can be undertaken, until after October 1, 1963, except to the extent that possible future expansions under existing projects recognized by the Report be correspondingly curtailed or prohibited.

The State of Colorado suggests that the Report contains plans and proposals which disregard this patent fact, and recommends that the Report be modified to correct this omission.

7. Comprehensive planning must conform to orderly construction of desired and justified projects. Concerning recommendation 3, paragraph 70, of the Regional Directors' Report, the State of Colorado concurs in and approves of that portion of the proposal involving increased appropriations by Congress, and expenditures by the Bureau of Reclamation and other agencies of the Department of Interior, in order that more complete and accurate data concerning the production, use and disposal of waters of the Colorado River System may become available to the Congress and the affected states. This is also necessary to continue and expedite the completion of detailed investigations and individual project designs and reports, to the end that an orderly and progressive development of the Colorado River Basin, as defined by the Colorado River Compact, may be assured. Such a development will provide supplemental water supplies as needed for municipal, irrigation and industrial purposes and provide adequate and regulated supplies of water for lands that await reclamation by irrigation. Incidental to such reclamation development, will be the production of hydroelectric power, the improvement of recreational advantages, and other opportunities in the public interest.

However, Colorado cannot subscribe to that proposal of the Report which claims or infers that such appropriations and expenditures are necessary or desirable in order for the Department of Interior to formulate and carry out a comprehensive plan of development at this time or in the near future. Instead, the orderly and progressive development, above mentioned, should be carried on by the construction from time to time of those individual projects which, upon investigation, (1) are feasible, justified and

needed, (2) are within each state's equitable but as yet unestablished share of water, (3) are desired by local beneficiaries after their repayment obligations are known, and (4) entail construction costs which may be financed by Congressional appropriations or otherwise.

Experience teaches that the necessary investigational program will require many years to complete; that the construction of some projects may be carried on while investigations of others are underway; that neither the needs of future generations or the dictates of financial policies can be anticipated too far in advance. Hence the view of Colorado is that any plan for the comprehensive and ultimate development of the Colorado River Basin, which might now be formulated by the Department of Interior, will be modified from time to time. Further, Colorado points out that the Report itself recognizes that a comprehensive plan is contingent in a major way upon the ultimate determination of the apportionment of water to the individual states. It can be reasonably expected that upon the determination of such allocations, each affected state will exert an important influence in shaping the development within its borders and within its share of Colorado River water, consistent with common operational features on the river and the provisions of the Colorado River Compact.

8. Joint action of all seven states is not necessary to an allocation of water. The Report recommends, "that the states of the Colorado River Basin determine their respective rights to deplete the flow of the Colorado River consistent with the Colorado River Compact." This proposal implies that all controversies concerning the waters of the Colorado River can and should be resolved promptly by the collective action of all seven affected states. As previously pointed out, the first necessary step toward carrying out this proposal involves the apportionments heretofore made by the Colorado River Compact to the Upper Basin and to the Lower Basin, recognizing that further apportionments between the two basins, over and above those heretofore made, cannot be undertaken under the Compact until after 1963.

Colorado recognizes the necessity and desirability of the states of the Colorado River Basin determining their respective rights to deplete the flow of the Colorado River consistent with the Colorado River Compact. That all of the states of the Upper Basin accept this recommendation of the Report and assume that responsibility is evidenced by the fact that since the Report was issued these states have initiated compact negotiations for two principal purposes, namely, (1) to determine relative rights of the respective states of the Upper Basin in the beneficial consumptive use of the 7,500,000 acre feet of water per annum heretofore apportioned in perpetuity from the Colorado River to the Upper Basin by Article III (a) of the Colorado River Compact; and (2) to determine the relative obligations of the states of the Upper Division imposed by Article III (d) of the Colorado River Compact, not to cause the flow of the Colorado River at Lee Ferry to be depleted below an aggregate of 75,000,000 acre feet for

any period of ten consecutive water-years. These negotiations were initiated under the Compact Clause of the Federal constitution.

However, Colorado does not concur in the implied, and often repeated assertion, that controversies concerning the waters of the Colorado River can and should be resolved by joint action of all seven of the Colorado River Basin states, nor does the State concede that an adjustment of all controversies in both the Upper and Lower basins must be settled before major developments of the water resources of the river may proceed. There are controversial matters peculiar to each basin which are unrelated to those in the other, the adjustment of which will permit development to go forward in one basin although unresolved questions remain in the other basin.

It is pertinent to point out that after initiation of compact negotiations by the states of the Upper Basin, it was found necessary to appoint an engineering committee to review the water supply and depletion estimates and other factual information contained in the Report, and to supply data not included in the Report which is recognized to be necessary or desirable for the negotiation and consummation of a workable compact. It is here suggested that this fact indicates the need for a modification of the Report and the inclusion in it of data and information which it does not now contain.

9. In Colorado there may be no allocation to specific projects. It is asserted in the Report that all the states have not made final allocations of water among projects within their borders. This implies and amounts to a proposal that final allocations to individual projects are necessary and must be made in advance of their construction. Colorado points out that no official or agency of the State is authorized to comply with or carry out such a proposal. No such authority could be granted by the legislature to any official under the constitution of the State. The right to divert and use water in Colorado is based upon prior appropriation for beneficial purposes. Any change of principle or method would require the amending of the State constitution.

Under Section 8 of the Reclamation Act of 1902 the Secretary of the Interior is required to appropriate and divert water for reclamation projects in conformity with the state laws regulating appropriation, use and distribution of water supplies. And it must be noted that when new projects are constructed, the rights of existing appropriators must be recognized and protected in order that such new projects may not adversely affect established water uses.

Colorado must, therefore, request that, on the basis of the existing laws of the State respecting water rights, that all statements contained in the Report which directly or indirectly imply that final allocation to individual projects is necessary and must be made in advance of further

project construction by the Bureau of Reclamation or any other public or private agency, be eliminated.

10. Controversies over contracts for Lake Mead water should be resolved by the Secretary of the Interior. The Report asserts that, "there is not complete agreement among the states regarding the interpretation of the Compact and its associated documents, -- the Boulder Canyon Project Act, the California Self-Limitation Act, and the several contracts between the Secretary of the Interior and individual states or agencies within the states for the delivery of water from Lake Mead." Its authors say, "this Report makes no attempt to interpret the Colorado River Compact or any other acts or contracts relating to the allocation of Colorado River water among the states and among projects within the states."

It is the view of Colorado that the long-standing controversies among the states in the main result from these contracts made by the Secretary of the Interior with California and agencies thereof. It is likewise the position of Colorado that the amount of water which may be delivered under these contracts must be in strict compliance with the provisions of the Colorado River Compact and the Boulder Canyon Project Act. Such compliance is specified by the contracts themselves. Yet certain provisions of these contracts raise controversies which admittedly must be settled before an ultimate plan of development may be realized in the Lower Basin.

The Report contemplates the future expansion of existing or authorized projects in California, including the Coachella. These allowances will make the total "present" use of Colorado River water in California 5,802,000 acre feet annually. Under the California Self-Limitation statute, California is limited to 4,400,000 acre feet annually plus one-half of the surplus as defined by the Colorado River Compact. Under that Compact the surplus may not be allocated between the two basins until after 1963. These increased and expanded uses would exceed the California share by 1,402,000 acre feet annually. The failure to recognize and apply the limitation self-imposed by California makes the Report misleading.

Colorado respectfully suggests that since the Secretary of the Interior executed these contracts on behalf of the Government, it is incumbent upon him to interpret them separately and in connection with the Colorado River Compact and the Boulder Canyon Project Act. Unless these questions are otherwise resolved, it would seem unreasonable and contrary to public policy for the Department of Interior, without interpreting the Acts, statutes and contracts above mentioned, to submit this Report, presaging a plan of development, to the Congress.

11. Initial stage of development. Among the plans and proposals is recommendation 1, paragraph 70 of the Regional Directors' Report, "that the states of the Colorado River Basin, acting separately or jointly, recommend for construction, as the next stage of development, a group of

projects, the streamflow depletions of which will assuredly fall within ultimate allocations of Colorado River water which may be made to the individual states." Elsewhere the Report speaks of affected states deciding from among "known potentialities" which projects they desire to have the Bureau of Reclamation consider for construction. At another place the Report says that detailed information is available for a substantial number of potential developments and only data of a reconnaissance nature for others, but from all information available it should be possible, prior to a final settlement of water rights (by compact if possible, or litigation if necessary), to select a group of projects which are urgently needed, or which will be key units of the comprehensive plan for construction as the next stage of development. Colorado, as herein previously mentioned, says the so-called potential projects listed in the Report might, more appropriately, be termed an inventory of development possibilities that largely await detailed investigation and individual project reports. As an inventory of development possibilities in Colorado, the list is incomplete. It fails to include development possibilities upon which investigations have been initiated by the Bureau of Reclamation since the list was compiled, and others which local interests and state officials and agencies have since brought to the attention of the Bureau of Reclamation. Considered as a list of known potentialities, Colorado asserts that the data contained in the Report, or elsewhere available through individual project reports, concerning the so-called potential projects in the State are wholly inadequate for determining at this time the desirability, or economic feasibility, or probability of authorization and construction of individual projects. Much of the data is largely of a reconnaissance nature.

The concept that "the economic feasibility of the group of projects included in the next stage of development would be comprehended in the finding of feasibility for the over-all ultimate development of the basin," is subject to challenge from the data appearing in the Report, wherein annual costs to the Nation, if based on construction costs estimated in the Commissioner's letter, may be found to exceed the annual benefits to the Nation, which in turn are subject to question since they are based on estimated gross values of crop and power production. Inasmuch as the Report plans that "when the next stage of development has been decided upon, it may be presented to the Congress for authorization of construction," it would seem to be equally as feasible, and perhaps would involve less delay, to plan to submit to the Congress each individual project report as it is completed, (where such submission to Congress is required under existing law), and thereby provide for an orderly and progressive development in accordance with both local needs and public interest. In this connection, note the views and recommendations of the State of Colorado set forth in the foregoing paragraph 7.

12. Colorado projects. It is respectfully suggested by Colorado that the list of projects submitted by the Report does not provide a basis for an intelligent selection by the State of projects for construction.

For many years the State has been urging the investigation and issuance of reports on specific projects within its borders. These investigations and reports have reached various stages of completion. Based thereon and because of known information on these projects, the State is able and desires to urge an early issuance of reports on, and consideration for early construction, of a group of projects hereinafter mentioned. These projects are all within the Colorado River Basin and will cause a depletion of water supplies assuredly within the ultimate allocation of Colorado River water which may be made to the State. Consideration of these projects for construction should not be delayed pending the consummation of an Upper Colorado River Basin compact. These projects do not constitute an exclusive list and the list should be subject to expansion as investigations proceed. The projects, with brief references to their nature and investigational and authorization status, are as follows:

(a) Paonia Project. This project was authorized in 1939 and since that time \$900,000 has been appropriated for its construction. The sum of \$848,470.50 now remains available to the Bureau of Reclamation to proceed with actual construction. Because of change in design, increase in costs and necessary repayment arrangements, it was found necessary to seek a reauthorization or amended authorization. The necessary district organizations of water users have been set up. More recently the water users have agreed to increase their unit obligations for the water and have, with the concurrence of the State, suggested a longer repayment period. The final report has been completed and the project is before the Department of Interior for approval and for submission to the Congress for reauthorization. The project will provide supplemental water supplies for presently irrigated lands. The storage facilities of this project provide a capacity of 14,000 acre feet.

(b) Pine River Extension. This project will provide laterals and distribution facilities for the conveyance to project lands of water stored by the Vallecito reservoir, located in Southwestern Colorado. The Vallecito dam and reservoir is a Bureau of Reclamation project completed in December, 1942. It stores 125,000 acre feet of water. The existing facilities below the dam do not serve all of the lands which may, and are intended to be, irrigated with water stored in Vallecito reservoir. The Pine River Extension constitutes a unit of the project. Investigations of the Pine River Extension have proceeded to the point where a report of the Regional Director, Region 4, Bureau of Reclamation, is expected in the very near future. Obviously, in the interest of the water users under the Pine River project, as well as in the interest of the Government, in order to make stored water available for irrigation of land, the Pine River Extension should be considered for early construction.

(c) La Plata Project. This project is located in Southwestern Colorado. It includes two units, namely, the Long Hollow reservoir, to provide storage facilities for the irrigation of lands in Colorado, and the Stateline reservoir, to store water for the irrigation of lands in New Mexico. Both reservoirs are located in the La Plata River Basin and are intended to regulate the flow of water of that river to provide supplemental water supplies for presently irrigated lands. These project units have been under investigation for ten years, or more. A number of reports have been issued. The water users in Colorado have created a district to contract with the Government. The erratic flows of the La Plata River created interstate controversies which resulted in an interstate compact which apportioned the water between New Mexico and Colorado and made necessary at times the rotation of water use between water users of the two states. This resulted in serious reductions of available water for long established farm units in Colorado. The entire area has suffered seriously from drought conditions. The only solution is construction of both units of the La Plata project. Eventually these units may be and can become a part of a larger project ultimately to be investigated, involving the inter-basin diversion of water into the La Plata River. The State has conferred on numerous occasions with interested water users and more recently considered with the local interests and the Bureau of Reclamation a proposed final report. It is expected that this report will be completed in the office of the Regional Director, Region 4, Bureau of Reclamation, in the near future and will be ready for submission to Congress. Because of this situation Colorado urges early consideration of the construction of both units of this project. Conferences with the officials of New Mexico have resulted in an agreement between the two states. New Mexico, we believe, will join in this request.

(d) Florida Project. This project has long been under investigation. A final report is scheduled for early consideration by the Regional office, Region 4, Bureau of Reclamation. Available information is adequate to indicate to the State that the investigation of this project should be expedited in order that it be considered for construction. The project is located in Southwestern Colorado and will provide supplemental water supplies for presently irrigated lands.

(e) Dolores Project. This project is located in Southwestern Colorado and will divert waters from the Dolores River for the irrigation of lands which are under dry farm operations. A major portion of the project lands lies in Colorado but a part of them is in Utah. The proposed project lands are highly productive, but in the event of drought conditions may be subjected to serious crop losses. Irrigation supplies are needed upon presently non-irrigated lands in order to bring about diversified farming and assure more stabilized farm conditions. The project

has long been under investigation. Colorado urges that these investigations be expedited in order that the project may be considered for construction.

(f) Silt Project. This project is located near Rifle, Colorado, and will store water diverted from Rifle Creek to make available supplemental water supplies for presently irrigated lands. The project has long been under investigation and some preliminary reports have been issued thereon. A final report is in the process of preparation and is scheduled for early consideration by the office of the Regional Director, Region 4, Bureau of Reclamation. Colorado requests that the scheduled issuance of this report be followed and that the project may be considered for construction.

(g) Collbran Project. This project is located near Grand Junction, Colorado. It has been under investigation for many years. Originally this proposed development was for the irrigation of lands, now under cultivation with inadequate water supplies, located in the Plateau Valley. In recent months a revised plan for this project to also provide municipal water supplies for the City of Grand Junction and vicinity, and to afford an incidental production of power, has been under investigation by the Bureau of Reclamation. It has been found necessary to expedite this investigation due to the population growth in Grand Junction and the recognition of the desirability of providing stock and domestic water supplies for the area in the vicinity of Grand Junction. It is now indicated that the present source of municipal water for Grand Junction will be adequate for a period of only about three years, and that water for this purpose must be obtained from other sources within that time. Upon the basis of present data and information it seems highly probable that this project may be economically justified under the provisions of the 1939 Reclamation Act. Because of this urgent need for domestic water supplies, as well as the desirability of providing supplemental supplies for irrigation of lands in Plateau Valley, Colorado urges that the investigation on this project be completed and a report issued early this year in order that the project may be considered for construction.

(h) Little Snake Development. The Little Snake River, a tributary of the Colorado River, crosses and recrosses the Colorado-Wyoming boundary line. For a number of years the Bureau of Reclamation has conducted investigations concerning the so-called ultimate development of the Little Snake River, including exportations from and importations to the Little Snake River Basin, and including the proposed construction in the near future of a relatively small project to serve lands in Colorado and Wyoming requiring supplemental water supplies for dependable irrigation, and to irrigate some new lands in both states. Two small reservoir projects, one

located in Colorado and the other in Wyoming, have been investigated. A report has been anticipated by the two states for a number of years. Interstate relations on this river are such that the two affected states expect to enter upon compact negotiations. Commissioners for this purpose have been appointed by the two states. The adjustment of interstate relations is dependent in a major way upon a settled plan of development in the Little Snake Basin. Colorado urges that the investigation of these proposed reservoir units of the Little Snake project be expedited in order that any such project development which may be found economically feasible may be considered for construction.

(1) Investigation of Specific Projects Recommended by Southwestern Water Conservation District. When the Colorado Water Conservation Board held its meeting to consider the proposed report of the Secretary of the Interior on the development of the water resources of the Colorado River Basin, the Southwestern Water Conservation District, a legal entity created under State Statutes, specifically requested that the Board urge the Bureau of Reclamation to initiate the investigation of a number of proposed projects needed in Archuleta County in Colorado in order to properly serve that section of the State. The State concurs in this request and includes herein the descriptions submitted by the Southwestern Water Conservation District of these proposed project developments as follows:

"(1) Mill Creek; This proposed project will supply supplemental water to lands now under irrigation that can never be supplied from any other project. Development of the project would require a storage reservoir and approximately 10 miles of diversion and distribution canals. In most instances the existing canals would only require enlarging. A minimum of 1,500 acres of farming and pasture lands would be serviced by this project.

"(2) Four Mile and Turkey Creek Lakes; It will be noted that in the report of July 3, 1945 there is an indication of an over-lapping between the Four Mile and Turkey Creek, and the Dutton Park projects. Further study may determine that due to the limited drainage area that would supply the water to Four Mile and Turkey Creek Lakes no water would be available for the Dutton Park area. Therefore, we want to list only 6,000 acres for supplemental water and 13,000 acres of new farming and pasture land. The proposed development requires the enlargement of the Lakes as well as the existing ditches.

"(3) Dutton Park; This project could and would be serviced by canals and possibly a small reservoir in the O'Neal Park Project which is now listed by the Bureau of Reclamation.

"(4) Buckles - Harris Lakes: This project would require new dams to increase the capacity of the Lakes and the enlargement of existing ditches and some new ditches. This project would probably serve only part of the land in Coyote Park and should be considered in case the Dulce-Chama-Navajo Project listed by the Bureau of Reclamation never materializes."

13. Report in its present form should not be submitted for the approval of the Congress. The Report purports to be an inventory of water supplies, existing water utilization and development possibilities of the Colorado River. It is indicative of the integrated relationship of individual project potentialities, but its value for this purpose is limited to the information contained therein being used only to develop an integrated plan when and as presently undetermined factors are resolved and further material information made available. As pointed out herein, certain material considerations necessary for a comprehensive plan of development, cannot be disregarded. Otherwise, the Report would result in further confusion and intensify future controversies. For instance, as elsewhere explained herein in detail, (1) the Report contains plans for utilization of Colorado River water which if realized would be contrary to the Colorado River Compact; (2) potential project developments are included which are contingent upon, and may be modified by, the future apportionment of water among the affected states; (3) necessary interpretation of basic legal instruments, which constitute the law of the river, remains unanswered; (4) inventoried potentialities admittedly exceed available water supplies; (5) material inconsistencies in the Report exist and potential developments of prime importance to some of the states are not properly reflected thereby because of the failure of the Report properly and consistently to cover all territorial areas of development in the states comprising the Colorado River Basin, as defined by the Colorado River Compact; (6) important and necessary factual data and information for the operation of the river under conditions of comprehensive development, and material in effectuating a progressive, integrated plan are not found in the Report; (7) and it follows that no reliable basis for the economic justification of the plan of project development, set forth in the Report, is established.

Intimately related with these considerations, is the fact that areas susceptible of development through the utilization of Colorado River water are located in four different regions under the organization of the Bureau of Reclamation. Two of these regions comprise areas outside of the natural basin of the Colorado River. Apparently the directors of these two regions had no part in the preparation of the Report. There exists a necessity of integrating the activities and plans of separate regions interested in the use of Colorado River water within and without the natural basin in portions of states which are a part of the Colorado River Basin as defined by the Colorado River Compact. Project plans for the diversion of water from the natural basin must envision the appropriate plans for water

utilization within tributary areas of the Colorado River Basin. This is particularly important in such states as Colorado where a policy is followed, heretofore approved by the Bureau of Reclamation, of protecting present and prospective uses of water within the natural basin in the State in connection with plans for transmountain diversion projects. A program for the integration of the activities of these interested regions in cooperation with the interested states for the furtherance of state programs should be initiated.

In view of this situation, it seems inconceivable that the Report in its present form and at this time should be transmitted to the Congress for its approval. It is Colorado's view that the Report constitutes a compliance with Section 15 of the Boulder Canyon Project Act (45 Stat. 1057), if modified in accordance with the views and recommendations herein contained, and the data and information contained therein will aid the states and the Government in the progressive formulation of a comprehensive plan and in the development of a program of individual project authorization.

Engineering Data

1. Discrepancies in basic data. Data concerning the flow of the Colorado River at Lee Ferry are presented in Appendix 1 by years for the period 1897-1943. These consist of estimates by the Bureau of Reclamation for the period 1897-1921, and of records by the U. S. Geological Survey for subsequent years. Colorado notes that the U. S. Geological Survey has also published estimates for the period 1897-1921 which differ in most years, and in some by substantial amounts, from the Bureau of Reclamation estimates presented in the Report. Such discrepancies in the basic data reported by cooperating agencies are confusing, and have required the Engineering Committee of the Upper Colorado River Basin Compact Commission to undertake correlation studies and make its own estimations.

2. Natural Conveyance Losses above Lee Ferry. The so-called virgin flow of the Colorado River at Lee Ferry was calculated in Appendix 1, for each year of the 1897-1943 period, as the sum of: (1) the actual flow as estimated or recorded, plus (2) the quantity of water estimated to have been consumed by the lands, irrigated within the natural basin and to have been diverted from the natural basin for use outside. Expressed as an average for the period 1897-1943, the virgin flow of the Colorado River at Lee Ferry, thus calculated, is reported at 16,270,000 acre feet annually. With respect to the quantities of water estimated to have been utilized upstream from Lee Ferry, attention has previously been directed to the fact that the quantities employed in Appendix 1 (See Paragraph 5, "Detailed Views and Recommendations" above) to calculate virgin flows differ from the estimates of existing uses reported in the substantiating material. In both estimates the evaluations were made as of project sites, - the quantities of water consumed by the irrigation of lands within the natural basin above Lee Ferry being calculated by multiplying the number of acres irrigated by a unit rate of consumptive use considered to be applicable in accordance with prevailing temperatures, and the quantities diverted from the natural basin being measured at project sites.

Colorado notes, however, that the Report, disregarding the natural channel losses incident to the conveyance of water downstream to Lee Ferry, applies the full amount of the estimated upstream uses, or the stream depletions at project sites, to the flow at Lee Ferry. This erroneous assumption of the Report, that water, if not used and consumed upstream, would arrive in full amount at Lee Ferry, has required the Engineering Committee of the Upper Colorado River Basin Compact Commission to undertake studies and make estimations of natural conveyance losses along the Colorado, Green and San Juan rivers and certain of their tributaries above Lee Ferry, particularly in the States of Utah and New Mexico.

3. Sources by States of Stream Flow. The Report presents no information concerning the sources by States of the flow of the Colorado River at Lee Ferry. This omission of data, essential to determinations of

respective rights and obligations of individual states above Lee Ferry, has further extended and complicated the work of the Upper Basin Engineering Committee. The Report should present estimates of the contributions of each state to the long-time average virgin flow of the Colorado River at Lee Ferry, together with similar information for a period such as 1931-1940 when streamflows for ten consecutive years were the lowest of record.

4. Pasture Land Irrigation. The Report estimates that, ultimately, 500,000 acre feet of water will be consumed annually by the irrigation for pasture purposes of 500,000 acres of land in the Upper Basin. This is in addition to lands presently irrigated and to be served by so-called potential projects listed in the Report. Colorado notes that, while this allowance of 500,000 acre feet of water is included in the reported total ultimate depletions upstream from Lee Ferry, the Report fails to describe the required facilities and works, or to include estimates of their construction costs. The Report also fails to segregate this assumed future consumption of water among individual states, or to indicate the locations of the assumed pasture lands on the maps presented in Appendix II. More definite and detailed information would facilitate both the plans for the development and the pending negotiations among affected states. Since the existing acreage irrigated in the Upper Basin includes hay-lands from which the crops are harvested at times and at other times are used for the pasturing of livestock, it appears that the assumed future pasture lands might similarly be classified as irrigated lands, without attempting to distinguish between methods of harvesting. The required works and facilities might properly be included with so-called potential projects as construction possibilities.

5. Reservoirs above Lee Ferry. The so-called potential projects listed in the Report include a number of possible reservoirs in the Upper Basin above Lee Ferry, at sites along the Colorado, San Juan and Green rivers, located generally below the lands irrigated in the Upper Basin. Their purposes include power production, flood control, silt detention, streamflow regulation, and hold-over storage. The Report presents estimates of construction costs and power production for each reservoir, but fails to disclose information as to the status of upstream development assumed for purposes of estimating the power production. The total loss of water from the whole group of reservoirs is reported at 831,000 acre feet per year, but the Report fails to segregate the estimated total loss among individual reservoirs, or to explain the factors employed in estimating the reservoir losses. A comprehensive engineering investigation is required, including definite and detailed river and reservoir operation studies, the results of which should appear in the Report, to the end that construction costs and water losses may be compared with project benefits, and to define the areas and interests that would benefit from operations of the reservoirs for their various intended purposes.

The affected states above Lee Ferry need to know how far development can proceed before any of the potential capacity of these reservoirs will be needed for holdover storage purposes. They should be advised as to how much

holdover storage capacity will be needed when the uses of water and depletions of streamflows above Lee Ferry have reached the quantity heretofore apportioned to the Upper Basin by the Colorado River Compact. This is necessary to insure that flows at Lee Ferry will not be depleted below an aggregate of 75,000,000 acre feet for any period of ten consecutive years, such as 1931-1940; and they should also be advised as to what the reservoir losses at that stage of development might total. Likewise, they should be informed that, when the 16,270,000 acre feet of virgin flow at Lee Ferry has been depleted by 7,500,000 acre feet, including upstream reservoir losses, the remaining flow at Lee Ferry might be equated to a flow of 8,770,000 acre feet, provided that sufficient reservoir capacity be constructed and operated for holdover storage and streamflow regulation purposes; and they should be informed as to the possibilities for constructing the required reservoir capacities, as well as concerning the losses involved.

The Report indicates that any studies made in connection with these so-called potential reservoirs appear to have been devoted to their assumed operations primarily for power purposes. The total power production at all the reservoirs will greatly exceed the needs for power in the natural drainage basin above Lee Ferry for forty years, according to the forecast contained in the Report. The Report proposes to market this surplus power, in part, in areas outside the natural basin in Utah and Colorado (which areas are not covered by the Report), but mainly in the Lower Basin market area where power deficiencies are anticipated in the near future.

Colorado points out that projects, under construction and proposed in Colorado, for diverting waters of the Colorado River System for irrigation use and for municipal and industrial purposes in the South Platte and Arkansas River valleys in eastern Colorado, - being areas within the Colorado River Basin as defined in the Colorado River Compact, - will also produce power sufficient in amount for the future needs of eastern Colorado for many decades in the future. Hence the Report should not contemplate the marketing in eastern Colorado of surplus power produced at the reservoirs under discussion.

6. Colorado River Water Supplies Available in the United States. Conclusions of the Report, respecting the water supplies of the Colorado River available in the United States, are based on the flow of the Colorado River at the International Boundary, as calculated for so-called virgin conditions. Starting with the estimated virgin flow at Lee Ferry of 16,270,000 acre-feet annually, the aggregate combined effect of all tributary inflows to the river section below Lee Ferry (including the Gila River), and of all natural consumption of water and channel losses incident to the conveyance of Colorado River water from Lee Ferry, and of Gila River water from the Phoenix vicinity, to the International Boundary, is estimated in the Report to have increased the virgin flow at the International Boundary to an average of 17,720,000 acre feet annually. Allowing for a future flow to Mexico averaging 1,500,000 acre feet annually, as required by Treaty, the Report concludes that the remaining 16,220,000 acre feet is the water supply of the Colorado River available for depletion

in the United States.

Colorado says that this conclusion of the Report is inaccurate, and is confusing if not misleading to the affected states and the Congress. It involves the implied assumption that the natural consumption of water and the channel losses of virgin flow volumes and conditions will prevail undiminished in amount regardless of future streamflow volumes and conditions, - an assumption which, being contrary to known facts, is unjustified. In order to deplete the flow into Mexico from its estimated virgin volume of 17,720,000 acre feet, to its future volume of 1,500,000 acre feet as fixed by the Treaty, it will be necessary to utilize in the United States a quantity of water materially greater than the reported 16,220,000 acre feet annually. The amount by which the uses of water and depletions of streamflows in the United States will exceed 16,220,000 acre feet annually, will be determined by the extent to which the natural consumption and losses of water, which prevailed under the streamflow volumes of virgin conditions, are reduced, or prevented, or avoided, or are converted to beneficial consumptive uses, with development in the United States.

Colorado points out that existing developments and uses of water in the United States have already had the effect of reducing the natural losses under virgin conditions; that the estimated 1,030,000 acre feet of natural or virgin channel loss in the section of the Colorado River from Boulder Dam to Laguna Dam has been materially reduced in amount since Lake Mead came into operation, by reason of the more regulated streamflow volumes and the reduced flows to Mexico; that the estimated 1,007,000 acre feet of natural or virgin channel loss in the section of the Gila River from the vicinity of Phoenix downstream, incident to the conveyance of 2,279,000 acre feet of estimated natural or virgin condition inflows to the Phoenix vicinity, has since been largely reduced in amount by the developments which store, divert, use and consume the water supplies at and above the Phoenix vicinity; and that all such channel loss reductions constitute savings or the salvage of water, which correspondingly add to the supplies available in the United States. The above mentioned examples under present developments are in amounts which are subject to determination by comparative analytical studies.

Colorado says that further reductions in the natural losses of virgin conditions will necessarily accompany the future progressive development in the United States; and that in the future, with full development in the United States, when the flow of the Colorado River at Lee Ferry has been reduced from its virgin volume of about 16,000,000 acre feet to about half that amount, and when the flow of the Colorado River at the International Boundary has been reduced from its virgin volume of about 17,700,000 acre feet to about 1,500,000 acre feet, the further reductions in natural losses will further increase the supply of water available in the United States. The future salvage of water is subject to estimation from engineering data and studies with as much assurance of accuracy as estimations of the future depletions by so-called potential projects. Estimations of salvaged water clearly should be included in this Report on the future development and full utilization in the United States of all the waters of the Colorado River System available to the States of the Colorado River Basin.