

**Report of
Financial Consultants**

To

**State of California
Department of Water Resources**

On

**Financial Aspects of Program for
State Water Resources Development System**

**Dillon, Read & Co. Inc.
New York, N.Y.**

October 26, 1960

HARVEY O. BANKS
DIRECTOR

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ADDRESS REPLY TO
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STATE OF CALIFORNIA
Department of Water Resources

SACRAMENTO

October 26, 1960

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

Dear Governor Brown:

I transmit herewith (a) an analysis of the financial feasibility by Dillon, Read & Co., Inc., of New York, and (b) an analysis of the engineering feasibility by Charles T. Main, Inc., of Boston, of the State Water Project to be financed by the California Water Resources Development Bond Act (S. B. 1106).

In brief, the consultants' reports state that the water program is feasible from an engineering standpoint, that the water is needed, that the needs will increase, that the program will produce sufficient water to meet the needs, that the funds are adequate to complete the program including not only the Oroville Dam but also the Eel River development, and the costs can be repaid by the water users on the basis of present day costs. They further conclude that the bonds can be sold at a reasonable interest cost, and that their sale will not adversely affect the State's financial position.

The consultants point out that material inflation is a risk in any program of this magnitude extending over such a long period of time, and a risk which the State must be prepared to assume. Obviously, further delay in construction can only accelerate the ultimate cost.

You will note that in their analyses the consultants indicated that their legal counsel, contrary to the opinion of our own attorneys, question the surcharge provision. In this connection I would only point out that the Legislature, if it so desires, may eliminate any question on this matter at the next regular session in 1961.

October 26, 1960

The engineering feasibility report contains one new element which I consider to be of importance. The consultants have pointed out that there will be funds available within the bond authorization to permit construction of the first storage unit on the North Coast on the Middle Fork of the Eel River. This will mean that even after full allowance for area of origin needs there will be sufficient water available to meet project demands, well beyond the middle of the next century, of those areas within the project service area to which water must be exported.

In closing, I would like to say that the consultants have been most thorough in their analyses and diligent in their investigations. Thus, it is with pleasure that I transmit their reports to you with the knowledge that their publications will result in a broader awareness of the water crisis we face and will impress the public with the urgent necessity of favorable action on Proposition One, and with the fact that we should start construction at the earliest possible time.

Very truly yours,

/s/ Harvey O. Banks

HARVEY O. BANKS
Director

Enclosures

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INTRODUCTION

This is our second and last report under our contract, dated February 18, 1960, with the State of California Department of Water Resources (the "Department"). Our interim report under this contract was submitted July 8, 1960.

Our contract provides that this report shall contain conclusions with respect to certain matters bearing on the financial aspects of the State's water program, including particularly the financial soundness and financial feasibility of the program. We are advised by the Department that, in its opinion, the submission by us of this report constitutes fulfillment of the work assigned to us by the contract.

At the time of our interim report, the State's water program had undergone substantial revisions, and the necessary engineering studies were still in progress. Therefore, it was not possible at that time to arrive at even preliminary conclusions with respect to a number of the matters to be covered by us, particularly with respect to the adequacy of revenues of the program to pay the expenses and financial charges. Our present report covers such matters as well as those discussed in our interim report, and completely supersedes that report.

Our reports have been coordinated with the interim (July 8, 1960) and final (October 18, 1960) reports of Chas. T. Main, Inc. (the "Consulting Engineers"), retained by the Department as engineering consultant; and with the findings of Coverdale & Colpitts and of Dr. D. Wynne Thorne and Associates, retained by the Consulting Engineers as advisers on certain matters. We have worked closely with the Consulting Engineers and have enjoyed their full cooperation. The estimates contained herein of construction costs, water supply and demand, water deliveries, and revenues and expenses are those of the Consulting Engineers. Of necessity, the preparation of portions of our present report has awaited the completion of their studies and of their final report.

We have also worked closely with, and have enjoyed the full cooperation of, the Department and various other State offices and departments, including the Controller's office, the Treasurer's office, the Finance Department, the State Lands Division and the Attorney General's office. Legal interpretations herein are stated on the authority of counsel for the Department and counsel retained by us.

We have conferred with certain financial firms and institutions and financial services, for the purpose of reviewing with them some of our conclusions as to financial aspects; and with officials of various important political subdivisions of the State, for the purpose of reviewing with them the prospective borrowing requirements of these subdivisions.

We have also drawn for our information upon the Department's Office Report of April 1960 ("Information and Data on Proposed Program for Financing and Constructing State Water Facilities"), upon the Department's revised Bulletin

No. 78 of December 1959 ("Investigation of Alternative Aqueduct Systems to Serve Southern California"), upon appendices and supplements to such Office Report and Bulletin, upon financial reports of the State and its more important political subdivisions, and upon other reports and documents furnished to us by the Department or obtained by us from other sources.

The conclusions in this report are confined to those matters which we deem relevant to the financial aspects of the State's water program. As financial consultants, we are not concerned with political and social questions, except as they affect these financial aspects.

CONCLUSIONS AS TO FINANCIAL FEASIBILITY

Scope of Program

The Program upon which we are reporting (hereinafter called the "Program") consists of certain water conservation facilities to be located in the northern part of California and aqueduct facilities to transport the water for municipal, industrial and agricultural uses in Southern California, the San Joaquin Valley and certain other areas. These facilities are essentially (i) the "State Water Facilities" (other than the Davis-Grunsky Projects, which are discussed in this report), constituting part of the "State Water Resources Development System," as defined in the Burns-Porter Act (Chapter 1762, Statutes of 1959, herein called the "Act"), and (ii) the Eel River development, also constituting part of the State Water Resources Development System. The Act is being submitted to the people of the State to be voted upon at the general election of November 8, 1960.

The Program considered in this report differs from that considered in our interim report by including more water conservation facilities, namely the Oroville development on the Feather River (constituting part of the State Water Facilities) and the Eel River development as mentioned above. This change has been made because of two occurrences since the date of our interim report: (i) the issuance by the State's Attorney General of an opinion (discussed in this report) which holds that the Act does not preclude financing the completion of construction of the full Program through additional bond issues, to be authorized in the future when and to the extent required and to be supported by a portion of the revenues to be derived from the operation of the Program, and (ii) the completion by the Consulting Engineers of their water supply studies, which indicate a materially smaller supply available for delivery through the aqueduct facilities than was contemplated by them at the date of our interim report, and accordingly indicate an insufficient economic justification for the program therein considered, unless followed by additional conservation facilities as contemplated by the Department.

With the addition of the Oroville and Eel River developments, as contemplated by the full Program considered by this report, the estimated water supply available for delivery through the aqueduct facilities will exceed, at least until the year 2040, the estimated 1990 demand.

Financial feasibility tests

As financial consultants, we interpret the question, upon which we are engaged to report, of "financial soundness and financial feasibility" of the Program to mean:

- (1) Can the costs of construction of the Program be provided out of the available construction funds, including funds to be borrowed, substantially without recourse to the State's general tax funds?
- (2) Can the interest and principal payments on the funds to be borrowed be provided out of revenues (after deducting operating expenses) to be derived from the operation of the Program, substantially without recourse to the State's general tax funds?
- (3) Can the State obtain the funds to be borrowed at reasonable cost and without material impact upon its credit?

We recognize that the foregoing financial feasibility tests may be more restrictive, with regard to the use of the State's general tax funds, than those which might be deemed applicable in a broad consideration of public policy.

General conclusions

We conclude that the Program would meet our financial feasibility tests on the basis of present construction cost levels.

No one can safely predict the course of construction costs during the period of construction of the Program, which covers approximately the next 30 years, or ignore the long-term upward trend of construction costs, which has been a characteristic of the economy for most of the past 30 years. A material increase in construction costs over present levels would require a material amount of financing additional to that provided by the Act, which consists of the proceeds of sales of Water Bonds authorized thereby and California Water Fund moneys. Unless recourse were to be had to the general tax funds of the State, we must assume that this additional financing would have to rely upon sales of bonds, additional to the Water Bonds, to be authorized in the future when and to the extent required, and to be supported by a portion of the revenues to be derived from the operation of the Program (predicated upon the opinion of the Attorney General, which is discussed in this report).

The accomplishment of the required additional bond financing would depend upon the then current borrowing capacity of the State. The realization of the additional revenues required to service the additional bonds, as well as to defray operating expenses, would depend upon the then current economic capacity of the contractors for the water to pay the water charges required to produce these additional revenues. Of course, as to portions of the Program which shall have been completed at any time, subsequent increases in construction cost levels would not apply. The rate formula for the pricing of water to be delivered by the Program, as developed by the Consulting Engineers and discussed in this report, would produce revenues substantially sufficient (provided that the payment capacity of the contractors for the water is adequate to produce these revenues) to service all of the bonds to be issued for the construction of the Program, regardless of the level of construction costs, as well as to defray all operating expenses of the Program, regardless of the level of these expenses.

As a general principle, increases in construction cost levels, to the extent accompanied by increases in general price levels, should also be accompanied by increases in the over-all payment capacity of contractors for the water and in the State's borrowing capacity. The economic studies of the Consulting Engineers have led them to conclude that while this general principle is applicable as concerns the payment capacity of prospective contractors for the water in urban areas, it is of limited application as concerns the payment capacity of prospective contractors for the water in agricultural areas, to which a substantial portion of the water is to be delivered by the Program. The Consulting Engineers are of the opinion that farm income per acre will not necessarily rise as general prices rise or as production increases, and that the development of irrigation in agricultural areas would be retarded if water charges, due to increases in construction and operating cost levels, were to rise faster than agricultural payment capacities.

The Consulting Engineers are further of the opinion that increases in operating expenses of the Program should be less than increases in general price levels, since a major part of these operating expenses is accounted for by the cost of electric energy for pumping, which cost has exhibited, and under current conditions may be expected to continue to exhibit, relative stability. For the purpose of our report, we have considered that operating cost levels would probably not increase unless there were an increase in construction cost levels.

In their conclusions, the Consulting Engineers have assumed the formation of "master" districts, which would contract for the water in agricultural areas (in particular, in the San Joaquin Valley) and distribute it in such areas through member agencies, acting as sub-contractors. These districts would have a broad property tax base, in part embracing urban communities, thereby recovering from local property taxes a substantial portion of the wholesale charges for the water.

It is axiomatic that an increase in cost levels, unless accompanied by increases, if and to the extent required, in the payment capacity of all prospective contractors for the water, so as to produce revenues sufficient to service all of the bonds to be issued for the construction of the Program as well as to defray all operating expenses of the Program, would necessitate having recourse to the State's general tax funds. Although it must be recognized that there are limits to the State's taxable resources as well as to its borrowing capacity, some increases in both may be expected to accompany increases in cost levels.

A further discussion of the Program in relation to our financial feasibility tests, on the basis of estimated construction expenditures at present cost levels, follows.

Adequacy of funds

As to test (1) above: Substantially the entire costs to the State of construction of the Program, based on the estimated construction expenditures at present cost levels, would be provided out of the available construction funds,

including funds to be borrowed as contemplated by the Act. These construction funds would consist of future Water Bond proceeds and the California Water Fund, which is derived principally from payments to the State of oil and gas royalties under certain tidelands leases. The California Water Fund moneys available for construction would also include amounts repaid to this Fund, during the construction period, out of revenues (after deducting operating expenses) not required for current Water Bond Service.

However, as indicated below, there would remain a balance of construction expenditures to be financed from other sources. The amount of this balance is not substantial in relation either to the size of the Program or to the revenues of the State's General Fund. These revenues are derived principally from State taxes and are currently budgeted at \$1,617 millions annually. If such a balance of construction expenditures were to be provided out of the General Fund, it could not be regarded as imposing a material burden on the general taxpayer.

The budget of funds required and of funds to be provided for the estimated future expenditures by the State for the construction of the Program, on the basis of present cost levels, is as follows:

	(000,000)	
Funds required:		
State Water Facilities.....	\$1,677	
Eel River development.....	195	
Total funds required.....	<u>1,872</u>	\$1,872
Funds to be provided:		
Water Bond issues.....	\$1,582	
Less: portion thereof reserved for Davis- Grunsky Projects (discussed in this re- port)	130	
Water Bond issues for Program.....	<u>\$1,452</u>	
California Water Fund moneys:		
On hand	\$97	
To accrue from tidelands royalties.....	204	
Revenues not required for current Water Bond service	65	
Total California Water Fund moneys.....	<u>\$366</u>	
Total funds to be provided.....	<u>\$1,818</u>	
Balance of construction expenditures to be fi- nanced from other sources.....		<u>\$54</u>

The total amount of Water Bond issues authorized by the Act is \$1,750 millions. Deducting from this total the amount of \$1,582 millions of Water Bond

issues, as shown in the foregoing budget, leaves a remainder of \$168 millions of authorized Water Bonds, which cannot be used to complete the construction of the State Water Facilities by reason of a limitation contained in the Act upon expenditures of Water Bond proceeds for that purpose. These \$168 millions of Water Bonds could be used only to complete the construction of the Eel River development, if required for that purpose, or to construct water facilities additional to those included in the Program.

The budgeted construction expenditures do not include interest during construction. The Act does not provide for the financing of this interest out of Water Bond proceeds or out of California Water Fund moneys. Under the rate formula for pricing the water to be delivered by the Program, the calculated revenues would substantially cover this construction interest. To the extent not so covered, this interest would have to be advanced from the General Fund.

Adequacy of revenues

As to test (2) above: The revenues to be derived from the operation of the Program, as developed by the application of the rate formula to estimated construction expenditures and after deducting estimated operating expenses, both at present cost levels, would substantially cover the estimated requirements for service payments on the Water Bonds. In each but four of the years within the period to the final maturity of the Water Bonds to be issued for the construction of the Program, there would be an excess of net operating revenues over the Water Bond service payments. Withdrawals from the General Fund for Water Bond service would occur from 1978 to 1981, inclusive, would reach a maximum annual amount of about \$4 millions, and would aggregate about \$11 millions. They would soon be repaid, with interest, out of revenues derived thereafter. The amounts of these temporary withdrawals from the General Fund are nominal in relation to the revenues of this Fund.

The Consulting Engineers are of the opinion that the payment capacities of prospective contractors for the water to be delivered by the Program are sufficient to produce the revenues developed by the application of the rate formula based on present cost levels. This is in reliance upon the assumed formation of "master" districts in agricultural areas, as discussed above.

Borrowing costs and impact

As to test (3) above: The projected issues of Water Bonds as shown above total \$1,582 millions on the basis of present construction cost levels. In keeping with the requirements of the construction schedule, they would be issued in installments, commencing in 1964, about one-half of the total being issued during the period through 1970 and the remainder being spread out over the following 18 years.

In our opinion, these issues of Water Bonds can be marketed at reasonable cost and without material impact upon the State's credit, if they are properly scheduled in relation to the State's other borrowing requirements and if the State refrains (at least during the coming ten-year period, in which the require-

ments for Water Bond financing will be at a high level) from increasing the rate of its borrowings for other purposes. By reasonable cost, we mean a reasonable relationship between the interest cost on the Water Bonds and the then current market for long term money as well as that for the State's other bond issues.

While it is not practicable to predict the cost of interest rates during the construction period, we regard the Department's assumption of an average rate of 4% for the Water Bonds as reasonable, in the light of current conditions and historical perspective.

Certain assumptions

The more important assumptions not covered above, on which the foregoing conclusions are based, are the following :

- (1) That the State carries out the construction of the Program substantially in accordance with the construction schedule developed therefor by the Consulting Engineers.
- (2) That the State legislature does not exercise its right to appropriate moneys in the California Water Fund to purposes other than the construction of the Program.
- (3) That expected future Congressional appropriations are received for certain specified features of the Program, and that necessary State-Federal agreements are entered into with regard to certain matters affecting the operation of the Program, all as discussed in this report.
- (4) That contracts for the sale of substantially all of the water are executed, and that these contracts conform substantially to the rate formula developed by the Consulting Engineers.

THE PROGRAM

General

The Program will bring surplus water from the northern part of California to water-deficient areas in Southern California and, en route, in the San Joaquin Valley. This water will flow into the Delta (at the confluence of the Sacramento and San Joaquin Rivers near San Francisco Bay) and be distributed thence at wholesale by the State, acting through the Department.

The Program includes both aqueduct facilities and water conservation facilities. The principal aqueduct facilities consist of the San Joaquin Valley-Southern California Aqueduct (the "Main Aqueduct"), extending about 450 miles from the Delta to the general vicinity of Los Angeles (with east and west branches), including facilities to pump the water to an elevation of 3,400 feet for passage over the Tehachapi Mountains north of Los Angeles. The aqueduct facilities also include three branch aqueducts (aggregating about 200 miles), namely the North (San Francisco) Bay Aqueduct, the South (San Francisco) Bay Aqueduct and the Coastal Aqueduct (serving principally the Santa Barbara and San Luis Obispo area). In connection with the Main Aqueduct, the Program provides for a San Joaquin Valley drain to control the salt balance in that general service area.

The conservation facilities comprise works in the Delta consisting of channel improvements, levees and control structures; the San Luis dam and reservoir (about 70 miles south of the Delta), to be constructed and operated jointly with the Federal Government, and related facilities; the Oroville dam and reservoir on the Feather River (about 100 miles north of the Delta) and certain small related dams and reservoirs; and a series of dams and reservoirs (about 80 miles north of the Delta) to utilize the flow from the Middle Fork of the Eel River. Certain hydro-electric generating facilities are also included, the more important of which are to be located at the site of the Oroville development and on the Main Aqueduct on the south side of the Tehachapi Mountains.

The Program is authorized by the Act, which is being submitted to the people of the State to be voted upon November 8, 1960 ("election date"). The Act authorizes the construction of certain additional facilities and incorporates certain other legislation applicable to the Program. The entire Program is more fully described in the final report of the Consulting Engineers.

Both the Program and the Central Valley Project of the Federal Government, which has been constructed and is being expanded by the United States Bureau of Reclamation, bring to the San Joaquin Valley water which flows from the northern part of the State into the Delta. Most of the territory to be served by the Program lies to the west and south of the territory served by the Federal Central Valley Project, which does not include Southern California. The successful operation of the Program will depend upon satisfactory State-Federal agreements being reached regarding certain operating matters affecting both

parties, as to which matters the Department advises that there is reasonable ground to expect that the necessary agreements will be forthcoming.

Water supply and demand

The conservation features of the Program will provide a regulated flow, normally available for delivery from the Delta, estimated at about 3,500,000 acre-feet annually until the year 2040. The aqueduct facilities are sized for deliveries from the Delta, net of aqueduct losses, of at least 3,750,000 acre-feet annually.

The demand for the water to be delivered from the Delta is estimated to increase to about 3,350,000 acre-feet annually by 1990. The Consulting Engineers have not used estimates of demand beyond 1990, although recognizing that the demand will in fact probably continue to grow, and that in order to meet substantially more than the 1990 demand the construction of facilities additional to the Program will ultimately be required, in the form of enlarged aqueduct facilities and of additional conservation facilities.

The Act recites that it does not affect the prior rights, as established in the State's Water Code, of any county of origin of water, and of any watershed wherein water originates or any area immediately adjacent thereto, to divert such water to their own use if required. Water so diverted upstream from the Delta will effect a reduction in the regulated flow available for delivery from the Delta, for which the Consulting Engineers have made allowance in their estimates. This allowance is considered by them to be ample for the development of a conservative schedule of construction of conservation facilities, so as to meet the demand when it occurs.

The following table shows the estimated regulated flow available for delivery from the Delta (net of evaporation and seepage losses), to be provided by the conservation facilities included in the Program, as of 1990 and as of 2040, and the estimated 1990 demand for each of the general service areas to which water is to be delivered by the Program:

	<i>Acre-feet annually</i>	
	<u>1990</u>	<u>2040</u>
Regulated flow provided:		
Delta and San Luis developments -----	2,060,000	1,550,000
Oroville development -----	990,000	940,000
Eel River development -----	1,000,000	1,000,000
Total available for delivery from Delta --	<u>4,050,000</u>	<u>3,490,000</u>
Demand:	<u>1990</u>	
Southern California (below Tehachapi Mountains) -----	1,750,000	
San Joaquin Valley -----	1,170,000	
North (San Francisco) Bay -----	150,000	
South (San Francisco) Bay -----	170,000	
Coastal (Santa Barbara and San Luis Obispo area) -----	110,000	
Total demand -----	<u>3,350,000</u>	

The foregoing estimated water demands are taken as the deliveries from the aqueduct facilities for 1990 and subsequent years. Initially, the deliveries are expected to be quite small. The dates of initial deliveries are estimated as 1970 for parts of Southern California, 1968 for parts of the San Joaquin Valley, 1970 for the North Bay area, 1963 for the South Bay area, and 1974 for the Coastal area.

These deliveries exclude prospective water deliveries by the Program to certain Feather River areas, upstream from the Delta, which deliveries would not utilize the aqueduct facilities. This water would constitute part of that to which these areas are entitled under the prior rights of counties of origin, as referred to above, and has been deducted in the calculation of regulated flow provided by the conservation facilities. The 1990 deliveries to these areas are estimated at about 320,000 acre-feet.

Certain considerations affecting demand

The water to be delivered by the Program is destined both for municipal (that is, primarily domestic) and industrial use and for agricultural (that is, primarily irrigation) use. About 90% of the water for the Southern California and the South Bay areas is for municipal and industrial use. About 90% of the water for the San Joaquin Valley area is for agricultural use, and includes substantial volumes expected to be used for the irrigation of areas not now farmed or irrigated. The water for the North Bay and the Coastal areas is for both classes of use. That for the Feather River areas upstream from the Delta is almost entirely for agricultural use.

The Southern California area in particular is experiencing rapid growth and development, the continuance of which will depend in part, in the opinion of the Consulting Engineers, on the receipt of water from the Program. The report handed down in May 1960 by the Special Master appointed by the United States Supreme Court, in the Colorado River case, tends to support the expectation of substantial demand from this area. If the Special Master's recommendations are adopted by that Court, the Metropolitan Water District of Southern California, which is the largest prospective contractor for water to be delivered by the Program, could ultimately lose the use of about 1,200,000 acre-feet annually of Colorado River water. This could accelerate the timing of deliveries of water by the Program as estimated for the Southern California area.

In general, agricultural users cannot afford to pay as high rates for water as can municipal and industrial users. While the price of water is usually a minor factor in the budgets of households and industrial establishments, it is usually a major factor for agricultural users, as it may mean the difference between success and failure in farm operation and may also be the determining factor in the development of new agricultural areas. As to agricultural areas, the estimates of water deliveries rely especially upon present cost levels and the adoption of the rate formula developed by the Consulting Engineers, as explained later in this report, as well as upon the formation of "master" districts, as discussed earlier in this report.

CONSTRUCTION

Construction expenditures

The estimated construction expenditures for the Program, payable by the State after the election date and based on present cost levels, are shown below. These include the estimated costs of related power plants, pumping plants, storage reservoirs and land acquisition.

	(000,000)
Aqueduct facilities:	
Main Aqueduct	\$991
North Bay Aqueduct.....	24
South Bay Aqueduct.....	33
Coastal Aqueduct.....	68
San Joaquin Valley drain	23
Total aqueduct facilities	<u>\$1,139</u>
Conservation facilities:	
Delta development	\$90
San Luis development.....	116
Oroville development	332
Eel River development.....	195
Total conservation facilities.....	<u>\$733</u>
Total Program	<u><u>\$1,872</u></u>

These estimates are based essentially on estimated unit quantities multiplied by present unit costs, with an allowance averaging about 16% for contingencies (other than for increases in construction cost levels) of the kind normally provided in engineering estimates, and an allowance of 15% for engineering, administration and overhead. As has been stated, they do not include interest payable during construction. The construction expenditures prior to the election date, which are excluded from the table, amount to \$82 millions (including commitments under present construction contracts), consisting of \$14 millions for aqueduct facilities and \$68 millions for conservation facilities.

Construction schedule

By fiscal years, the estimated construction expenditures payable by the State based on present cost levels are as follows :

<i>Fiscal year ending June 30</i>	<i>Aqueduct facilities(b)</i>	<i>(000,000)</i>			<i>Total</i>
		<i>Conservation facilities</i>			
		<i>Delta and San Luis developments</i>	<i>Oroville development</i>	<i>Eel River development</i>	
1961 (a) ----	\$15	\$3	\$6 (c)	\$--	\$24
1962 -----	31	8	6 (c)	--	45
1963 -----	25	15	1 (c)	--	41
1964 -----	37	25	--	--	62
1965 -----	43	26	--	--	69
1966 -----	72	26	--	--	98
1967 -----	95	19	--	--	114
1968 -----	129	10	--	--	139
1969 -----	153	8	--	--	161
1970 -----	143	7	--	--	150
1971 -----	96	4	--	--	100
1972 -----	38	4	--	--	42
1973 -----	47	3	--	--	50
1974 -----	32	4	--	--	36
1975 -----	18	4	7	--	29
1976 -----	11	10	13	--	34
1977 -----	21	9	67	--	97
1978 -----	22	8	48	--	78
1979 -----	23	5	54	--	82
1980 -----	9	--	51	--	60
1981 -----	8	1	51	3	63
1982 -----	14	1	24	8	47
1983 -----	5	--	--	16	21
1984 -----	2	--	--	22	24
1985 -----	14	2	1(d)	29	46
1986 -----	23	2	2(d)	43	70
1987 -----	7	--	1(d)	50	58
1988 -----	4	1	--	24	29
1989 -----	2	1	--	--	3
	<u>\$1,139</u>	<u>\$206</u>	<u>\$332</u>	<u>\$195</u>	<u>\$1,872</u>

- (a) From election date.
- (b) Expenditures on aqueduct facilities after 1972 represent principally the costs of additional pumping and generating facilities associated with the increased water deliveries.
- (c) Consists principally of highway and railroad relocation work now under way.
- (d) Consists of certain small dams and reservoirs upstream from the Oroville site.

The Consulting Engineers have scheduled the construction of the conservation facilities with a view to completing the various features at the time that they will be needed to meet the estimated demands. The Delta and San Luis developments will be needed prior to or simultaneously with the construction of the other conservation facilities. The Oroville and Eel River developments are scheduled to satisfy expected needs beginning in about 1983 and about 1989, respectively.

While it is recognized that one of the State's objectives in constructing the Oroville development is to accomplish needed flood control, it should be pointed out that any radical advance in the timing of this construction, as compared with the foregoing schedule, could have an adverse effect upon the marketing of the Water Bonds. The large volume of Water Bonds required to be issued during the period to 1970, in accordance with the requirements of the construction schedule, would be heavily augmented if the volume of Water Bond issues which would be required under such an advanced timing of the Oroville development were to be superimposed thereon.

Non-reimbursable expenditures

Those construction expenditures which are allocable to flood control, enhancement of fish and wildlife, and recreation are regarded by the Department as "non-reimbursable," which means that such expenditures will not be reflected in the charges to be paid by water users. With respect to the Program, the Consulting Engineers advise that the expenditures allocable to flood control are intended to be covered by the expected Congressional appropriations referred to hereinafter, but that the State's expenditures for the Oroville development will include some expenditures allocable to recreation. These "non-reimbursable" expenditures by the State have been included in the total of the State's construction expenditures to which the rate formula has been applied, as the amounts thereof, while not deemed significant by the Consulting Engineers, are not determinable in advance; on the other hand, the expected revenues to be received from sales of water to Feather River areas upstream from the Delta have been excluded in the calculation of revenues from the rate formula.

Expected Congressional appropriations

For a portion of the cost of certain specified features of the Program, the Department and the Consulting Engineers are relying upon expected future

Congressional appropriations, which are not included in the foregoing estimates of the State's costs, in the following amounts :

	<i>(000,000)</i>
South Bay Aqueduct	\$ 5 (a)
Delta development	30 (a)
San Luis development	142 (b)
Oroville development	75 (a)
Total	<u><u>\$252</u></u>

- (a) Flood control allocation.
- (b) Federal share of joint-use facilities.

Discussions are under way between the Department and the Federal Government regarding the extent of Federal financial participation in these facilities. For the San Luis development, Congress authorized in 1960 the appropriation (subject to the future action of Congress actually appropriating the funds) of \$290 millions, which is intended to cover the cost of certain facilities to be used solely by the Central Valley Project of the Federal Government as well as the Federal share of joint-use facilities. For the Oroville development, Congress in 1958 authorized Federal financial participation, and the local offices of the United States Army Corps of Engineers in 1960 recommended a basis for such participation, which is estimated to provide approximately \$75 millions of the construction cost.

The San Joaquin Valley drain will be a joint State-Federal project, but as the Federal portion of the cost has not been estimated, the amount for this facility included in the construction budget for the State is based on the cost of a drain designed to serve only the contractors for water to be delivered by the Program in that area.

REVENUES, EXPENSES AND RATES

Rate base concept

The revenues to be derived from the operation of the Program will depend primarily on the rates charged for the water, the demand therefor, and the payment capacities of the contractors therefor.

The Department has adopted a rate base concept, which would establish rates to be charged for the water so as to allow a rate of return on the capital investment, and the amortization of such investment over a stipulated period, out of the net operating revenues of the Program. For this purpose, the interest rate on the Water Bonds is taken as the rate of return (which would vary with this interest rate), the total of the State's construction expenditures on the Program is taken as the capital investment, and the period to final maturity of the Water Bonds is taken as the period of amortization.

This concept would be carried out as follows: each contractor for the water would pay annually, in varying amounts from year to year, (i) an aqueduct charge to cover its share of the capital and operating costs for the aqueduct facilities and (ii) a conservation charge, expressed as a rate per acre-foot (known as the Delta water charge), which would be the same for all contractors, to cover the capital and operating costs for the conservation facilities. In the establishment of the conservation charge, there would be deducted a power credit on account of part of the operating revenues of the Oroville hydro-electric generating facilities.

Rate formula

The Consulting Engineers have accepted the Department's rate concept, in broad terms. The rate formula for the pricing of water to be delivered from the Delta, as developed by the Consulting Engineers, is predicated upon the establishment of a rate base for the aqueduct facilities and a rate base for the conservation facilities (including the Oroville power facilities). For this purpose, the rate formula treats the following construction expenditures, estimated to aggregate \$369 millions, as interest-free and allocates them to the rate base for the conservation facilities: expenditures for conservation facilities heretofore made or committed, \$68 millions; expenditures for either aqueduct or conservation facilities from California Water Fund moneys on hand, \$97 millions; and expenditures for either aqueduct or conservation facilities from California Water Fund moneys to accrue from tidelands royalties, \$204 millions.

This treatment extends the benefits of the interest-free moneys to all contractors for the water, and also results in charges for the water which fall within the limitations of the agricultural payment capacity based on present cost levels.

Expenditures of all other funds for the construction of the Program, as made in any year, are treated as bearing interest at approximately the rate applicable

on sales of Water Bonds (or additional bonds, if any) then currently being issued for the construction of the Program.

The manner of calculation of the aqueduct charge and the conservation charge, including the power credit to be applied to the latter, is set forth in notes to Schedule 1, which is annexed hereto and is discussed later in this report. In brief, the aqueduct charge is designed to amortize (with interest) the capital investment represented by aqueduct construction expenditures made in each year, on the basis of equal annual installments thereafter; and the conservation charge is designed to amortize (with interest, in the case of expenditures deemed to be made from other than interest-free moneys) the capital investment represented by conservation construction expenditures made in each year, on the basis of an acre-foot rate applied to the schedule of water deliveries thereafter, as specified in the contracts for the sale of water; applicable operating expenses, in each case, being added on substantially a pay-as-you-go basis (except for extraordinary maintenance and replacements, which are treated as hereinafter stated).

Operating expenses

The expenses of operation of the Program, as estimated by the Consulting Engineers and as to be provided for in the rate formula, include all applicable administration expenses and maintenance and replacement expenditures (including certain reserves as hereinafter stated). In the determination of aqueduct operating expenses, the power revenues to be derived from the hydro-electric generating facilities on the south side of the Tehachapi Mountains are credited to the cost of pumping the water over these mountains.

Maintenance and replacements that are not annually recurrent are to be provided for by the inclusion, in the determination of operating expenses, of amounts equivalent to payments into a reserve fund for these purposes, thus avoiding the impact upon water rates for any particular year of any extraordinary maintenance and replacements that may occur in that year. While the Act has been construed by counsel for the Department and by our counsel as permitting the setting aside and holding of such a maintenance and replacement reserve fund for use by the Department, the Act is not definite on the point. If the Act should later be construed otherwise, so as to cause these reserve fund payments to be paid over to the General Fund or the California Water Fund, these payments would still serve their purpose in the rate formula. The General Fund or the California Water Fund would then absorb the impact of extraordinary maintenance and replacement expenditures, for the payment of which there would be withheld from these Funds, out of revenues, the amount required to meet the extraordinary expenditures when incurred.

No provision is included, in the operating expense estimates of the Consulting Engineers, for catastrophe replacements that cannot reasonably be predicted, nor for the loss of revenues therefrom, such as might result from an earthquake. The Consulting Engineers advise that reasonable precautions against earthquake have been taken in the design of the facilities, and that reasonable provision for spare equipment has been included in their estimates of construction costs.

Revenues and rates calculated from formula

The results of application of the rate formula to the estimated construction expenditures, at present cost levels, are set forth in Schedule 1 annexed hereto. This Schedule includes the estimates made by the Consulting Engineers of operating expenses, also at present cost levels, of net operating revenues from the Oroville power facilities (which are based on an estimate of the economic value of the power), and of total operating revenues and net operating revenues to be derived from the operation of the Program. The Schedule is included in this report on the authority of the Consulting Engineers.

For 1990, which is the first year of maximum estimated deliveries of water by the Program, the total aqueduct charge, as shown in Schedule 1, is distributed by the Consulting Engineers among the general service areas in approximately the percentages shown in the following table. The table also shows for the same year the approximate average rates per acre-foot of water for each of the general service areas to which water is to be delivered from the aqueduct facilities, as derived from Schedule 1 using the distribution of the total aqueduct charge and the estimated deliveries of water to these areas.

	Percentage of total aqueduct charge (a)	Approximate average rates per acre-foot		
		Aqueduct charge	Conservation charge(b)	Total
Southern California-----	76%	\$47.65	\$7.25	\$54.90
San Joaquin Valley-----	13	12.20(c)	7.25	19.45(c)
North (San Francisco) Bay--	2	14.65	7.25	21.90
South (San Francisco) Bay--	3	19.35	7.25	26.60
Coastal (Santa Barbara and San Luis Obispo area)----	6	59.85	7.25	67.10
	100%			

- (a) Reflects an allocation, as made by the Consulting Engineers, of the estimated aqueduct construction expenditures among general service areas.
- (b) Known as the Delta water charge. This charge increases from \$3.50 initially. In 1993, it decreases to approximately \$6.15 for the period from that year to 2026, with further decreases thereafter.
- (c) Includes charge for San Joaquin Valley drain.

Additional provisions of rate formula

The rate formula is related solely to the facilities included in the Program and to the regulated flow available for delivery from the Delta, which is to be provided by the conservation facilities included in the Program, and does not cover the period beyond the final maturity of the Water Bonds to be issued for the construction of the Program. It is recognized that, in order to meet substantially more than the 1990 demand, the construction of facilities addi-

tional to the Program will ultimately be required, and that the amortization of the capital investment represented by the construction cost of these additional facilities will probably extend beyond the final maturity of the Water Bonds to be issued for the construction of the Program. It is contemplated that the cost of such additional facilities, if not otherwise provided for, would be supported by revenues to be derived from additional contracts for the sale of water, to be executed when and as the occasion arises.

While it is further recognized that the Department has considered the inclusion in its water contracts of a provision for a surcharge on water to be used for the irrigation of more than 160 acres held under single ownership (or 320 acres in the case of community property), it should be noted that the rate structure as developed by the Consulting Engineers excludes such a surcharge. This exclusion is stated by the Consulting Engineers to be made because of a legal problem which would arise from the attempt to impose such a surcharge, and also because of the difficulty of determining how much water would be sold if a surcharge were imposed, with the possibility that this could have an adverse effect upon water sales in agricultural areas. The Consulting Engineers indicate that this is particularly the case in the San Joaquin Valley area, where much of the land is in the hands of large holders.

Status of contracts

The Department has been conducting negotiations for a considerable period of time with the Metropolitan Water District of Southern California, which encompasses Los Angeles and surrounding areas as well as most of San Diego, looking toward the consummation of a water contract with that District. These negotiations were intended to produce a form of contract which would serve as a model for all of the Department's water contracts.

Preliminary negotiations, looking toward the execution of contracts for the sale of water to be delivered by the Program, have also been proceeding with some of the other prospective contractors for this water, and exploratory discussions have been carried on by the Department with prospective purchasers of power to be generated by the facilities.

To date, no contract for the sale of the water or of the power has been entered into.

As stated earlier in this report, our conclusions as to financial feasibility assume, among other things, that contracts for the sale of water will conform substantially to the rate formula developed by the Consulting Engineers. The form of contract which the Department has been developing contains provisions which would differ in certain respects from this rate formula. Because negotiations were carried on of necessity for a long time prior to the completion by the Consulting Engineers of their studies of water availability, water demand, payment capacities and rates, it would not have been practicable for the Department, had it so wished, to conform the provisions of this form of contract to the rate formula developed by the Consulting Engineers.

Under the Act, all water and power contracts will be subject to such terms and conditions as may have been prescribed by the legislature at the time that the respective contracts are executed. Any contract meeting these terms and conditions may not be impaired by subsequent legislative action so long as any of the Water Bonds are outstanding. The terms and conditions which have been prescribed in the Act relate only to the period to be covered by the contracts, which is to be for the life of the Water Bonds issued thereunder insofar as practicable, and to certain recitals to be contained in the contracts.

Local tax and borrowing powers

The Program contemplates that the contractors for the water to be delivered by the Program will be municipal corporations, water districts and similar public agencies with local taxing power, and that, as suggested by the Department, at least part or all of the aqueduct charge may be recovered by these contractors through the levy of taxes or assessments on real estate within their respective jurisdictions. The retail prices of water would in effect be credited with these local taxes, or assessments, paid by users and non-users alike, with a resultant reduction in the acre-foot cost to the retail users. This is considered by the Department to be in recognition of the fact that some of the economic benefits of the water are shared by all.

California has numerous kinds of municipal agencies and districts, authorized by law to purchase and sell water. The contractors for the water may consist of agencies of several kinds, operating under different State laws and municipal charters, with different tax limitations and debt limitations, all as provided by these laws or charters. Existing limitations might in some cases restrict the legal rights of the contractors to meet an appropriate portion of the State's water charges through local taxes, or to incur debt for the construction of retail water distributing facilities.

If and where the legal powers of the contractors are deficient, reliance will have to be placed on remedial legislation. We are advised that if special legislation is enacted for the formation of "master" districts for agricultural areas, such legislation could provide adequate legal powers and thus eliminate a large area of uncertainty.

DAVIS-GRUNSKY PROJECTS

Under the Act, an amount equal to \$130 millions of Water Bond proceeds is reserved exclusively for loans and grants for local facilities (herein called "Davis-Grunsky Projects"), as referred to in the Davis-Grunsky Act (Chapter 1752, Statutes of 1959). Such facilities are defined as those constructed or improved by a local public agency for the diversion, storage, or distribution of water primarily for domestic, municipal, agricultural, industrial, flood control or power production purposes. The provision of loans and grants for Davis-Grunsky Projects is, by definition, included in the Act as part of the State Water Facilities, but for convenience is treated in this report as being separate therefrom. Nevertheless, consideration of the financial aspects of the Program requires consideration of the effects of these loans and grants.

None of the storage facilities included in the Davis-Grunsky Projects would be related to the Program, but conceivably some of the distribution facilities might utilize water to be supplied by the Program. The Consulting Engineers are not relying upon the construction of any of these facilities for the marketing of the water to be delivered by the Program.

Provision for Davis-Grunsky Projects may be in the form of interest-bearing loans repayable over not exceeding 50 years, or (in the case of incidental expenditures allocable to the enhancement of fish and wildlife or to recreation) non-reimbursable grants, or both. Any loan is to be limited to the portion of the cost of the particular project which the Department finds to be beyond the reasonable ability of the public agency to finance from other sources. The Department does not contemplate that grants will account for any considerable portion of the Davis-Grunsky expenditures.

As it cannot be determined at this time to what extent the State will recover the funds to be expended for Davis-Grunsky Projects, no payments of interest or principal on loans therefor are included in the revenue projection set forth herein. These payments, under the Act, would be treated in the same manner as revenues derived from the operation of the Program.

As shown later in this report, the projected net operating revenues to be derived from the operation of the Program, on the basis of the rate formula, would be substantially sufficient to pay the Water Bond service, including that on the Water Bonds to be issued to provide funds for Davis-Grunsky Projects. In addition, they would be sufficient to make payments to the California Water Fund, in reimbursement of construction expenditures made therefrom, as contemplated by the Act, but not to the extent of full reimbursement. The fact that the projected net operating revenues cover the projected service on the Water Bonds to be issued to provide funds for Davis-Grunsky Projects reflects the fact that the rate formula, while not taking into account the outlays for loans and grants for

Davis-Grunsky Projects, does take into account substantial amounts of past and future construction expenditures from the California Water Fund. To the extent that interest or principal are received on loans for Davis-Grunsky Projects, additional amounts to be treated as net operating revenues would be available, so as to effect greater and possibly full reimbursement of the California Water Fund.

FINANCING

Our conclusions regarding the financial feasibility of the Program have been set forth earlier in this report. The following discussion furnishes some of the background for these conclusions.

Pledge of revenues

The Water Bonds are to be general obligations of the State, for the payment of which, as to principal and interest, there will be pledged the full faith and credit of the State and also the revenues (except as referred to below) of the State Water Resources Development System (initially consisting of the Program), after deducting the expenses of operation of the System. The Act provides that contracts for the sale of water or power shall recite that the revenues to be derived therefrom are so pledged.

An opinion of the Attorney General of the State (36 Ops. Cal. Atty. Gen. 160 (1960)) is to the effect that the revenues which are pledged by the Act to the payment of the Water Bonds constitute solely the portion of these revenues which is allocable to the facilities, or portions thereof, constructed out of funds provided by the Act, namely, Water Bond proceeds and California Water Fund moneys; so that if bonds, additional to the Water Bonds, are authorized in the future and issued to finance the completion of construction of the Program, they can be supported by the portion of the revenues which is allocable to the facilities, or portions thereof, constructed out of the proceeds of such additional bonds. These additional bonds could be general obligation bonds, secured by the pledge of the full faith and credit of the State as well as by the pledge of a portion of the revenues as referred to above. The authorization of such additional bonds would require legislative action and subsequent approval by the voters of the State. Alternatively, the additional bonds could be, at least in part, revenue bonds, secured only by the pledge of the allocable revenues, and the authorization therefor would be effected solely by proceedings of the Department under an existing statute. However, revenue bonds probably could not be sold on terms as favorable as general obligation bonds, if of comparable amount and maturity.

In accordance with the Attorney General's opinion, it is contemplated that the bond resolution providing for each issue of the Water Bonds, the Water Bonds themselves, and the contracts for the sale of water and power should contain appropriate provisions to reflect the fact that the revenues, as referred to therein, pledged for the Water Bonds are solely those allocable to the facilities, or portions thereof, constructed out of Water Bond proceeds or California Water Fund moneys.

The Attorney General's opinion affords a basis for assistance in the financing of future additions to the Program, by the sale of additional bonds therefor

to be supported by allocable revenues, without recourse to the State's general tax funds.

Funds provided by Act

As discussed earlier in this report, the funds provided by the Act for expenditures on construction subsequent to the election date consist of the proceeds of Water Bonds, authorized in the amount of \$1,750 millions, and California Water Fund moneys on hand and to accrue (subject to a limitation on expenditures of Water Bond proceeds for the construction of State Water Facilities).

The Act further authorizes the use for construction of surplus revenues, if any, of the State Water Resources Development System remaining after reimbursement of the General Fund, with simple interest, for withdrawals therefrom for Water Bond payments, and after reimbursement of the California Water Fund, without interest, for construction payments made therefrom. Since the entire California Water Fund is appropriated for construction of the System, any reimbursements thereof from revenues become automatically available for further construction, unless the legislature exercises its right, which is reserved in the Act, to appropriate the California Water Fund for other purposes.

Sources of California Water Fund moneys

The uncommitted moneys in the California Water Fund as of the election date are estimated at \$97 millions. The State Lands Division has submitted estimates of amounts which may be expected to accrue to the California Water Fund in the future from oil and gas royalties paid to the State under certain tidelands leases. The estimates do not give consideration to the possible receipt of additional payments from new tidelands leases, since the amounts and timing of these cannot be estimated with assurance and, if from other off-shore developments, would be subject to prior appropriations, which may include future appropriations, attaching thereto prior to payment into the California Water Fund.

The receipts of the California Water Fund, as estimated by the State Lands Division, increase from \$5.6 millions for 1961 to \$10.2 millions for 1974, reflecting expected increases in production as a result of secondary recoveries through re-pressuring, and decrease annually thereafter. For the 29 years which have been taken as the construction period of the Program, they are estimated to aggregate \$204 millions. These estimates have been reviewed by the Consulting Engineers, who are of the opinion that they represent a conservative estimate of the revenues that will accrue to the Fund from this source over the period.

In addition, based on the projection of net operating revenues calculated from the rate formula, there would be an excess of \$65 millions of net operating revenues over Water Bond service during the construction period, which would be paid into the California Water Fund and would be applied to construction of the Program.

Under the Act, the California Water Fund moneys are to be expended to the extent available prior to the expenditure of Water Bond proceeds.

Annual Water Bond issues

Using the annual construction expenditures for the Program, at present cost levels, as shown earlier in this report, plus the \$130 millions earmarked for Davis-Grunsky Projects (which we have arbitrarily taken at \$5 millions a year beginning with 1964, the first year for which we have scheduled an issue of Water Bonds), and deducting from these expenditures the amounts to be available in the California Water Fund, it is readily possible to project by years the amounts required to be provided by the sale of Water Bonds. However, the sale of the Water Bonds as required just to meet the construction schedule would result in relatively excessive sales during the period 1968 to 1970. For this reason, we have projected the annual issues sufficiently in advance of the requirements of the construction schedule, so as to limit the issues in any year to \$120 millions. This projection is made in Schedule 2 annexed hereto.

As shown in Schedule 2, the initial issue of Water Bonds would be for \$60 millions in 1964, followed by an annual rate of sales of not over \$120 millions through 1970, by which time the Water Bond financing would be about one-half completed, and by a reduced volume of sales thereafter. The entire Water Bond financing operation would be completed in 1988. Due to the limitation in the Act on expenditures of Water Bond proceeds for the construction of State Water Facilities, as discussed earlier in this report, there would remain a balance of \$54 millions of construction expenditures to be financed from other sources.

In practice, the amounts of Water Bond issues would necessarily vary somewhat from the pattern set up in Schedule 2. The issues will have to be fitted in with the State's over-all financing program, in a planned marketing procedure. Market conditions and interest rates prevailing from time to time will exercise an important influence on the amounts and timing of the issues. The longer term of the Water Bonds, discussed hereinafter, as compared with that of most of the other State issues, will create differences from time to time in their relative salability and interest rates, which will have to be considered before coming to market.

Interest on unexpended Water Bond proceeds

Our projection of annual Water Bond sales as shown in Schedule 2 results in a carry-over of unexpended Water Bond proceeds, reaching a high of \$59 millions in 1968 and averaging \$44 millions for the period from 1964 to 1970. These unexpended proceeds result partly from the fact that, as has been stated, available California Water Fund moneys are to be used for construction prior to the expenditure of Water Bond proceeds. The gross interest expense incurred with respect to the unexpended Water Bond proceeds resulting from our projection would amount to \$11 millions.

In large part, this gross interest expense can be recovered by the temporary investment of the unexpended Water Bond proceeds. In our calculations, we

have not taken into account any credit for interest earned on these unexpended Water Bond proceeds. We consider that the net interest cost arising from such sales of Water Bonds in advance of actual construction requirements, after deducting the interest earnings, is not an excessive price to pay for the promotion of an orderly market for all of the State's bond issues.

Schedule of maturities

Under the Act, each issue of the Water Bonds must commence to mature not later than ten years after issuance, with a final maturity not later than 50 years after issuance. The Act does not expressly provide for term bonds with a sinking fund, but in any case the sinking fund payments on term bonds may be considered as the equivalent of serial maturities.

As the rate formula for sales of water to be delivered by the Program is intended to amortize over 50 years the capital investment represented by construction expenditures, it is necessary in order to make the Water Bonds revenue-supported that the repayments of the bonds be likewise scheduled over 50 years. Because the Act contains no provision for refunding the Water Bonds, the schedule of maturities must operate to effect full amortization within the 50-year period.

In our calculations, we have considered various schedules of maturities which could be adopted for the respective issues of Water Bonds, producing different over-all patterns of annual service for the Water Bonds. The Water Bond service pattern, which appears to best fit the revenue pattern resulting from the rate formula, is obtained by providing no maturities until the tenth anniversary after issue, with maturities scheduled so as to produce annual service in level amounts for the last 41 years from the time of issue. The same pattern of maturities would be applicable for bonds, additional to the Water Bonds, issued for the completion of construction of the Program.

For an issue of 4% Water Bonds, the annual service for the first nine years would be 4% (interest only), and for the remaining 41 years approximately 5% (interest plus principal payments), of the issue. The average life of such an issue is $35\frac{1}{2}$ years.

Interest costs

It must be expected that the interest cost on Water Bonds maturing over a 50-year period will be higher than that which would apply on the State's other bond issues, if the maturities of the latter are scheduled, as has usually been the case, over a period not exceeding 26 years. This difference in interest cost should not be material in its effect upon the charges for water to be delivered by the Program. There may be a modest compensating advantage, as the higher rate on the Water Bonds should tend to attract some new buyers and thus to broaden the market.

The last bond sale of the State was on September 28, 1960, and amounted to \$75 millions of bonds, due serially in from 2 to 26 years, at an over-all interest cost of about 3.81%. On the proposed schedule of maturities for Water Bonds,

the comparable rate would probably have been over 4%. Since 1933, the first year in which the State had to pay a rate as high as 4% on its bond sales was 1959; and in the 1920's, when the tax advantages of state and municipal bonds were small compared with what they are now, the State rarely had to pay so high a rate.

The State's interest costs on its borrowings reached a low of slightly over 1% in 1945 and remained under 3% until 1957, reflecting generally low interest rates throughout that period. The maximum interest rate permissible under existing legislation is 5%, and this also is the legal ceiling on interest costs, since the State's bonds must be sold at their principal amount or higher.

The Department, in its calculations, has assumed an average interest rate of 4% for the Water Bonds. While it is not practicable to predict the course of interest rates for the next 28 years, during which time the sales of Water Bonds are scheduled, any assumption that the rate will average over 4% seems harsh in the light of current conditions and historical perspective. We have used a rate of 4% for the purpose of our calculations, and the same rate has been used in the projection of revenues as calculated from the rate formula. This is on the expectation that the State's bonds will continue to enjoy tax exemption.

After the commencement of principal payments, any change in the interest rate will not be correspondingly reflected in the amounts of annual Water Bond service. For 4% bonds, a variation of 25% from this rate (i.e. to 5% or 3%) would produce a variation of only about 15% in the combined interest and principal payments on a 41-year level service basis.

Callability

In order to obtain the most favorable interest cost on the Water Bonds as well as to facilitate their sale, present market considerations would require that they be made non-callable (other than for the sinking fund on term bonds, if any) for a considerable period, preferably for 20 years or possibly longer.

The Act contains no provision for refunding the Water Bonds, and for practical purposes prevents the use of surplus revenues, if any, for the acceleration of fixed maturities. Further, the Act presents a barrier to the partial refunding of the Water Bonds, through the issuance of additional bonds to be authorized in the future, since the revenues pledged for the Water Bonds could not thereby be released to support the additional bonds.

We are advised that the Act, once ratified, cannot be amended so as to increase the amount, or change the purposes of issue, of the Water Bonds without re-submission to the people (and, of course, cannot be amended to impair the rights of Water Bond holders). Hence, in practical effect, the State might not be giving up a valuable option by thus making the Water Bonds non-callable. This question will have to be considered at the time of sale of each issue of the Water Bonds, in the light of market and other considerations then applicable.

Water Bond service and effect on Funds

On the bases and assumptions that we have recited, the aggregate annual service on the Water Bonds, using the projection of issues set up in Schedule 2,

would increase gradually to a peak of \$79 millions by 1997, at which point these requirements would level out for 17 years, thereafter declining until final payment in the year 2037. The maximum outstanding amount of the Water Bond issues would be \$1,451 millions, reached in 1988. Schedule 3 annexed hereto shows by years the projection of annual amounts of Water Bond service, and of Water Bonds outstanding.

From the projected revenues as shown in Schedule 1 and the projected Water Bond service shown in Schedule 3, it is readily possible to calculate the extent to which the projected revenues would produce a surplus or deficit in any year as compared with the Water Bond service. This is shown in Schedule 4 annexed hereto. This Schedule also shows that there would be available out of the revenues \$306 millions toward reimbursement of the California Water Fund for construction expenditures made therefrom, as contemplated by the Act.

The payment of the Water Bond service will, in some degree, require withdrawals from the General Fund from time to time for the purpose of meeting this service, since it is not possible to set up a schedule of Water Bond service which will exactly conform to the revenues. The term "withdrawal" as used herein refers to payments from the General Fund, for Water Bond service, which are not currently repaid from revenues. In fact, the Act provides that all payments of Water Bond service are to be made in the first instance from the General Fund, which is to be reimbursed therefor from revenues when and as they are available. As has been stated earlier in this report, the withdrawals from the General Fund for the payment of Water Bond service, on the bases and assumptions that we have recited, would aggregate about \$11 millions and would soon be repaid, with interest, out of revenues derived after the time of withdrawal. This fully reflects the service requirements on Water Bonds to be issued for loans and grants for Davis-Grunsky Projects.

Competition with other borrowers

In seeking capital for the Program, the State will be in competition with other borrowers, including itself. To arrive at a conclusion as to whether the State can raise this capital on reasonable terms involves a consideration of the prospective requirements of these borrowers.

Substantial competition, which the State will face in raising this capital, is afforded by its own borrowings for other purposes. The State's annual sales of general obligation bonds from 1955 to date have averaged \$281 millions, and from 1957 have averaged \$360 millions. A record was established in 1958, in which year these sales amounted to \$400 millions, and thus far in 1960 these sales have approached the same amount. California's sales are currently exceeding any other state's sales of general obligation bonds, and the rate of increase of California's sales has also been exceptional, both dollar-wise and percentage-wise. In view of the large amounts of unsold bonds of the State which have been authorized, (\$1,030 millions), and the State's population growth and continuing needs, the continuation of a high level of borrowings by the State must be expected.

About 60% of California's volume, from 1955 to date, of State general obligation bond issues has consisted of issues for the California Home and Farm Loan program for veterans. These issues are classified by financial firms and institutions and by financial services as revenue-supported; nevertheless, the continued heavy sales of these issues has had an adverse impact upon the State's borrowing costs.

We have included in this report, as Schedule 5 hereto, certain data on the State's bond sales from 1950 to date, showing the interest cost on each issue. We have compared these interest costs with the then current yields on state and local general obligation bonds, as measured by the Bond Buyer's 20-bond index, which, while not strictly comparable, is representative enough for this purpose. Prior to 1957, the State's interest costs were almost always lower than the index yield. Beginning with 1957, when the State's annual borrowings were materially increased, they have been higher than the index yield. By itself, this is not conclusive evidence that the increased borrowings produced the increased interest costs, as compared with the index, but it supports our conclusions with regard to the market effect of the volume of the State's borrowings.

In order to promote the successful marketing of the Water Bonds, as well as the State's general obligation bond issues for other purposes, it is important that the State refrain from an expansion of the present level (taken at approximately \$400 millions annually) of these bond issues for other purposes—at least during the next ten years, which is the period of the heaviest projected sales of Water Bonds. We have explored the situation with State officials, have considered with them various methods of meeting the State's requirements without expanding the rate of borrowings, and are of the opinion that these borrowings can be held within the present level during the next decade, in spite of the demands of a rapidly growing California population and without foregoing the satisfaction of the State's financial needs for all purposes. We are assured by State officials that the Administration also believes that this can be done, and intends to use its best efforts in that direction.

Apart from the State itself, local borrowers in California have had and will continue to have substantial recourse to the capital markets. California's borrowings, both State and local, have been absorbing about one-eighth of the nation's flow of capital funds into state and local bonds in recent years. This is in excess of the ratio of California's population to that of the United States. A comparison of California's borrowings with the national total is shown in Schedule 6 annexed hereto, which also summarizes for selected states, including California, the annual volume of state and local bond issues starting with 1955.

Pursuant to our contract, we have made an analysis of the trend of California's borrowings and indebtedness, both State and local. The Consulting Engineers have made forecasts of population and personal income which we have used. We have had discussions with State officials and officials of various important political subdivisions of the State, with respect to the prospective borrowing requirements of the State and these subdivisions, and have examined

financial reports of the State and its more important political subdivisions. With the aid of these forecasts, discussions and reports, we have made a projection to 1970 of State and local borrowings and indebtedness.

With respect to local borrowings, we have had to include an estimate of the volume of public issues which will be required by 1970 for the construction of distribution systems to utilize the water to be delivered by the Program. Based on advice furnished by the Consulting Engineers, we have taken this amount at \$500 millions.

The results of our analysis are set forth in Schedule 7 annexed hereto, which also includes certain related statistics with respect to population, personal income and assessed valuation. The projection to 1970 as contained in this Schedule represents our estimate of the probable general trend, and may be invalidated by the future actions of legislators, other public officials and voters.

Evaluation of State's credit

As an aid in evaluating the State's credit, we have prepared a statistical bond comparison giving certain financial data bearing on the bonds of selected states, including California. The states selected carry bond ratings of triple A (the highest) down to single A, but are not necessarily the largest borrowers. This comparison is given in Schedule 8 annexed hereto, and supports the view that California's debt is not excessive.

Dun & Bradstreet, Inc. has published certain yardsticks, by which the net indebtedness of a state can be measured against that of other states, using for this purpose the median for all of the states. Local debt is not included in the derivation of these yardsticks. By this measurement, as well, California's debt is not excessive. Also, the projection of the State's net debt to 1970 as given in Schedule 7 is not alarming when measured against the current net debt ratios of certain other important states as shown in Schedule 8. This is especially so if consideration is given to the State's wealth and resources and to the Consulting Engineers' projections of the State's economic growth.

The median for all states, as published by Dun & Bradstreet, Inc., and California's present and projected position in relation thereto, using the data shown in Schedule 7, are given below. Of course it should be pointed out that a 1960 median is not necessarily comparable to a 1970 projection, and that the median itself takes into account states which have little or no debt and which presumably do not have the same needs as California.

	<i>Median for all states 1960</i>	<i>California</i>	
		<i>1960</i>	<i>Projection to 1970</i>
Direct net debt:			
Per capita -----	\$36	\$54	\$104
% of personal income -----	2.2%	2.0%	3.3%
% of assessed valuation -----	2.6%	3.0%	Not available
% of estimated full valuation ----	1.2%	0.9%	Not available

In the projection of California's net debt to 1970, we have assumed that the State will not increase the rate of its borrowings apart from the Water Bonds. Also, we have considered that the Water Bond issues expected to be outstanding at that time will be classified as revenue-supported and can therefore be deducted from gross debt in determining net debt.

Taken together, these studies do not give rise to present concern for California's credit.

Certain legal questions

The report of the Consulting Engineers expresses the opinion that there are limitations in the Act, which make the construction program somewhat inflexible regarding the use of funds, and which make financial operation awkward in some respects. Such report and an appendix thereto suggest that certain legislative changes, which would improve these conditions, would be desirable. We have examined into these matters, with the assistance of counsel, and have concluded that while some clarification may be desirable, this is not necessary from the standpoint of the financial aspects of the Program.

Interval before Water Bond financing

Under the financing schedule prepared by us, none of the Water Bonds would be issued prior to 1964. Thus, if the Act is ratified by the voters at the November 1960 general election, there would remain an interval of about three years between the effective date of the Act and the first issue of Water Bonds. That interval is needed in order to resolve a number of important problems, as discussed earlier in this report, which still face the Department; in particular, the formation of "master" districts, the execution of contracts for the sale of water, the receipt of necessary Congressional appropriations, and the negotiation of necessary State-Federal agreements, all to the extent which may be appropriate by 1964. An interval is also needed to dispose of such litigation as may be undertaken to test the validity of the Act and related matters, as well as the rights of the Department and others concerned with the Program. The California Water Fund moneys are expected to be adequate to carry on the construction schedule during an interval of about three years.

Prior to the issuance of any of the Water Bonds, the Program should be re-examined in the light of changes that will undoubtedly develop, and at reasonably frequent intervals during the construction period the Program should again be re-examined, so that the engineering and financial plans can be modified to the extent necessary to take account of new conditions as they arise.

October 26, 1960

DILLON, READ & CO. INC.

Schedule 1

PROJECTION OF REVENUES CALCULATED FROM RATE FORMULA (a)

(Based on estimated construction expenditures and estimated operating expenses at present cost levels)

(000,000)

Calendar year	1	2	3	4	5	6	7	8	9	10
	Revenues from aqueduct charge (b)			Revenues from conservation charge (c)			Net operating revenues of Oroville power facilities (d)	Total operating revenues (f) (Cols. 3 + 7 + 8)	Total net operating revenues (g) (Cols. 9 - 2 - 5)	
	Capital component	Expense component (d)	Total (Cols. 1 + 2)	Capital component	Expense component (d)	Power credit				Total (Cols. 4 + 5 - 6)
1963	\$1.5	\$0.3	\$1.8	\$--	\$0.1	\$--	\$0.1	\$--	\$1.9	\$1.5
1964	6.0	0.4	6.4	--	0.1	--	0.1	--	6.5	6.0
1965	8.0	0.6	8.6	--	0.1	--	0.1	--	8.7	8.0
1966	11.4	0.9	12.3	--	0.1	--	0.3	--	12.6	11.6
1967	15.8	0.9	16.7	--	0.1	--	0.4	--	17.1	16.1
1968	21.9	2.2	24.1	--	0.4	--	0.5	--	24.6	22.0
1969	28.9	2.2	31.1	--	0.4	--	0.6	--	31.7	29.1
1970	35.6	5.8	41.4	--	1.5	--	1.5	--	42.9	35.6
1971	40.0	10.7	50.7	--	2.1	--	2.1	--	52.8	40.0
1972	41.8	14.0	55.8	--	2.3	--	2.3	--	58.1	41.8
1973	44.0	16.4	60.4	--	2.6	--	2.6	--	63.0	44.0
1974	45.5	19.9	65.4	--	2.8	--	2.8	--	68.2	45.5
1975	46.3	23.7	70.0	--	3.5	--	3.5	--	73.5	46.3
1976	46.8	26.8	73.6	--	3.6	--	3.6	--	77.2	46.8
1977	47.9	29.5	77.4	1.2	3.9	--	5.1	--	82.5	49.1
1978	48.8	33.0	81.8	2.7	4.2	--	6.9	--	88.7	51.5
1979	49.9	32.6	82.5	4.4	4.4	--	8.8	--	91.3	54.3
1980	50.3	35.6	85.9	6.1	4.6	--	10.7	--	96.6	56.4
1981	50.7	38.6	89.3	8.1	4.6	--	12.7	--	102.0	58.8
1982	51.3	41.0	92.3	9.5	5.3	--	14.8	6.7	113.8	67.5
1983	51.6	43.4	95.0	10.4	5.6	6.5	9.5	13.4	117.9	68.9
1984	51.7	45.7	97.4	11.6	6.0	6.4	11.2	13.4	122.0	70.3
1985	52.4	47.4	99.8	13.2	6.0	6.3	12.9	13.4	126.1	72.7
1986	53.4	50.3	103.7	15.6	6.8	6.2	16.2	13.4	133.3	76.2
1987	53.8	51.9	105.7	18.3	6.9	6.2	19.0	13.4	138.1	79.3
1988	53.9	52.4	106.3	20.1	7.1	6.1	21.1	13.4	140.8	81.3
1989	54.0	54.6	108.6	21.0	8.5	6.0	23.5	13.4	145.5	82.4
1990	54.0	55.7	109.7	21.8	8.5	6.0	24.3	13.4	147.4	83.2
1991	54.0	55.6	109.6	21.8	8.5	6.0	24.3	13.4	147.3	83.2
1992	54.0	55.6	109.6	21.8	8.5	6.0	24.3	13.4	147.3	83.2
Annually										
1993-2012	53.9	55.6	109.5	21.8	8.6	9.7	20.7	17.2	147.4	83.2
2013	52.5	55.6	108.1	21.8	8.6	9.7	20.7	17.2	146.0	81.8
2014	47.9	55.6	103.5	21.8	8.6	9.7	20.7	17.2	141.4	77.2
2015	45.9	55.6	101.5	21.8	8.6	9.7	20.7	17.2	139.4	75.2

(36)

2016	42.6	55.6	98.2	21.8	8.6	9.7	20.7	17.2	136.1	71.9
2017	38.2	55.6	93.8	21.8	8.6	9.7	20.7	17.2	131.7	67.5
2018	32.1	55.6	87.7	21.8	8.6	9.7	20.7	17.2	125.6	61.4
2019	25.0	55.6	80.6	21.8	8.6	9.7	20.7	17.2	118.5	54.3
2020	18.4	55.6	74.0	21.8	8.6	9.7	20.7	17.2	111.9	47.7
2021	13.9	55.6	69.5	21.8	8.6	9.7	20.7	17.2	107.4	43.2
2022	12.1	55.6	67.7	21.8	8.6	9.7	20.7	17.2	105.6	41.4
2023	9.9	55.6	65.5	21.8	8.6	9.7	20.7	17.2	103.4	39.2
2024	8.5	55.6	64.1	21.8	8.6	9.7	20.7	17.2	102.0	37.8
2025	7.6	55.6	63.2	21.8	8.6	9.7	20.7	17.2	101.1	36.9
2026	7.1	55.6	62.7	21.8	8.6	9.7	20.7	17.2	100.6	36.4
2027	6.1	55.6	61.7	19.0	8.6	9.7	17.9	17.2	96.8	32.6
2028	5.1	55.6	60.7	16.4	8.6	9.7	15.3	17.2	93.2	29.0
2029	4.0	55.6	59.6	13.8	8.6	9.7	12.7	17.2	89.5	25.3
2030	3.6	55.6	59.2	11.5	8.6	9.7	10.4	17.2	86.8	22.6
2031	3.2	55.6	58.8	9.1	8.6	9.7	8.0	17.2	84.0	19.8
2032	2.6	55.6	58.2	7.8	8.6	16.5	(0.1)	17.2	75.3	11.1
2033	2.3	55.6	57.9	7.3	8.6	16.6	(0.7)	17.2	74.4	10.2
2034	2.2	55.6	57.8	6.5	8.6	16.7	(1.6)	17.2	73.4	9.2
2035	1.6	55.6	57.2	5.2	8.6	16.8	(3.0)	17.2	71.4	7.2
2036	0.5	55.6	56.1	3.1	8.6	16.8	(5.1)	17.2	68.2	4.0
2037	0.2	55.6	55.8	1.0	8.6	17.0	(7.4)	17.2	65.6	1.4
2038	0.1	55.5	55.6	--	8.6	17.0	(8.4)	17.2	64.4	0.3

Notes:

- (a) This Schedule I, which was completed subsequent to the date of the report of the Consulting Engineers, is included herein on the authority of the Consulting Engineers. The Consulting Engineers advise that this Schedule, since it contains additional information and gives effect to certain refinements in the application of the rate formula, replaces their earlier schedule of estimated net revenues (Exhibit V-2) as set forth in their report.
- (b) Calculated from rate formula as follows: The construction expenditures made in each year for aqueduct facilities (treating the expenditures heretofore made as though made currently) are converted into a series of equal annual amounts, deemed to be payable over the immediately ensuing 50 years, in such annual amount as would amortize over that period an amount of debt equivalent to the amount of these expenditures, with interest at the average rate borne by bonds issued during the year of the expenditures (or 4% if none of the bonds shall yet have been issued), which rate is assumed for the purpose of this Schedule to be 4%. The aggregate of these annual amounts deemed to be payable in any year, with respect to all of the construction expenditures for aqueduct facilities theretofore made, constitutes the capital component of the aqueduct charge for that year. The expense component, comprising the operating expenses (as described in the text of our report) applicable to the aqueduct facilities for the year, is added to the capital component to determine the total aqueduct charge for the year. The aqueduct charge is computed separately for each aqueduct section, and the charge for each section is allocated among water contractors served thereby in proportion to their respective shares of water deliveries therefrom for 1990, as specified in their contracts. Up to the time of the execution of water contracts (assumed for the purpose of this Schedule to be 1964, except for South Bay), the aqueduct charges allocable to prospective contractors for water are accumulated with interest and similarly converted into a series of equal annual amounts, deemed to be payable over the period of 50 years commencing with the execution of the contracts.
- (c) Calculated from rate formula as follows: All construction expenditures for conservation facilities are treated as interest-free to the extent of the available interest-free moneys (as discussed in the text of our report). The

construction expenditures made in each year for conservation facilities, less the amount of construction expenditures so treated as interest-free, are converted into an acre-foot rate deemed to be payable over the immediately ensuing 50 years in such amount as, when applied to the aggregate water deliveries specified in the water contracts, would amortize over that period an amount of debt equivalent to the amount of these expenditures, with interest at the same rate as described in note (b) above. Unlike the amortization pattern for the aqueduct charge, which is that of level debt service, the amortization pattern for the conservation charge parallels the curve of aggregate water deliveries, as specified in the contracts. The aggregate of these acre-foot rates deemed to be payable in any year, with respect to all of the construction expenditures for conservation facilities theretofore made, multiplied by the aggregate water deliveries for that year as specified in the contracts, constitutes the capital component of the conservation charge for that year. The remaining construction expenditures made in each year for conservation facilities, which are treated as interest-free, are amortized out of the net operating revenues of the Oroville power facilities. These expenditures for each year are converted into a series of 50 equal annual amounts deemed to be payable (without interest) after the commencement of operation of the Oroville power facilities. The aggregate of these annual amounts deemed to be payable in any year, with respect to all of the construction expenditures from interest-free moneys theretofore made, is subtracted from the net operating revenues of the Oroville power facilities to determine the power credit for that year. The expense component, comprising the operating expenses (as described in the text of our report) applicable to the conservation facilities for the year, is added to the capital component, and from this sum the power credit is deducted, to determine the conservation charge for the year; provided that for the period through 1969 the conservation charge is arbitrarily fixed at \$3.50 per acre-foot.

- (d) As estimated by the Consulting Engineers.
- (e) As stated in note (c) above, the conservation charge for the period through 1969 is arbitrarily fixed at \$3.50 per acre-foot, without regard to the applicable operating expenses.
- (f) Net of Oroville power operating expenses.

Schedule 2

PROJECTION OF WATER BOND ISSUES
(Based on estimated construction expenditures at present cost levels)

(000)

	1	2	3	4	5	6	7	8	9	10	11
	California Water Fund										
Fiscal year ending June 30 (a)	Construction expenditures (b)	Loans and grants for Davis-Grunsky Projects (c)	Total expenditures (Cols. 1 + 2)	Balance available at beginning of period (d)	Accruals from tidelands royalties (e)	Revenues not required for current Water Bond service (f)	Available for expenditure (Cols. 4 + 5 + 6)	Expenditures (lesser of Cols. 3 or 7)	Balance of expenditures to be financed (Cols. 3 - 8)	Expenditures to be financed from other sources (g)	Projected Water Bond issues (h)
1961 -----	\$24,000	\$--	\$24,000	\$96,900	\$3,700	\$--	\$100,600	\$24,000	\$--	\$--	\$--
1962 -----	45,000	--	45,000	76,600	5,500	--	82,100	45,000	--	--	--
1963 -----	41,000	--	41,000	37,100	5,500	--	42,600	41,000	--	--	--
1964 -----	62,000	5,000	67,000	1,600	6,100	1,500	9,200	9,200	57,800	--	60,000
1965 -----	69,000	5,000	74,000	--	6,600	3,600	10,200	10,200	63,800	--	101,000
1966 -----	98,000	5,000	103,000	--	7,300	1,600	8,900	8,900	94,100	--	120,000
1967 -----	114,000	5,000	119,000	--	7,800	400	8,200	8,200	110,800	--	120,000
1968 -----	139,000	5,000	144,000	--	8,300	100	8,400	8,400	135,600	--	120,000
1969 -----	161,000	5,000	166,000	--	8,700	1,100	9,800	9,800	156,200	--	120,000
1970 -----	150,000	5,000	155,000	--	9,200	3,500	12,700	12,700	142,300	--	120,000
1971 -----	100,000	5,000	105,000	--	9,500	5,000	14,500	14,500	90,500	--	91,000
1972 -----	42,000	5,000	47,000	--	9,800	6,000	15,800	15,800	31,200	--	31,000
1973 -----	50,000	5,000	55,000	--	10,100	6,500	16,600	16,600	38,400	--	38,000
1974 -----	36,000	5,000	41,000	--	10,200	6,600	16,800	16,800	24,200	--	24,000
1975 -----	29,000	5,000	34,000	--	10,000	6,100	16,100	16,100	17,900	--	18,000

1976	34,000	5,000	39,000	---	9,500	5,000	14,500	14,500	24,500	---	25,000
1977	97,000	5,000	102,000	---	8,900	3,300	12,200	12,200	89,800	---	90,000
1978	78,000	5,000	83,000	---	8,200	700	8,900	8,900	74,100	---	74,000
1979	82,000	5,000	87,000	---	7,500	---	7,500	7,500	79,500	---	79,000
1980	60,000	5,000	65,000	---	7,000	---	7,000	7,000	58,000	---	58,000
1981	63,000	5,000	68,000	---	6,500	---	6,500	6,500	61,500	---	62,000
1982	47,000	5,000	52,000	---	6,100	---	6,100	6,100	45,900	---	46,000
1983	21,000	5,000	26,000	---	5,600	---	5,600	5,600	20,400	---	20,000
1984	24,000	5,000	29,000	---	5,300	---	5,300	5,300	23,700	---	24,000
1985	46,000	5,000	51,000	---	5,000	---	5,000	5,000	46,000	14,000	32,000
1986	70,000	5,000	75,000	---	4,700	---	4,700	4,700	70,300	27,000	43,000
1987	58,000	5,000	63,000	---	4,500	3,500	8,000	8,000	55,000	8,000	47,000
1988	29,000	5,000	34,000	---	4,300	5,200	9,500	9,500	24,500	5,000	19,000
1989	3,000	5,000	8,000	---	2,300	5,700	8,000	8,000	---	---	---
Totals	\$1,872,000	\$130,000	\$2,002,000		\$203,700	\$65,400	\$366,000	\$1,636,000	\$54,000	\$1,582,000	

Notes:

- (39)
- (a) Initial period is taken as the period from the election date to June 30, 1961. For the purpose of this Schedule, all expenditures, accruals and Water Bond issues are deemed to occur at the midpoint of the respective fiscal year.
 - (b) Construction expenditures are as furnished by the Consulting Engineers and exclude Congressional appropriations expected to be received for certain specified features of the Program. These expenditures also exclude \$82,000,000 expended or committed prior to the election date.
 - (c) Loans and grants for Davis-Grunsky Projects are arbitrarily scheduled in equal annual amounts starting in the first year of issue of Water Bonds.
 - (d) California Water Fund balance available at election date is as furnished by the Department.
 - (e) California Water Fund accruals from tidelands royalties are as furnished by the State Lands Division and reviewed by the Consulting Engineers (except that the accruals used for the initial and final periods are the applicable portions of the accruals for the respective years).

- (f) Revenues (after deducting operating expenses) not required for current Water Bond service are as shown for the construction period in Schedule 4, Column 7 (rounded to multiples of \$100,000).
- (g) Expenditures to be financed from other sources (i.e., from sources other than California Water Fund moneys and Water Bond proceeds) arise from a limitation contained in the Act, as discussed in the text of our report, upon expenditures of Water Bond proceeds for construction of State Water Facilities.
- (h) Projected Water Bond issues are the amounts shown in Column 9 (less, where applicable, the amounts shown in Column 10) adjusted so as to limit annual Water Bond issues to \$120,000,000. Of the total authorization of \$1,750,000,000 of Water Bonds, the \$168,000,000 excess over the aggregate amount of \$1,582,000,000 of these issues, as shown above, cannot be used to complete the construction of the State Water Facilities by reason of the limitation in the Act referred to in note (g) above.

Schedule 3

PROJECTION OF WATER BOND SERVICE
 (Based on estimated construction expenditures at present cost levels)

Calendar year	(000)				
	1	2	3	4	5
	Projected Water Bond issues (a)	Projected Water Bonds outstanding at beginning of year (b)	Projected Water Bond service (c)		
		Interest	Principal payments	Total	
1964	\$60,000	\$60,000	\$2,400	\$	\$2,400
1965	101,000	161,000	6,440	--	6,440
1966	120,000	281,000	11,240	--	11,240
1967	120,000	401,000	16,040	--	16,040
1968	120,000	521,000	20,840	--	20,840
1969	120,000	641,000	25,640	--	25,640
1970	120,000	761,000	30,440	--	30,440
1971	91,000	852,000	34,080	--	34,080
1972	31,000	883,000	35,320	--	35,320
1973	38,000	921,000	36,840	601	37,441
1974	24,000	944,399	37,776	1,637	39,413
1975	18,000	960,762	38,431	2,904	41,335
1976	25,000	982,858	39,314	4,223	43,537
1977	90,000	1,068,635	42,745	5,594	48,339
1978	74,000	1,137,041	45,482	7,019	52,501
1979	79,000	1,209,022	48,361	8,502	56,863
1980	58,000	1,258,520	50,341	9,754	60,095
1981	62,000	1,310,766	52,431	10,455	62,886
1982	46,000	1,346,311	53,853	11,254	65,107
1983	20,000	1,355,057	54,203	11,944	66,147
1984	24,000	1,367,113	54,685	12,602	67,287
1985	32,000	1,386,511	55,460	13,357	68,817
1986	43,000	1,416,154	56,646	14,793	71,439
1987	47,000	1,448,361	57,934	16,126	74,060
1988	19,000	1,451,235	58,049	17,562	75,611
1989	--	1,433,673	57,347	18,845	76,192
1990	--	1,414,828	56,593	20,220	76,813
1991	--	1,394,608	55,784	21,490	77,274
1992	--	1,373,118	54,925	22,550	77,475
1993	--	1,350,568	54,023	23,692	77,715
1994	--	1,326,876	53,075	24,961	78,036
1995	--	1,301,915	52,077	26,390	78,467
1996	--	1,275,525	51,021	27,916	78,937
1997	--	1,247,609	49,904	29,223	79,127
1998	--	1,218,386	48,735	30,392	79,127

1999	1,187,994	47,519	31,608	79,127
2000	1,156,386	46,255	32,872	79,127
2001	1,123,514	44,940	34,187	79,127
2002	1,089,327	43,573	35,554	79,127
2003	1,053,773	42,150	36,977	79,127
2004	1,016,796	40,671	38,456	70,127
2005	978,340	39,133	39,994	79,127
2006	938,346	37,533	41,594	79,127
2007	896,752	35,870	43,257	79,127
2008	853,495	34,139	44,988	79,127
2009	808,507	32,340	46,787	79,127
2010	761,720	30,468	48,659	79,127
2011	713,061	28,522	50,605	79,127
2012	662,456	26,498	52,629	79,127
2013	609,827	24,393	54,734	79,127
2014	555,093	22,204	53,923	76,127
2015	501,170	20,047	51,028	71,075
2016	450,142	18,006	47,067	65,073
2017	403,075	16,123	42,947	59,070
2018	360,128	14,405	38,663	53,068
2019	321,465	12,859	34,208	47,067
2020	287,257	11,490	29,574	41,064
2021	257,683	10,307	26,205	36,512
2022	231,478	9,259	25,703	34,962
2023	205,775	8,231	24,830	33,061
2024	180,945	7,238	24,623	31,861
2025	156,322	6,253	24,708	30,961
2026	131,614	5,265	24,446	29,711
2027	107,168	4,287	20,922	25,209
2028	86,246	3,450	18,057	21,507
2029	68,189	2,728	14,828	17,556
2030	53,361	2,134	12,521	14,655
2031	40,840	1,634	9,920	11,554
2032	30,920	1,237	8,016	9,253
2033	22,904	916	7,337	8,253
2034	15,567	623	6,430	7,053
2035	9,137	365	5,086	5,451
2036	4,051	162	3,139	3,301
2037	912	36	912	948

Notes :

- (a) Projected Water Bond issues are as shown for fiscal years in Schedule 2, Column 11, and are deemed for the purpose of this Schedule 3 to occur at the mid-point of the respective fiscal year, i.e., at the beginning of the calendar year.
- (b) Projected Water Bonds outstanding give effect to concurrent Water Bond issues and principal payments.

- (c) Projected Water Bond service is calculated on the assumption that each issue carries an interest rate of 4% and matures from its 10th to its 50th anniversary, both inclusive, in amounts producing level annual service (interest plus principal payments) for the last 41 years; and is deemed for the purpose hereof to occur at the end of the respective calendar year.

Schedule 4

PROJECTION OF WITHDRAWALS FROM GENERAL FUND AND OF
PAYMENTS TO GENERAL AND CALIFORNIA WATER FUNDS (a)

(Based on estimated construction expenditures at present cost levels)

Calendar year	(000)						
	1 Net operating revenues (b)	2 Projected Water Bond service (c)	3 Withdrawals from General Fund for Water Bond service	4 Revenues not required for current Water Bond service (d)	5 Paid into General Fund on account of withdrawals therefrom	6 Paid into General Fund on account of simple interest on withdrawals	7 Paid into California Water Fund and available for construction (e)
1963	\$1,500	\$--	\$--	\$1,500	\$--	\$--	\$1,500
1964	6,000	2,400	--	3,600	--	--	3,600
1965	8,000	6,440	--	1,560	--	--	1,560
1966	11,600	11,240	--	360	--	--	360
1967	16,100	16,040	--	60	--	--	60
1968	22,000	20,840	--	1,160	--	--	1,160
1969	29,100	25,640	--	3,460	--	--	3,460
1970	35,600	30,440	--	5,160	--	--	5,160
1971	40,000	34,080	--	5,920	--	--	5,920
1972	41,800	35,320	--	6,480	--	--	6,480
1973	44,000	37,441	--	6,559	--	--	6,559
1974	45,500	39,413	--	6,087	--	--	6,087
1975	46,300	41,335	--	4,965	--	--	4,965
1976	46,800	43,537	--	3,263	--	--	3,263
1977	49,100	48,339	--	761	--	--	761
1978	51,500	52,501	1,001	--	--	--	--
1979	54,300	56,863	2,563	--	--	--	--
1980	56,400	60,095	3,695	--	--	--	--
1981	58,800	62,886	4,086	--	--	--	--
1982	67,500	65,107	--	2,393	1,466	927	--
1983	68,900	66,147	--	2,753	2,358	395	--
1984	70,300	67,287	--	3,013	2,712	301	--
1985	72,700	68,817	--	3,883	3,691	192	--
1986	76,200	71,439	--	4,761	1,118	45	3,598
1987	79,300	74,060	--	5,240	--	--	5,240
1988	81,300	75,611	--	5,689	--	--	5,689
1989	82,400	76,192	--	6,208	--	--	6,208
1990	83,200	76,813	--	6,387	--	--	6,387
1991	83,200	77,274	--	5,926	--	--	5,926
1992	83,200	77,475	--	5,725	--	--	5,725

1993	83,200	77,715	--	5,485	--	--	5,485
1994	83,200	78,036	--	5,164	--	--	5,164
1995	83,200	78,467	--	4,733	--	--	4,733
1996	83,200	78,937	--	4,263	--	--	4,263
Annually	83,200	79,127	--	4,073	--	--	4,073
1997-2012							
2013	81,800	79,127	--	2,673	--	--	2,673
2014	77,200	76,127	--	1,073	--	--	1,073
2015	75,200	71,075	--	4,125	--	--	4,125
2016	71,900	65,073	--	6,827	--	--	6,827
2017	67,500	59,070	--	8,430	--	--	8,430
2018	61,400	53,068	--	8,332	--	--	8,332
2019	54,300	47,067	--	7,233	--	--	7,233
2020	47,700	41,064	--	6,636	--	--	6,636
2021	43,200	36,512	--	6,688	--	--	6,688
2022	41,400	34,962	--	6,438	--	--	6,438
2023	39,200	33,061	--	6,139	--	--	6,139
2024	37,800	31,861	--	5,939	--	--	5,939
2025	36,900	30,961	--	5,939	--	--	5,939
2026	36,400	29,711	--	6,689	--	--	6,689
2027	32,600	25,209	--	7,391	--	--	7,391
2028	29,000	21,507	--	7,493	--	--	7,493
2029	25,300	17,556	--	7,744	--	--	7,744
2030	22,600	14,655	--	7,945	--	--	7,945
2031	19,800	11,554	--	8,246	--	--	8,246
2032	11,100	9,253	--	1,847	--	--	1,847
2033	10,200	8,253	--	1,947	--	--	1,947
2034	9,200	7,053	--	2,147	--	--	2,147
2035	7,200	5,451	--	1,749	--	--	1,749
2036	4,000	3,301	--	699	--	--	699
2037	1,400	948	--	452	--	--	452
2038	300	--	--	300	--	--	300
Totals	\$4,121,200	\$3,813,738	\$11,345	\$318,807	\$11,345	\$1,860	\$305,602

Notes:

- (a) Reflects operation of provisions of the Act as to withdrawals and payments.
- (b) Net operating revenues are as shown in Schedule 1, Column 10, and exclude receipts of interest or principal on loans to be made for Davis-Grunsky Projects.
- (c) Projected Water Bond service is as shown in Schedule 3, Column 5, and includes service on Water Bonds to be issued to provide funds for loans and grants for Davis-Grunsky Projects.
- (d) These amounts include amounts paid into the General Fund, as shown in Columns 5 and 6, and are greater, to that extent, than the amounts paid into the California Water Fund, as shown in Column 7.
- (e) Payments into the California Water Fund are in reimbursement of construction expenditures made therefrom. These payments include about \$65,400,000 paid into that Fund during the construction period (being the total shown in Schedule 2, Column 6).

The rate formula as discussed in the text of our report is designed to produce, on the basis of estimated construction expenditures at present cost

levels, net operating revenues substantially equivalent, over the period to the final maturity of the Water Bonds issued for the construction of the Program, to the sum of (i) Water Bond service (exclusive of service on Water Bonds issued for Davis-Grunsky Projects), (ii) future construction expenditures made from the California Water Fund (\$366,000,000, as shown in Schedule 2, Column 8), (iii) future construction expenditures to be financed from other sources as discussed in the text of our report (\$54,000,000, as shown in Schedule 2, Column 10), and (iv) past construction expenditures (\$82,000,000, as discussed in the text of our report). The sum of the last three items is \$502,000,000 and compares with the total of \$305,602,000 paid into the California Water Fund as shown above, the difference being due principally to the fact that the Water Bond service as shown above includes service on Water Bonds issued for Davis-Grunsky Projects. To the extent that interest or principal are received on loans for Davis-Grunsky Projects, additional amounts to be treated as net operating revenues would be available so as to reduce or possibly eliminate this difference.

Schedule 5

CERTAIN DATA ON CALIFORNIA STATE BOND ISSUES, 1950 TO DATE (a)

Date sold	Purpose of issue	Principal amount (000)	Range of interest rates	Maturities (b)	Net interest cost	Bond buyer's 20-bond index
2- 1-50	Veterans -----	\$25,000	2 $\frac{1}{4}$ %	1952/71	1.699%	2.05%
5- 3-50	Schools -----	50,000	4 $\frac{1}{2}$ %-1%	1952/76	1.7413	2.03
9- 7-50	Veterans -----	50,000	4%-1 $\frac{1}{2}$ %	1952/71	1.6632	1.83
9- 7-50	Schools -----	50,000	4%-1 $\frac{1}{2}$ %	1952/76	1.8978	1.83
	1950 Total -----	\$175,000				
4- 4-51	Schools -----	\$50,000	4%-1 $\frac{1}{2}$ %	1953/77	1.8978	1.82
7-11-51	Veterans -----	25,000	4%-1 $\frac{1}{2}$ %	1953/72	1.8902	2.23
	1951 Total -----	\$75,000				
(44)	1- 9-52	Schools -----	4%-1 $\frac{1}{2}$ %	1953/77	1.8034	2.09
	1- 9-52	Veterans -----	4%-1 $\frac{1}{2}$ %	1953/72	1.726	2.09
	6- 4-52	Schools -----	4%-1 $\frac{1}{2}$ %	1954/78	1.869	2.06
	10-29-52	Schools -----	4%-2%	1954/78	2.0934	2.39
	1952 Total -----	\$125,000				
	2- 3-53	Veterans -----	2 $\frac{1}{2}$ %-2%	1954/73	2.4159	2.13
	6-24-53	Schools -----	5%-2 $\frac{3}{4}$ %	1955/79	3.0128	3.02
	1953 Total -----	\$125,000				
	1-13-54	Veterans -----	2%-1 $\frac{3}{4}$ %	1956/75	1.9328	2.54
	4-21-54	Schools -----	5%-1%	1956/80	2.1941	2.49
	1954 Total -----	\$100,000				
	1- 5-55	Veterans -----	5%- $\frac{1}{4}$ %	1957/76	2.0297	2.38
	4-27-55	Schools -----	5%-1 $\frac{1}{4}$ %	1957/81	2.0519	2.40
	11- 2-55	Schools -----	5%- $\frac{1}{4}$ %	1957/81	2.2122	2.50
	11- 2-55	Veterans -----	5%-1 $\frac{3}{4}$ %	1957/76	2.137	2.50
	1955 Total -----	\$150,000				
	2-29-56	Schools -----	5%- $\frac{1}{4}$ %	1958/82	2.338	2.42
	6-13-56	Veterans -----	5%-2%	1958/77	2.2955	2.53
	10- 3-56	Veterans -----	5%-2 $\frac{1}{2}$ %	1958/77	2.795	2.90
	1956 Total -----	\$115,000				

1-16-57	Schools -----	\$35,000	5% - 3 $\frac{1}{4}$ %	1959/83	3.3499	3.24
1-16-57	Veterans -----	50,000	5% - 3%	1958/77	3.3004	3.24
4-24-57	Schools -----	30,000	5% - 3 $\frac{1}{4}$ %	1959/83	3.4592	3.16
4-24-57	Veterans -----	50,000	5% - 3 $\frac{1}{2}$ %	1958/77	3.4258	3.16
7-24-57	Veterans -----	50,000	5% - 3 $\frac{1}{4}$ %	1959/78	3.5791	3.38
10-23-57	Veterans -----	50,000	5% - 3 $\frac{1}{2}$ %	1959/78	3.6501	3.41
10-23-57	Schools -----	35,000	5% - 3 $\frac{1}{2}$ %	1960/84	3.6758	3.41
	1957 Total -----	\$300,000				
1-22-58	Veterans -----	\$100,000	3 $\frac{1}{2}$ % - 2 $\frac{1}{2}$ %	1959/83	3.0723	2.87
4-23-58	Schools -----	50,000	5% - 1%	1960/84	2.9592	2.96
4-23-58	Veterans -----	50,000	5% - 1%	1959/83	2.9616	2.96
7-23-58	Veterans -----	100,000	5% - 1%	1960/84	3.2276	3.10
12- 3-58	Schools -----	50,000	5% - 3 $\frac{1}{2}$ %	1961/85	3.6135	3.30
12- 3-58	Construction -----	50,000	5% - 3 $\frac{1}{2}$ %	1959/78	3.5786	3.30
	1958 Total -----	\$400,000				
3-11-59	Veterans -----	\$50,000	5% - 3 $\frac{1}{4}$ %	1960/84	3.5544	3.26
3-11-59	Construction -----	50,000	5% - 3 $\frac{1}{4}$ %	1960/84	3.536	3.26
6-10-59	Veterans -----	100,000	5% - 3 $\frac{1}{2}$ %	1961/85	3.9446	3.64
9-10-59	Schools -----	50,000	5% - 3 $\frac{1}{2}$ %	1961/85	4.0089	3.72
10-21-59	San Francisco Harbor -----	7,500	6% - 3 $\frac{1}{4}$ %	1964/83	3.5747	3.60
	1959 Total -----	\$257,500				
1-13-60	Veterans -----	\$50,000	5% - 3 $\frac{3}{4}$ %	1961/85	4.0191	3.78
1-13-60	Construction -----	50,000	5% - 3 $\frac{3}{4}$ %	1961/85	4.0182	3.78
3- 9-60	Veterans -----	50,000	5% - 3 $\frac{1}{2}$ %	1962/86	3.9524	3.65
3- 9-60	Construction -----	50,000	5% - 3 $\frac{1}{2}$ %	1961/85	3.9447	3.65
4-19-60	Schools -----	25,000	5% - 3 $\frac{1}{2}$ %	1962/86	3.8355	3.55
6-28-60	Veterans -----	50,000	5% - 3 $\frac{1}{2}$ %	1965/84	3.9534	3.52
6-28-60	Schools -----	25,000	5% - 3 $\frac{1}{2}$ %	1962/86	3.926	3.52
7-18-60	Small Craft Harbors -----	3,000	6% - 3 $\frac{1}{4}$ %	1965/84	3.5733	3.52
8-17-60	San Francisco Harbor -----	15,000	6% - 1%	1965/90	3.3091	3.27
9-28-60	Veterans -----	50,000	5% - 4%	1962/86	3.8157	3.46
9-28-60	Schools -----	25,000	5% - 4%	1962/86	3.791	3.46
	1960 to date -----	\$393,000				

(45)

Notes:

(a) Furnished by the State Treasurer's office, except as to Bond Buyer's 20-bond index. Excludes issues of \$1,500,000 or less, aggregating \$4,000,000 for the period.

(b) All of the issues have a non-callable provision, the earliest call date being for the most part at least 20 years after issuance and in all cases at least 15 years after issuance.

Schedule 6
SUMMARY OF STATE AND LOCAL BOND ISSUES, FOR SELECTED
STATES AND THE UNITED STATES, 1955-1960 (a)

	(000,000)						1960 through August	Total
	Calendar year							
	1955	1956	1957	1958	1959			
California:								
State _____	\$150	\$115	\$300	\$400	\$258	\$318	\$1,541	
State and local _____	664	534	840	1,079	957	787	4,861	
New York:								
State _____	151	50	129	327	50	None	707	
State and local _____	552	348	897	995	1,273	761	4,826	
Illinois:								
State _____	None	None	None	None	None	None	None	
State and local _____	681	293	456	454	285	180	2,349	
Texas:								
State _____	None	None	13	40	26	None	79	
State and local _____	362	323	415	367	361	236	2,064	
Ohio:								
State _____	None	None	148	None	None	150	298	
State and local _____	264	310	537	392	301	210	2,014	
Pennsylvania:								
State _____	60	62	33	75	120	None	350	
State and local _____	235	326	274	378	471	247	1,931	

Massachusetts:							
State	221	114	117	206	128	None	786
State and local	370	274	286	309	285	150	1,674
Michigan:							
State	None	20	None	None	None	25	45
State and local	251	323	266	362	167	214	1,583
Washington:							
State	None	4	2	None	25	34	65
State and local	133	302	487	105	320	189	1,536
Maryland:							
State	None	17	24	71	12	37	161
State and local	134	161	129	171	129	135	859
Indiana:							
State	None	None	None	None	None	None	None
State and local	85	95	87	145	144	49	605
Oregon:							
State	None	8	47	21	20	None	96
State and local	44	41	93	66	96	46	386
United States total:							
State and local	5,977	5,446	6,958	7,449	7,681	5,189	38,700
California as percent of total	11.1%	9.8%	12.1%	14.5%	12.5%	15.2%	12.6%

Note:

(a) For the purpose of this Schedule, state bond issues consist of general obligations only (limited obligations of states and all revenue bond issues being included in state and local issues). The data have been compiled by us from records of the Bond Buyer, except as follows: California State issues

are from Schedule 5; California State and local issues through 1959 are as published by Bank of America National Trust and Savings Association; and United States totals are as published by the Bond Buyer.

Notes:

- (a) For purposes of this Schedule, general obligations only are included.
- (b) The historical statistics of bond issues and amounts of bonded debt are compiled from data furnished by the offices of the State Controller and of the State Treasurer (except that for local issues, 1951-1953, the statistics are partly estimated by us from incomplete data).
- (c) Consists of annual averages of \$400,000,000 State bonds for purposes other than water and \$76,100,000 Water Bonds (based on estimated construction expenditures at present cost levels).
- (d) Not available.
- (e) Reflects deduction from gross bonded debt of revenue-supported bonds, consisting of Water Bonds and a proportion of other bond issues based on advice from the State Department of Finance.
- (f) Using 1959 assessed valuation.
- (g) From State Department of Finance through 1959; from census (preliminary) for 1960; and from Consulting Engineers for 1970.
- (h) From United States Department of Commerce through 1959; from Consulting Engineers for 1960 and 1970.
- (i) From State Board of Equalization.

Schedule 8

STATISTICAL BOND COMPARISON FOR SELECTED STATES (a)

	California (b)	New York	Pennsylvania	Ohio	Texas	Michigan	Massachusetts	Washington	West Virginia	Oregon	Rhode Island
Rating of State's general obligations											
Moody's -----	Aa	Aaa	Aa	Aaa	Aa	Aa	Aa	Aa	A	Aa	A
Standard & Poor's -----	A1+	A1+	A1+	A1+	A1+	A1+	A1+	A1	A1	A1	A1
Population (000)											
1950 census -----	10,586	14,830	10,498	7,947	7,711	6,372	4,691	2,379	2,006	1,521	792
1960 census (preliminary) -----	15,507	16,657	11,239	9,647	9,489	7,778	5,115	2,830	1,848	1,758	842
Assessed valuation, 1959 (000,000) (c)	\$27,440	\$37,916	\$13,811	\$25,931	\$9,647	\$24,000	\$9,475	\$3,226	\$3,673	\$2,657	\$2,886
Basis of assessment -----	30%	66%	41.5%	60%	40%	50%	70%	33.5%	50%	31.3%	70%
Estimated full valuation -----	\$91,467	\$57,448	\$33,280	\$43,218	\$24,118	\$48,000	\$13,536	\$9,630	\$7,346	\$8,489	\$4,051
Personal income, 1959 (000,000) (d) --	\$40,783	\$45,103	\$24,732	\$21,979	\$18,041	\$17,493	\$12,380	\$6,363	\$3,053	\$3,842	\$1,837
Bonded debt (000,000)											
State, total, 1959 (d) (e) -----	\$1,712	\$2,267	\$1,279	\$896	\$316	\$729	\$1,309	\$394	\$295	\$283	\$101
State, general obligations, 1959 (d) --	1,595	1,483	262	177	172	178	929	44	139	283	97
State, tax-supported net debt, 1959 or 1960 (f) -----	857	999	761	562	184	591	845	365	136	250	89
State and local, total, 1959 (d) -----	5,983	10,789	3,922	2,983	3,232	2,214	2,330	2,019	445	605	282
State tax collections, 1960 (preliminary) (000,000) (d) -----	\$2,124	\$1,961	\$1,029	\$873	\$778	\$914	\$491	\$461	\$180	\$208	\$86
State and local general revenues, 1959 (000,000) (d) -----	5,329	5,356	2,360	2,278	2,158	2,093	1,446	898	359	537	203
<u>Per capita</u>											
Assessed valuation -----	\$1,770	\$2,276	\$1,229	\$2,688	\$1,017	\$3,086	\$1,852	\$1,140	\$1,988	\$1,511	\$3,428
Estimated full valuation -----	5,898	3,449	2,961	4,480	2,542	6,171	2,646	3,403	3,975	4,829	4,811
Personal income (d) -----	2,661	2,736	2,222	2,328	1,908	2,253	2,444	2,271	1,635	2,171	2,156
Bonded debt											
State, total -----	110	136	114	93	33	94	256	139	160	161	120
State, general obligations -----	103	89	23	18	18	23	182	16	75	161	115
State, tax-supported net debt -----	55	60	68	58	19	76	165	129	74	142	106
State and local, total -----	386	648	349	309	341	285	456	713	241	344	335
State tax collections -----	137	118	92	90	82	118	96	163	97	118	102
State and local general revenues -----	344	322	210	236	227	269	283	317	194	305	241

(50)

Ratios

State tax-supported net bonded
debt as % of

Assessed valuation	3.1%	2.6%	5.5%	2.2%	1.9%	2.5%	8.9%	11.3%	3.7%	9.4%	3.1%
Estimated full valuation	0.9	1.7	2.3	1.3	0.8	1.2	6.2	3.8	1.9	2.9	2.2
Personal income	2.1	2.2	3.1	2.6	1.0	3.4	6.8	5.7	4.5	6.5	4.8
State tax collections	40.3	50.9	74.0	64.4	23.7	64.7	172.1	79.2	75.6	120.2	103.5

State and local total bonded
debt as % of

Assessed valuation	21.8%	28.5%	28.4%	11.5%	33.5%	9.2%	24.6%	62.6%	12.1%	22.8%	9.8%
Estimated full valuation	6.5	18.8	11.8	6.9	13.4	4.6	17.2	21.0	6.1	7.1	7.0
Personal income	14.7	23.9	15.9	13.6	17.9	12.7	18.8	31.7	14.6	15.7	15.4
State and local general revenues	112.3	201.4	166.2	130.9	149.8	105.8	161.2	224.8	124.0	112.7	138.9

Percentage increase (decrease), 1950
to latest date used above

Population	46.5%	12.3%	7.1%	21.4%	23.1%	23.1%	9.0%	19.0%	(7.9)%	15.6%	6.3%
Assessed valuation	101.5	30.5	12.4	85.8	60.6	101.4	31.1	85.5	39.1	65.2	52.6
Personal income	119.9	59.4	54.0	70.4	73.9	61.8	58.7	59.6	38.3	56.8	42.7
State total bonded debt	550.9	175.1	58.9	352.5	507.7	202.5	520.4	310.4	288.2	664.8	94.2
State tax-supported net bonded debt	368.3(g)	51.2	(33.8)	198.6	495.6	204.6	522.7	421.1	102.5	748.9	89.1

Notes:

- (a) The data set forth herein have been selected partly on an arbitrary basis, and necessarily may not include all of the data bearing on the significance of this comparison.
- (b) Certain of the figures differ from the corresponding figures shown in Schedule 7, for the reason that it was necessary to use different bases in some cases for consistency in this Schedule S.
- (c) 1958 for Texas. Compiled by Dun & Bradstreet, Inc. based on data furnished to them by the states.
- (d) As reported by United States Department of Commerce.

- (e) Comprises all bonded debt expressed as a state obligation, including limited obligations supported solely by specified taxes or revenues.
- (f) Tax-supported direct state debt, as compiled by Dun & Bradstreet, Inc. Includes limited obligations, as well as general obligations, when supported by state taxes or general revenues. General obligations of self-supporting undertakings and limited obligations are excluded unless supported by state taxes. California data as of September 28, 1960; other states as of most recent dates available, late 1959 or 1960.
- (g) From 1951.

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