



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

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April 9, 1976

2 Address

The Honorable Gaylord Nelson, Chairman
Select Committee on Small Business
United States Senate

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The Honorable Floyd K. Haskell
Acting Chairman for the
Westlands Hearings
Committee on Interior and Insular Affairs
United States Senate

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In accordance with your letter dated February 5, 1976, and subsequent discussions with your offices, we have calculated the subsidy applicable to the Westlands Water District. We expect to report on the other matters in the near future.

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We estimate that the subsidy will be about \$658 million, on a simple-interest present-value basis, virtually all of which covers the estimated interest foregone on the costs of the Westlands distribution system and that part of the cost of the San Luis Unit applicable to Westlands. A small amount, estimated at \$1 million, covers the repayments by power or municipal and industrial water customers for part of the irrigation costs.

You asked that we investigate the subsidy for both the Central Valley project and the Westlands Water District, noting the estimated total Central Valley project subsidies if we could not estimate the subsidies allocable to the Westlands Water District. You asked that, if we noted only such total subsidies, we explain how one might roughly extrapolate the figures to Westlands if certain assumptions were accepted. (See p. 4.) In particular, you asked us to evaluate the following alleged subsidies, both in present and total value, at interest rates we considered appropriate.

--The foregone interest on both the San Luis Unit capital costs and the Westlands distribution system. (See p. 5.)

--The differential between district rates for water and power and the market rates for water and power and the arguments for and against including these as subsidies, as well as the amounts. (See p. 7.)

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- Government payment of all or part of the operation and maintenance charges, either through contractual arrangements or through an inadequate water rate. (See p. 10.)

INTRODUCTION

The Bureau of Reclamation's Central Valley project in California is one of the Bureau's largest projects, consisting of 19 dams and related canals and conveyance systems. One of the project's primary purposes is to provide full irrigation water to 258,374 acres and supplemental irrigation water to 2,289,321 acres in the Sacramento and San Joaquin Valleys. Other project purposes include providing municipal and industrial water, hydroelectric power generation, flood control, fish and wildlife activities, navigation, and recreation.

The project's costs are allocated to its various purposes. Certain costs, such as those for irrigation, power generation, and municipal and industrial water, and part of the costs of recreation and wildlife activities are reimbursable and must be repaid to the U.S. Treasury from charges made to the project beneficiaries. Other costs, such as those incurred for flood control, navigation, and certain recreation and fish and wildlife activities, are considered Federal responsibilities and are nonreimbursable. As of January 1, 1976, the estimated total costs of the Central Valley project--which is not yet completed--was about \$3.7 billion, of which about \$3.3 billion will be reimbursable.

Under reclamation law, irrigation beneficiaries are required to repay, without interest, their share of project costs but not more than their "ability to pay." If the irrigators' ability to pay is less than their share of the costs, the Bureau of Reclamation uses the revenues from the sale of power and municipal and industrial water to repay the deficit. Therefore irrigation beneficiaries are not required to repay those Federal costs representing:

- The interest incurred during the period the funds borrowed by the U.S. Treasury to construct the irrigation facilities are not repaid.
- That part of the cost of the irrigation facilities that is determined to be beyond the ability of the irrigation users to repay, such cost being repaid, instead, by project revenues from the sale of power and municipal and industrial water.

Westlands Water District

The Westlands Water District is the largest of the irrigation districts receiving irrigation water from the Central Valley project. The district is approximately 15 miles wide and 70 miles long. Before the construction of the Central Valley project, the area was entirely dependent on groundwater for irrigation. The Bureau estimates that, when all irrigation works are completed, Westlands will receive from the project a supplemental water supply for about 572,000 acres of land.

The San Luis Unit of the Central Valley project serves the Westlands Water District. The unit was authorized by the Congress by Public Law 86-488, approved June 3, 1960. The main facilities of the unit were constructed as a joint effort by the Federal Government and the State of California with the State's part financed under the State water program. The Westlands Water District is served exclusively from the Federal part. About 94 percent of the cost of the Federal part of this unit is allocated to irrigation. We estimated that about 94 percent of the amount allocated to irrigation is assignable to the Westlands Water District.

In addition, the Bureau started construction in 1966 of a water distribution and drainage collector system for Westlands. Distribution facilities usually consist of a system of small canals, pipelines, and laterals which convey water from the main canal to the water delivery points on a farm. Westlands is required to repay--without interest--the cost of constructing the distribution and drainage system.

Following is the Bureau's estimate, as of January 1, 1976, of the cost of the San Luis Unit allocable to irrigation; the cost of Westlands' distribution and drainage system, when completed; the repayment requirements; and our estimate of the parts applicable to Westlands.

	<u>Bureau estimate of 1/1/76</u>	<u>GAO estimate of part attributed to Westlands</u>
Total estimated cost of:		
San Luis Unit main irrigation facilities	a/\$354,888,000	\$333,595,000
Distribution and drainage (Westlands)	<u>370,000,000</u>	<u>370,000,000</u>
Total	<u>b/\$724,888,000</u>	<u>b/\$703,595,000</u>
Total repayments by:		
Irrigators	\$617,555,000	\$602,701,000
Power or municipal and industrial water customers of the Central Valley project	<u>107,333,000</u>	<u>100,894,000</u>
Total	<u>\$724,888,000</u>	<u>\$703,595,000</u>

a/ We estimate that on the basis of water deliveries, about 94 percent of this amount is assignable to Westlands Water District.

b/ Does not include interest cost incurred by the Government.

COST OF CENTRAL VALLEY PROJECT
ALLOCABLE TO WESTLANDS WATER DISTRICT

Bureau officials told us that, except for the costs shown above of the San Luis Unit of the Central Valley project and the Westlands distribution and drainage system, irrigation costs of the project were not considered assignable to the Westlands Water District. The Bureau's December 1962 Definite Plan Report on the San Luis Unit included the following statement on page 119.

"Water pumped from the Delta for the San Luis Unit is obtained from winter surplus flows. These flows do not result from, nor utilize Central Valley Project storage facilities; therefore, Central Valley Project storage facility costs cannot be assigned to the San Luis Unit."

We have no basis for assuming that an additional allocation to Westlands for the project's storage facilities would be reasonable. Also, although the project's Delta Mendota Canal 1/ and Tracy pumping plant do benefit Westlands, these facilities were constructed before the Westlands Water District was established and, according to the Bureau, would be needed for other project requirements, regardless of whether the San Luis Unit had been constructed.

For the above reasons, and considering the difficulty and time frame that would be required, we did not try to compute an estimated subsidy applicable to the entire Central Valley project for making an allocation to Westlands. Instead--as discussed in the following sections--we estimated the subsidy allocable to Westlands on the basis of the estimated cost of the San Luis Unit and Westlands' distribution system.

FOREGONE INTEREST ON SAN LUIS UNIT
AND WESTLANDS DISTRIBUTION SYSTEM

The main irrigation facilities of the San Luis Unit and the Westlands distribution system have different repayment periods and requirements. The estimated amount of interest costs incurred by the U.S. Treasury that are not repaid to the Government (interest foregone) can vary greatly, depending on the assumptions concerning the completion date and final cost of the facilities, the interest rates used, the amount of the investment that will remain outstanding at the end of each year of the repayment period, and whether interest costs should be determined on a simple or compound basis. The bases for our computation of the interest foregone are shown in the enclosure.

The table on page 6 shows, on the bases of simple and compound interest, the interest foregone on the Federal investment applicable to Westlands and the present value of the interest foregone.

The simple-interest basis assumes that interest is being repaid as it becomes due during the repayment period. The compound-interest basis, however, assumes that the Federal Government must borrow funds to pay the interest costs which are not being repaid.

1/ Westlands receives about 50,000 acre-feet of water a year from this canal at a cost of \$3.50 an acre-foot.

The total amount of interest foregone does not recognize the fact that parts of the total interest are foregone for longer periods than are other parts. For example, \$1 of interest received by the Government now would be worth more than \$1 of interest received 50 years from now. To eliminate this difference in the value of interest received over a long period, all future dollars receivable are discounted to show their worth in terms of present value.

Estimated Subsidy to be Received by
Westlands Water District as a Result of
Interest Foregone on the San Luis Unit and
the Westlands Distribution System

	<u>Simple-interest basis</u>	<u>Compound-interest basis</u>
	----- (000,000 omitted) -----	-----
Total amount of interest foregone:		
Westlands distribution system	\$1,241	\$ 7,971
Part of San Luis Unit applicable to Westlands	<u>1,567</u>	<u>32,262</u>
Total	<u>\$2,808</u>	<u>\$40,233</u>
Present value of interest foregone:		
Westlands distribution system	\$283	\$283
Part of San Luis Unit applicable to Westlands	<u>374</u>	<u>374</u>
Total	<u>a/\$657</u>	<u>a/\$657</u>

a/ The present value of interest foregone is the same whether a simple- or compound-interest basis is used because on a simple-interest basis the interest is assumed to be paid throughout the repayment period whereas on a compound-interest basis it is assumed to be paid at the end of the repayment period.

Although the estimated payments (\$100.9 million) to be made on the irrigation investment from revenues received by

the Bureau from power or municipal and industrial water customers of the Central Valley project are not a subsidy from the Government, they do represent a subsidy to Westlands from such customers. (See p. 4.) If these payments are added to the interest foregone that is shown in the above schedule, the estimated subsidy to Westlands on a simple-interest basis would be:

	<u>Total amount</u> ----- (000,000)	<u>Present value</u> omitted)-----
Interest foregone	\$2,808	\$657
Power or municipal and industrial water customers' assistance to irrigation	101	<u>a/1</u>
	-----	-----
Total	<u>\$2,909</u>	<u>\$658</u>

a/ The present value is relatively small because of the assumption that the power or municipal and industrial water customers' assistance is paid at the end of the repayment period.

DIFFERENTIAL BETWEEN DISTRICT AND MARKET RATES FOR WATER AND POWER

The payments by the Westlands Water District for all Bureau costs applicable to water delivered to the district from the San Luis Unit is \$7.50 an acre-foot plus an additional charge of \$0.50 an acre-foot for drainage cost to be assessed starting in 1980. These charges are all that Westlands must pay applicable to repaying the Government's investment in the San Luis Unit, annual operation and maintenance costs of the unit, and annual costs of electrical power to run the water pumps.

To the extent that the charges paid by Westlands are not adequate to pay all of these costs, the Bureau can use the revenues the Central Valley project received from sale of power and municipal and industrial water to repay to the Government the deficit. These charges to Westlands represent the district rates for water and power, and we estimate that, on the basis of the amounts of water delivered or estimated to be delivered during the repayment period, the charges will result in payments by Westlands to the Government totaling about \$662 million.

There are no comparable organizations, other than the State of California, marketing water for irrigation purposes in this area of California. To estimate the market rates for water and power that would be applicable to Westlands if the Central Valley project did not exist, we used the rate charged by the State for irrigation water--which is \$21 an acre-foot. A State of California official told us that, if the State provided water to Westlands, the \$21 rate would cover all charges needed for amortization of investment, interest on the investment, operation and maintenance, and cost of power to run the required water pumps, except those pumps designated as relift pumps. There are 60 relift pumps used to lift water from the San Luis Unit canal to the various areas served by the Westlands distribution system.

Using the \$21 an acre-foot as the charge for water to be delivered to Westlands during the repayment period and adding an additional charge (based on power rates charged by the Pacific Gas and Electric Company of about \$0.02 a kilowatt-hour) for electric power to run the relift pumps, we estimated that the market rates for water and power during the repayment period would result in payments by Westlands to the State of California and to the Pacific Gas and Electric Company totaling about \$1.9 billion. Although the water rate charged Westlands by the Federal Government is fixed for 40 years, the \$21 rate charged by the State of California and the power rate charged by Pacific Gas and Electric Company are subject to change to cover any increased costs. Therefore the above-cited amount could increase considerably as a result of inflation or other factors.

Our estimate of the differential between district and market rates for water and power, including the present value of such differential, is summarized in the following table.

Estimated Subsidy to be Received by
Westlands Water District
on the Basis of the Differential Between
District and Market Rates for Water and Power

Estimated cost and subsidy
for water during the
repayment period
------(millions)-----

Market cost for water and power (not including relift pumps)	\$1,750.4
Electric power cost for relift pumps	<u>167.8</u>
Total market cost for water and power	<u>a/\$1,918.2</u>
Less district cost for water and power	<u>662.0</u>
Estimated subsidy to be received on the basis of the differential between market and district rates for water and power	<u>\$1,256.2</u>
Present value of the estimated subsidy	<u>\$ 352.5</u>

a/ Does not include capital cost of relift pumps, estimated to be about \$48 million.

A subsidy determined on the above basis does not reflect the subsidy Westlands Water District received on its distribution system. Also the above subsidy should not be added to the subsidy determined on an interest-foregone basis (see pp. 6 and 7) because it would result in double counting an amount for interest on the part of the San Luis Unit applicable to Westlands. (The \$21 an acre-foot charged by the State of California includes an amount for interest.)

The above subsidy could be added to that part of the subsidy determined on an interest-foregone basis for Westlands' distribution system (see p. 6) without resulting in double counting like items, but it would result in a total subsidy determined on two different bases.

We believe that the subsidy determined on the basis of estimated unrecovered interest costs to be incurred by the Government, plus the power or municipal and industrial water customers' assistance in repaying the irrigation investment, as shown in the schedule on page 7, is based on a reasonable method.

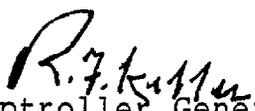
GOVERNMENT PAYMENT OF ALL OR PART OF
THE OPERATION AND MAINTENANCE CHARGES

We are not aware of instances in which the Government has not recovered, or does not expect to recover, operation and maintenance costs incurred on behalf of Westlands. A Bureau regional official told us that Westlands assumes operation and maintenance responsibility for the distribution system as soon as each lateral canal is completed and is capable of delivering water. He said that the acre-foot charge paid by Westlands has been adequate to pay the operation and maintenance costs applicable to the San Luis Unit.

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We discussed this report with Bureau officials and considered their comments in preparing this report. However, as requested by your offices, we have not obtained the Bureau's or Department of the Interior's formal comments.

As your offices agreed, we are sending a copy of this report to Congressman B. F. Sisk.


ACTING Comptroller General
of the United States

Enclosure

BASES USED FOR COMPUTING INTEREST-FOREGONE
SUBSIDY ON WESTLANDS WATER DISTRICT

AMOUNTS AND TIMING OF CONSTRUCTION
EXPENDITURES AND REPAYMENTS

The Bureau of Reclamation generally enters into two types of 40-year contracts with irrigation districts in the Central Valley project. These are (1) water service contracts and (2) repayment contracts for irrigation distribution systems.

In water service contracts, the districts pay preestablished rates based on the amount of water delivered. Revenues from this source are used to repay part of the costs of the main project facilities, such as dams and canals. Water service contracts provide for renewal. Distribution system repayment contracts differ from water service contracts in that the districts pay fixed annual amounts, regardless of the amount of water delivered. The districts are not required to pay interest on the Federal funds made available to construct the facilities and therefore receive subsidies.

The Bureau has entered into a water service contract and a repayment contract with the Westlands Water District. Under the water service contract, Westlands will pay \$7.50 for an acre-foot of water delivered from the San Luis Unit. During 1980, the rate will go to \$8 an acre-foot. The additional \$0.50 is to cover drainage costs. Bureau officials told us that they expected to increase the rate after the end of the present 40-year contract. Under the repayment contract, the district will make fixed annual payments to cover the cost of its distribution system.

Although the water service contract is for 40 years, Bureau repayment criteria provide that the reimbursable part of the San Luis Unit does not have to be repaid until 50 years after the unit is completed. The Bureau currently estimates that the San Luis Unit will be completed during 1985 or 1986; thus total repayment is not required until 2036.

Our analysis of the subsidy received by Westlands on the main facilities of the San Luis Unit is based on historical and projected costs, revenues, and water deliveries over the entire 69-year repayment period rather than over the 40-year water service contract period.

An amendment is being considered for the repayment contract for the distribution system which will provide that repayment begin when the facilities "have been completed to the point where substantially all of the lands in the District can be served from the facilities designed to serve such lands * * *." The proposed amendment further provides that the distribution system facilities be divided into construction groups and that repayment begin on each construction group when the facilities within the group are substantially completed.

Our analysis of the subsidy Westlands received on the distribution system assumes that there will be two construction groups with repayment of construction group I to begin in 1981 and repayment of construction group II to begin in 1986. We estimated that repayment of the distribution system will be completed in 2025. Thus our analysis assumes that the distribution system will not be repaid until 58 years after the initial part of the system was placed in service in 1968.

The estimated disbursements by years to construct the irrigation facilities and distribution system applicable to Westlands and the amount and timing of estimated repayments were based on information obtained from the Bureau.

INTEREST RATES

For the period 1961 through 1976 we estimated interest foregone on the basis of the average interest rates used by the Tennessee Valley Authority to pay interest to the U.S. Treasury on the unpaid Federal investment in the facilities of the Authority. The Congress indicated that such rates would result in full recovery of interest cost to the Treasury. These rates were as follows:

<u>Average interest rates</u>	<u>Applied to years</u>
3.3%	1961-64
4.25	1965-70
6.0	1971-76

For all years after 1976, we used an interest rate of 7-7/8 percent, which represents the yield rate, as of December 31, 1975, on outstanding Treasury bonds that bear interest in excess of 4-1/4 percent and that have more than 7 years remaining until maturity. We did not consider bonds yielding 4-1/4 percent or less, because they have special tax provisions or other benefits to purchasers that

keep them from being representative of the cost to the U.S. Treasury of borrowing money.

We also used the above rates for discounting purposes, to determine the present value of interest foregone.

APPROACH

In computing interest foregone, we used the following six basic steps. We used the extra steps, shown in brackets, in computing present values. We did not continue to compound interest after the end of the repayment period.

1. Compute simple interest during construction (IDC) for each year of expenditure using the given interest rate for the year. [Convert IDC to value at the start of the repayment period by increasing through appropriate interest rates.]
2. Add IDC to the Government expenditures during construction (principal).
3. Calculate the annual payments necessary to amortize the principal, including IDC, by the end of the payment period. (When interest rates change over the repayment period, the amortization payments are recomputed when the rates change.)
4. Subtract annual payments that the district is expected to make to repay the principal (without IDC) from the annual amortization payments computed in step 3. The result is the annual simple interest foregone. [Discount annual simple interest foregone to the 1976 base year.]
5. Total the annual simple interest foregone to find the total simple-interest subsidy.
6. When computing the compound-interest subsidy, compound the annual simple interest foregone from step 4 to find its worth at the end of the repayment period.