

STATE OF CALIFORNIA

The Resources Agency

Department of Water Resources

BULLETIN No. 132-71

The California
State Water Project
In 1971

APPENDIX D

COSTS
OF RECREATION AND
FISH AND WILDLIFE ENHANCEMENT

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STATE OF CALIFORNIA
Department of Water Resources
P. O. Box 388
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MARCH 1971

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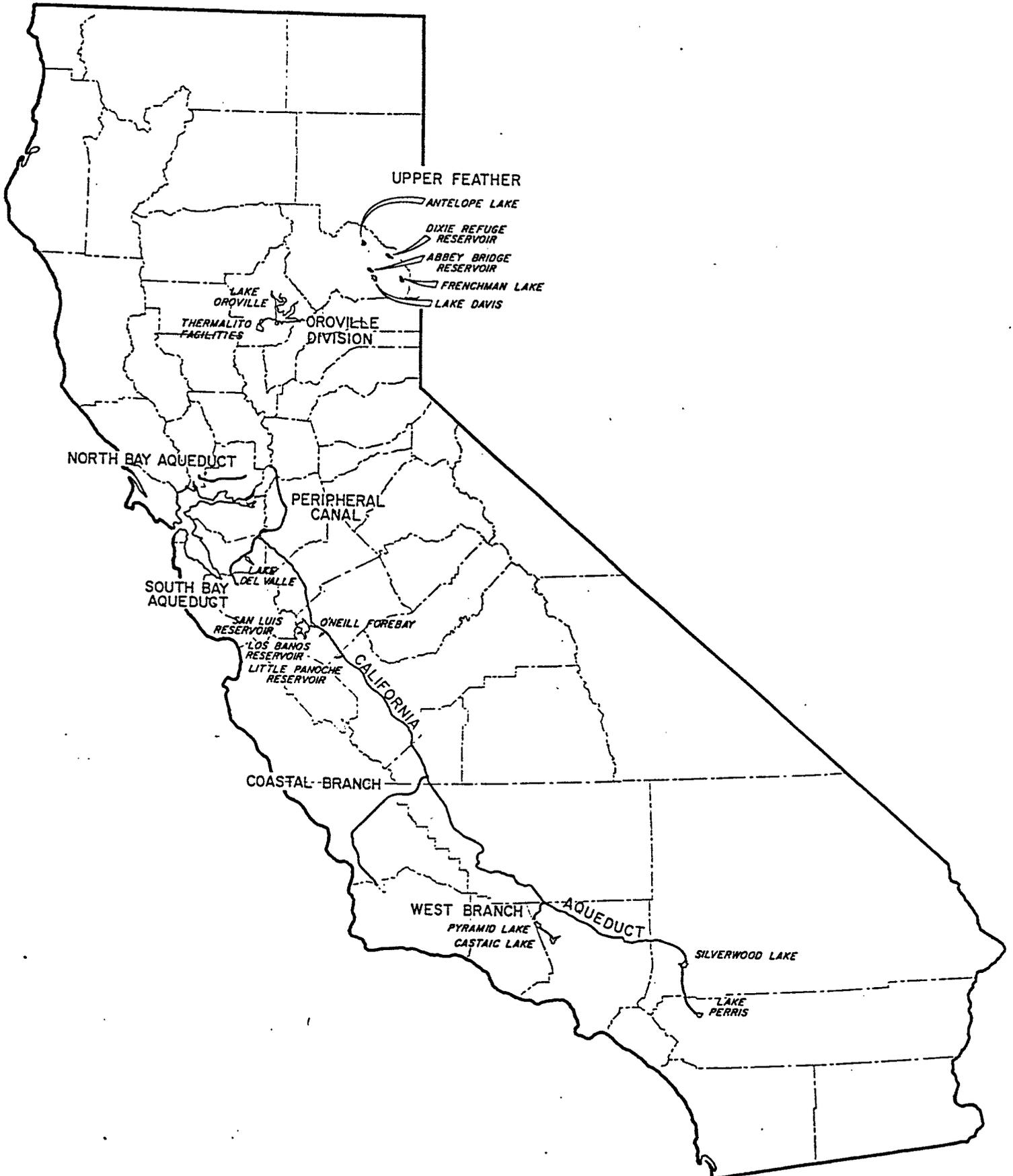
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Figure 1: LOCATION OF STATE WATER PROJECT FACILITIES



FOREWORD

The Davis-Dolwig Act (Sections 11900-11925 of the California Water Code) declares that recreation and fish and wildlife enhancement costs of state water projects benefit all of the people of California and are to be borne by them. The Act also provides a procedure through which the Department of Water Resources will be reimbursed for those recreation and fish and wildlife enhancement expenditures that are financed by project funds. The Department is to annually report such expenditures to the Legislature. If the Legislature approves the reported costs, a like amount of the State's tideland gas and oil revenues will be released to the Department from a continuing \$5,000,000 annual appropriation of tideland revenues which has been authorized specifically for that purpose (California Statutes of 1964, First Extraordinary Session, Chapter 138, as amended by California Statutes of 1966, First Extraordinary Session, Chapter 27).

Recreation and fish and wildlife enhancement costs previously reported for the State Water Project through December 31, 1969, were approved in the amount of \$25,551,740 (California Statutes of 1970, Chapter 833). The Department herein reports an additional \$12,896,562 through December 31, 1970, and requests that the total increased amount, \$38,448,302, be approved.

As of December 31, 1970, \$20,000,000 had been reimbursed to the Department from the continuing annual appropriation of tideland revenues. The 1970-71 appropriation had not been received as of the end of 1970. If the total increased amount reported herein is approved and if future annual appropriations are made in the full amount of \$5,000,000 annually, the 1970-71, 1971-72, and 1972-73 appropriations eventually will be made available to the Department, together with \$3,448,302 of the 1973-74 appropriation.

William R. Gianelli

William R. Gianelli, Director
Department of Water Resources
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State of California
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The Resources Agency
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ABSTRACT

This appendix complies with California Water Code Section 11912 which requires an annual Report to the Legislature by the Department of Water Resources. The Department reports that multiple-purpose capital costs of the State Water Project that have been allocated to recreation and fish and wildlife enhancement through December 31, 1970, total \$31,662,377. Expenditures for acquiring rights-of-way, easements, and property for recreation development associated with project facilities through December 31, 1970, total \$6,785,925. The total of these costs and expenditures (\$38,448,302) includes those costs and expenditures previously reported to and approved by the Legislature (\$25,551,740). This appendix describes the Department's derivation of cost allocation percentages for the Oroville Division and reports for the first time the joint capital costs of the Division that are allocated to recreation and fish and wildlife enhancement.

REPORTING OF RECREATION AND FISH AND
WILDLIFE ENHANCEMENT COSTS

Section 11912 of the California Water Code assigns to the Department of Water Resources the following responsibilities:

It shall be the duty of the department to report annually to the Legislature the costs, if any, which the department has allocated to recreation and fish and wildlife enhancement for each facility of any state water project. The department shall also report to the Legislature any revisions which the department makes in such allocations.

The department shall submit each such cost allocation to the Department of Navigation and Ocean Development, to the Department of Parks and Recreation, and to the Department of Fish and Game. The Department of Navigation and Ocean Development, the Department of Parks and Recreation, and the Department of Fish and Game shall file with the Department of Water Resources their written comments with respect to each such cost allocation, which written comments shall be included in the report required by this section.

It shall also be the duty of the department to report to the Legislature on any expenditure of funds for acquiring rights-of-way, easements and property pursuant to Section 346 for recreation development associated with such facilities....

This appendix constitutes the Department's 1971 report as required by Section 11912.

For brevity, "fish and wildlife enhancement" is hereafter referred to as "enhancement". The Department's cost allocations treat recreation and enhancement as one combined purpose of the State Water Project.

Organization of Report

The costs of State Water Project facilities which the Department has allocated to recreation and enhancement through December 31, 1970, are shown in Table 1, together with expenditures for acquiring rights-of-way, easements, and property for recreation development associated with such facilities.

The notes which immediately follow Table 1 contain an explanation of the Department's procedures for reporting recreation and enhancement costs, a description of how the amounts shown in the Table are calculated, and a reconciliation of significant changes from costs shown in previous reports.

For the first time, the reported costs of recreation and enhancement include multiple-purpose costs of the Oroville Division -- including Lake Oroville and Thermalito Forebay. The bulk of this report describes the Department's determination of how the costs of this major project facility are to be allocated among purposes. The allocation involves a long-term projection of the benefits to be realized for each purpose.

Included at the end of this report are comments by the Department of Navigation and Ocean Development, the Department of Parks and Recreation, and the Department of Fish and Game, as specifically required by Section 11912.

Table 1: RECREATION AND ENHANCEMENT
(Reported to the California Legislature in

(in

Type of Costs, Project Facility, and Source of Funds	Disbursements,						
	1952- 1957	1958	1959	1960	1961	1962	1963
JOINT CAPITAL COSTS ALLOCATED TO RECREATION AND ENHANCEMENT: ^(b)							
<u>Frenchman Dam and Lake (50.0%)</u>							
California Water Resources Development Bond Fund					-373	536	4,627
All other funds	1,617	109,560	246,069	497,382	409,906	218,085	64,006
Subtotal	1,617	109,560	246,069	497,382	409,533	218,621	68,633
<u>Antelope Dam and Lake (100.0%)</u>							
California Water Resources Development Bond Fund				-203	-300	-300	26,586
All other funds	2,636	2,808	30,391	34,983	200,054	788,273	2,641,058
Subtotal	2,636	2,808	30,391	34,780	199,754	787,973	2,667,644
<u>Grizzly Valley Dam and Lake Davis (94.9%)</u>							
California Water Resources Development Bond Fund							21,961
All other funds	2,194	2,354	12,019	13,038	1,851	118,130	155,111
Subtotal	2,194	2,354	12,019	13,038	1,851	118,130	177,072
<u>California Aqueduct, Delta to Dos Amigos P.P. (3.5%)</u>							
California Water Resources Development Bond Fund				- 53	-1,485	1,900	139,213
All other funds	8,957	3,678	17,790	64,800	58,275	144,544	1,020,547
Subtotal	8,957	3,678	17,790	64,747	56,790	146,444	1,159,760
<u>Groville Division (2.9%)</u>							
California Water Resources Development Bond Fund				- 32	-103	188	28,870
All other funds	191,404	216,588	229,925	292,351	382,262	442,066	1,036,335
Subtotal	191,404	216,588	229,925	292,319	382,159	442,254	1,065,205
TOTAL	206,808	334,988	536,194	902,266	1,050,087	1,713,422	5,138,314
SPECIFIC COSTS OF ACQUIRING LAND FOR RECREATION DEVELOPMENT: ^(c)							
<u>Frenchman Dam and Lake</u>							
California Water Resources Development Bond Fund						-154	-204
All other funds		1,796	44,162	1,935	598	521	348
Subtotal		1,796	44,162	1,935	598	367	144
<u>Grizzly Valley Dam and Lake Davis</u>							
California Water Resources Development Bond Fund							918
All other funds			975	984	334	1,169	5,069
Subtotal			975	984	334	1,169	5,987
<u>Groville Division</u>							
California Water Resources Development Bond Fund						-29,338	78,846
All other funds			2,337	18,070	20,516	94,206	83,095
Subtotal			2,337	18,070	20,516	64,868	161,941
<u>Del Valle Dam and Lake Del Valle</u>							
California Water Resources Development Bond Fund							892
All other funds			1,852	6,463	9,112	4,386	10,525
Subtotal			1,852	6,463	9,112	4,386	11,417
<u>San Luis Dam and Reservoir and O'Neill Forebay</u>							
California Water Resources Development Bond Fund						-20,519	-25,108
All other funds			325	2,741	4,053	33,411	25,821
Subtotal			325	2,741	4,053	12,892	713
<u>California Aqueduct</u>							
California Water Resources Development Bond Fund						-27,044	-45,844
All other funds			317	2,320	27,316	42,068	56,179
Subtotal			317	2,320	27,316	15,024	10,335
<u>Castaic Dam and Lake</u>							
California Water Resources Development Bond Fund							603
All other funds				21	644	2,704	5,278
Subtotal				21	644	2,704	5,881
<u>Cedar Springs Dam and Silverwood Lake</u>							
California Water Resources Development Bond Fund						5,208	99,311
All other funds			2,906	3,332	1,978	1,958	-319
Subtotal			2,906	3,332	1,978	7,166	98,992
TOTAL		1,796	52,874	35,866	64,553	108,576	295,410
TOTAL RECREATION AND ENHANCEMENT COSTS							
California Water Resources Development Bond Fund				-288	-2,261	-69,523	330,671
All other funds	206,808	336,784	589,068	938,420	1,116,901	1,891,521	5,103,053
GRAND TOTAL	206,808	336,784	589,068	938,132	1,114,640	1,821,998	5,433,724

Footnotes a - g are presented on pages 8 through 11.

COSTS OF THE STATE WATER PROJECT^(a)
response to Water Code Section 11912)

dollars)

by Calendar year							Total Disbursements Thru 1970	Add: Interest Accruals Thru 1970	Total Costs Reported Thru 1970	Comparison with Costs Previously Reported	
1964	1965	1966	1967	1968	1969	1970				Thru 1963	Increase
2,357	9,998	9,998	35,765	1,274	71	577	64,830	2,365	57,155	45,441	21,754
-124	23	-5	-161	288	800	145	1,547,591		1,547,591	1,554,149	-6,558
<u>2,233</u>	<u>10,021</u>	<u>9,993</u>	<u>35,604</u>	<u>1,562</u>	<u>871</u>	<u>722</u>	<u>1,612,421</u>	<u>2,365</u>	<u>1,614,786</u>	<u>1,599,590</u>	<u>15,196</u>
499,828	258,017	35,001	152,374	18,060	9,659	18,753	1,017,475	90,967	1,108,442	1,061,377	47,065
17,412	63	-10	-323	21,303	207,236	4,887	3,950,771		3,950,771	3,967,733	-16,962
<u>517,240</u>	<u>258,080</u>	<u>34,991</u>	<u>152,051</u>	<u>39,363</u>	<u>216,895</u>	<u>23,640</u>	<u>4,968,246</u>	<u>90,967</u>	<u>5,059,213</u>	<u>5,029,110</u>	<u>30,103</u>
513,178	972,433	1,721,050	481,648	175,720	24,656	7,073	3,917,719	379,378	4,297,097	4,233,763	63,334
4,667	13,670	39,792	15,847	15,951	158,404	123,307	676,335		676,335	566,018	110,317
<u>517,845</u>	<u>986,103</u>	<u>1,760,842</u>	<u>497,495</u>	<u>191,671</u>	<u>183,060</u>	<u>130,380</u>	<u>4,594,054</u>	<u>379,378</u>	<u>4,973,432</u>	<u>4,799,781</u>	<u>173,651</u>
697,363	1,237,492	1,797,541	1,537,982	266,567	77,445	88,778	5,842,743	619,651	6,462,394	7,078,042	-615,648
526,907	320,827	247,217	137,117	269,072	211,067	58,971	3,089,769		3,089,769	1,971,898	1,117,871
<u>1,224,270</u>	<u>1,558,319</u>	<u>2,044,758</u>	<u>1,675,099</u>	<u>535,639</u>	<u>288,512</u>	<u>147,749</u>	<u>8,932,512</u>	<u>619,651</u>	<u>9,552,163</u>	<u>9,049,940</u>	<u>502,223</u>
1,150,799	962,084	2,245,960	1,331,810	87,859	25,795	9,834	5,843,064	1,227,222	7,070,286	7,070,286	
116	43,652	44,467	79,771	325,769	90,655	17,136	3,392,497		3,392,497	3,392,497	
<u>1,150,915</u>	<u>1,005,736</u>	<u>2,290,427</u>	<u>1,411,581</u>	<u>413,628</u>	<u>116,450</u>	<u>26,970</u>	<u>9,235,561</u>	<u>1,227,222</u>	<u>10,462,783</u>	<u>10,462,783</u>	
3,412,503	3,818,259	6,141,011	3,771,830	1,181,863	805,788	329,461	29,342,794	2,319,583	31,662,377	20,478,421	11,183,956
720	664	1,549	541	222	41	86	3,465	144	3,109	-722	4,331
				228	75		49,663		49,663	42,082	7,581
<u>720</u>	<u>664</u>	<u>1,549</u>	<u>541</u>	<u>450</u>	<u>116</u>	<u>86</u>	<u>53,128</u>	<u>144</u>	<u>53,172</u>	<u>41,360</u>	<u>11,912</u>
30,042	4,527	18,026	158,242	-14,695	110	183	197,353	13,957	213,310	204,739	6,571
5				431	352	35,766	45,085		45,085	45,085	
<u>30,047</u>	<u>4,527</u>	<u>18,026</u>	<u>158,242</u>	<u>-14,264</u>	<u>462</u>	<u>35,949</u>	<u>242,438</u>	<u>13,957</u>	<u>258,393</u>	<u>204,739</u>	<u>51,656</u>
212,726	538,247	954,321	81,643	-16,812	10,806	1,887	1,832,326	405,596	2,237,922	2,130,407	107,515
-22,849	-3,716	-3,431	-33,973	91,498	15,027	3,708	264,490		264,490	29,565	234,925
<u>189,877</u>	<u>534,531</u>	<u>950,890</u>	<u>47,670</u>	<u>74,686</u>	<u>25,833</u>	<u>5,595</u>	<u>2,096,816</u>	<u>405,596</u>	<u>2,502,412</u>	<u>2,159,972</u>	<u>342,440</u>
26,365	72,732	10,471	493,411	-70,837	-1,556	630	532,108	93,577	625,685	461,680	164,005
102	-878			-81,598	543	107	-49,386		-49,386	9,336	-58,722
<u>26,467</u>	<u>71,854</u>	<u>10,471</u>	<u>493,411</u>	<u>-152,435</u>	<u>-1,013</u>	<u>737</u>	<u>482,722</u>	<u>93,577</u>	<u>576,299</u>	<u>471,016</u>	<u>105,283</u>
-15,885	50,187	-9,377	4,262	1,260	791	3,840	-10,549	-10,259	-20,808	14,471	-35,279
-3,664	-2,417	-570	-316	2,124	1,022	129	62,659		62,659	90,671	-28,012
<u>-19,549</u>	<u>47,770</u>	<u>-9,947</u>	<u>3,946</u>	<u>3,384</u>	<u>1,813</u>	<u>3,969</u>	<u>52,110</u>	<u>-10,259</u>	<u>-41,851</u>	<u>105,142</u>	<u>-63,291</u>
49,355	700,204	134,715	100,247	16,690	12,741	4,041	945,105	201,690	1,146,795	929,927	216,868
-20,116	-2,050	-790	-707	7,497	5,633	1,809	119,476		119,476	48,115	71,361
<u>29,239</u>	<u>698,154</u>	<u>133,925</u>	<u>99,540</u>	<u>24,187</u>	<u>18,374</u>	<u>5,850</u>	<u>1,064,581</u>	<u>201,690</u>	<u>1,266,271</u>	<u>978,042</u>	<u>288,229</u>
12,209	60,247	379,719	759,485	-8,564	160	379	1,204,238	204,324	1,408,562	770,995	637,567
831			-75	-115,225	357	50	-105,415		-105,415	61,601	-167,016
<u>13,040</u>	<u>60,247</u>	<u>379,719</u>	<u>759,410</u>	<u>-123,789</u>	<u>517</u>	<u>429</u>	<u>1,098,823</u>	<u>204,324</u>	<u>1,303,147</u>	<u>832,596</u>	<u>470,551</u>
603	10,120	69,015	39,381	3,934	40,347	11,360	278,676	61,220	339,896	72,079	267,817
				-153,152	567,895	21,181	446,382		446,382	208,373	238,009
<u>603</u>	<u>10,120</u>	<u>69,015</u>	<u>39,381</u>	<u>-149,218</u>	<u>608,242</u>	<u>32,541</u>	<u>725,058</u>	<u>61,220</u>	<u>786,278</u>	<u>280,452</u>	<u>505,826</u>
270,444	1,427,867	1,553,648	1,602,141	-336,999	654,344	85,156	5,815,676	970,249	6,785,925	5,073,319	1,712,606
3,179,057	4,876,952	7,367,989	5,176,791	460,678	201,066	147,421	21,668,553	3,289,832	24,958,385	17,002,199	7,956,186
503,890	369,174	326,670	197,180	384,186	1,259,066	267,196	13,489,917		13,489,917	8,549,541	4,940,376
<u>3,682,947</u>	<u>5,246,126</u>	<u>7,694,659</u>	<u>5,373,971</u>	<u>844,864</u>	<u>1,460,132</u>	<u>414,617</u>	<u>35,158,470</u>	<u>3,289,832</u>	<u>37,448,302</u>	<u>25,551,740</u>	<u>12,896,562</u>

Notes to Table 1.

a) Recreation and enhancement costs herein refer only to those capital costs of multiple-purpose facilities of the State Water Project that are allocated to recreation and enhancement and/or of lands that are acquired for associated recreation development. These costs are budgeted by the Department of Water Resources from funds that are available to the

Department for financing construction costs of the Project.

The remaining recreation and enhancement costs of types not reported herein are budgeted by several state departments and are financed by appropriations from a variety of funds. These costs and appropriations are summarized below:

Type of Recreation and Enhancement Costs Not Reported in Table 1	General Fund Appropriations, unless otherwise noted		
	1971-72 ^(a)	1970-71	Total, 1962-63 thru 1971-72
Allocated operation, maintenance, and replacement costs of multiple-purpose facilities	\$ 546,000	\$533,000	\$ 2,273,000
Capital costs of recreation developments other than for land acquisition	\$9,722,000 ^(b)	\$927,000 ^(c)	\$26,675,000 ^(d)
Operation, maintenance, and replacement costs of recreation developments	\$ 426,000	\$388,000	\$ 1,484,000

a) *Proposed budget amounts.*
 b) *Includes \$8,643,000 from the Recreation and Fish and Wildlife Enhancement Fund, and \$1,079,000 from the Clean Water Bond Fund.*
 c) *Includes \$209,000 from the Harbors and Watercraft Revolving Fund, and \$200,000 directly from the Highway Users Tax Fund.*
 d) *In addition to amounts shown in (b) and (c), includes \$1,027,000 additional from the Harbors and Watercraft Revolving Fund.*

Allocated operation, maintenance, and replacement costs of multiple-purpose facilities are budgeted by the Department of Water Resources and are financed by annual appropriations from the General Fund. Capital costs (other than land acquisition costs) and operation, maintenance, and replacement costs of recreation developments are budgeted by the Department of Parks and Recreation -- except that the costs of boating facilities are budgeted by the Department of Navigation and Ocean Development. Costs of enhancement developments are budgeted by the Department of Fish and Game.

each multiple-purpose facility, of the percentages of the total joint costs that are attributable to each included purpose. These derivations are based on the application of conventional cost allocation methods which weight the estimated costs to be incurred and benefits to be realized during a 50-year period of analysis. Allocated costs reflect the application of these percentages to the actual capital costs incurred for the facility as accounted by the Department.

b) Joint capital costs allocated to recreation and enhancement are based on the Department's derivation, for

Costs allocated to recreation and enhancement generally are first reported in the year following the year construction of a facility is complete. However, these allocated costs may be subsequently changed

due to either the adjustment of accounted capital costs or the revision of allocation percentages.

The allocation percentages of a facility may be revised if it can be formally demonstrated that such revision is warranted due to substantial changes in the supporting factors to the previous derivation. Such demonstration could include the finding that (1) funds are not forthcoming for financing the costs of planned recreation developments,

with resultant decreases in projected recreation benefits and costs, or (2) a change in cost allocation method would produce more equitable results.

The tentative schedule shown in Table 2 indicates the times when allocated costs of each State Water Project facility will be first reported and when the factors which support the derivation of allocation percentages will be periodically reviewed for substantial changes.

Table 2: TENTATIVE SCHEDULE FOR REPORTING AND REVIEW OF COST ALLOCATIONS

Project Facility	: Year :	Year Supporting Factors												
	: Allocation :	to be Reviewed												
	: to be :	for Substantial Changes												
	: Initially :													
	: Reported :	73	74	75	76	77	78	79	80	81	82	83	84	85 ^(a)
Frenchman Lake	1965	x					x							x
Antelope Lake	1966	x					x							x
Lake Davis	1968	x					x							x
Abbey Bridge Reservoir	1979 ^(b)													x
Dixie Refuge Reservoir	1981 ^(b)													x
Oroville Division	1971				x					x				
Delta Facilities	1980 ^(b)													x
North Bay Aqueduct	1980													x
South Bay Aqueduct (Lake Del Valle)	1972					x					x			
California Aqueduct, Project Conservation Facilities:	1970													
Bethany Reservoir					x					x				x
San Luis Reservoir					x					x				x
O'Neill Forebay					x					x				x
Los Banos Reservoir					x					x				x
Aqueduct Developments					x					x				x
California Aqueduct, Project Transportation Facilities:	1974													
Pyramid Lake									x					x
Castaic Lake									x					x
Silverwood Lake									x					x
Lake Perris									x					x
Aqueduct Developments									x					x

a) Reviews would continue in the pattern indicated below.

b) Construction schedule tentative and subject to revision.

c) Specific costs of acquiring land for recreation developments are incurred by the Department under the authority of California Water Code Section 346. The Department purchases recreation lands concurrently with lands needed for multiple-

purpose facilities in order to decrease the total land costs of the Project and to acquire property in an orderly manner. Recreation lands acquired for each project facility through December 31, 1970 are summarized in Table 3.

Table 3: SUMMARY OF RECREATION
LAND ACQUISITIONS(a)

(in acres)

Project Facility	:Acquired: : (b	To be :Acquired:	Federal: Lands(c:	Total
Frenchman Lake	719	0	0	719
Antelope Lake	1,342	0	0	1,342
Lake Davis	733	0	0	733
Abbey Bridge	0	2,663	0	2,663
Oroville Division	2,538	1	212	2,751
Lake Del Valle	1,206	0	0	1,206
San Luis Reservoir and O'Neill Forebay	132	616	0	748
California Aqueduct (excluding reservoirs)	817	(d	0	817
Castaic Lake	1,243	71	139	1,453
Silverwood Lake	505	0	2,919	3,424

- a) Includes recreation lands for only those project facilities with an established recreation land use and acquisition plan.
b) Costs of acquiring these lands are shown in Table 1.
c) These lands are presently being leased from Federal Government at a nominal cost to the State.
d) Additional land needs are to be identified by future studies.

The Department reports the annual expenditure of project funds for acquiring all recreation land in the year following the expenditure. The costs of such lands generally are established when acquired and are not affected by allocation percentages for the associated multiple-purpose project facility. However, the reported costs of certain lands may be subsequently revised due to receipt of certain revenues (such as federal grants and miscellaneous income from right-of-way sales) or due to modification of the recreation land use plan.

The amounts to be reported in future years will include credits for any reduction in previously reported costs, together with appropriate interest income thereon. If recreation land is sold or if grants are received, the amount of the receipt will be reported as a negative cost of the facility the year received. If recreation land is reclassified as multiple-purpose project land, the original purchase price, together with appropriate interest income thereon, will be reported as a negative expenditure for specific land costs in the year the modifica-

tion occurs, and an appropriate amount will be added to the joint capital costs allocated to recreation and enhancement for the associated facility.

The costs of acquiring recreation land include the salaries of department personnel who are engaged in recreation land acquisition activities, together with indirect costs that are distributed on the basis of direct salaries.

d) Interest accruals are calculated as shown in Table 4. Interest charges are accrued only on the portion of annual disbursements financed by the California Water Resources Development Bond Fund (proceeds from the sale of Burns-Porter Bonds) and cease when such disbursements, together with cumulative interest accruals thereon, have been reimbursed. Calculations are based on the weighted average interest costs of Burns-Porter Bonds sold to date (4.030 percent for the \$1,150,000,000 in bonds and \$200,000,000 in bond anticipation notes outstanding as of December 31, 1970).

As of December 31, 1970, a total of \$20,000,000 had been reimbursed to the

Department under the continuing annual \$5,000,000 appropriation (through fiscal year 1969-70) of the State's tideland oil and gas revenues, authorized by California Statutes of 1966, First Extraordinary Session, Chapter 27. Reimbursement of the increased amount of costs reported herein would cover annual appropriations in the full amounts for 1970-71, 1971-72, and 1972-73, together with \$3,448,302 of the appropriation for 1973-74.

Increase, in
thousands

- Total joint capital costs of the Oroville Division allocated to recreation and enhancement, reported for the first time.....\$ 9,236
- Additional accrued interest due to a rate increase from 4.021 percent to 4.030 percent and to an additional year of accrual (1970).....\$ 1,419
- Additional disbursements during 1970 for recreation lands and for joint capital costs allocated to recreation and enhancement (excluding those for the Oroville Division).....\$ 388
- Retroactive accounting adjustments for disbursements previously reported through 1969 (primarily, changes in distributions of general costs and corrections to prior applications of "open-space" credits among project and recreation land parcels)....\$ 1,854

e) The Department requests that this total increased amount of reported costs be approved by the Legislature.

f) Costs previously reported are as shown in Table 1 (pages 6 and 7) of Appendix D to Bulletin 132-70. Such costs were approved by California Statutes of 1970, Chapter 833.

g) Reasons for cost increases are outlined below. These increases reflect not only the additional amounts disbursed during 1970 but also retroactive cost adjustments for the entire 1952 through 1970 period.

TOTAL INCREASE \$12,897



Table 4: CALCULATION OF INTEREST ACCRUALS ON CALIFORNIA

(in dollars)

YEAR	ITEM	JOINT CAPITAL COSTS ALLOCATED TO RECREATION AND ENHANCEMENT					
		Frenchman Dam and Lake	Antelope Dam and Lake	Grizzly Valley Dam and Lake Davis	California Aqueduct Delta to Dos Amigos P.P.	Oroville Division	Total
1952-66	a. Disbursements: 1. Calif. Water Resources Development Bond Fund 2. All other funds	27,143 1,546,519	818,629 3,717,668	3,228,622 362,826	3,871,971 2,413,542	4,387,766 2,879,166	12,334,131 10,919,721
	b. Interest on a(1) accrued to end of 1966:	1,759	72,268	150,901	205,249	228,203	658,380
1967	c. Beginning of year balance to be reimbursed: 1. Calif. Water Resources Development Bond Fund 2. All other funds	28,902 1,546,519	890,897 3,717,668	3,379,523 362,826	4,077,220 2,413,542	4,615,969 2,879,166	12,992,511 10,919,721
	d. Disbursements during year: 1. Calif. Water Resources Development Bond Fund 2. All other funds	35,765 -161	152,374 -323	481,648 15,847	1,537,982 137,117	1,331,810 79,771	3,539,579 232,251
	e. Reimbursements during year applied to: 1. Calif. Water Resources Development Bond Fund 2. All other funds	64,667 1,546,358	1,043,271 2,293,141				1,107,938 3,839,499
	f. End of year balance, without interest for: 1. Calif. Water Resources Development Bond Fund 2. All other funds			3,861,171 378,673	5,615,202 2,550,659	5,947,779 2,958,937	15,424,152 7,312,473
	g. Interest accrual on average balance of c(1)&f(1):	582	17,952	145,900	195,302	212,860	572,596
	h. Beginning of year balance to be reimbursed: 1. Calif. Water Resources Development Bond Fund 2. All other funds	582 1,424,204	17,952 378,673	4,007,071 378,673	5,810,504 2,550,659	6,160,639 2,958,937	15,996,748 7,312,473
	i. Disbursements during year: 1. Calif. Water Resources Development Bond Fund 2. All other funds	1,274 288	18,060 21,303	175,720 15,951	266,567 269,072	87,859 325,769	549,480 632,383
j. Reimbursements during year applied to: 1. Calif. Water Resources Development Bond Fund 2. All other funds	1,856 288	36,012 1,445,507	4,182,791 394,624	3,722,987		7,943,646 1,840,419	
k. End of year balance, without interest for: 1. Calif. Water Resources Development Bond Fund 2. All other funds				2,354,084 2,819,731	6,248,498 3,284,706	8,602,582 6,104,437	
l. Interest accrual on average balance of h(1)&k(1):	12	362	80,742	164,516	250,044	495,676	
1968	m. Beginning of year balance to be reimbursed: 1. Calif. Water Resources Development Bond Fund 2. All other funds	12 800	362 207,236	80,742 158,404	2,518,600 2,819,731	6,498,542 3,284,706	9,098,258 6,104,437
	n. Disbursements during year: 1. Calif. Water Resources Development Bond Fund 2. All other funds	71 800	9,659 207,236	24,656 158,404	77,445 211,067	25,795 90,655	137,626 668,162
	o. Reimbursements during year applied to: 1. Calif. Water Resources Development Bond Fund 2. All other funds	83 800	10,021 207,236	105,398 158,404	2,596,045 1,916,978		2,711,547 2,283,418
	p. End of year balance, without interest for: 1. Calif. Water Resources Development Bond Fund 2. All other funds				1,113,820	6,524,337 3,375,361	6,524,337 4,489,181
	q. Interest accrual on average balance of m(1) & p(1):		7	1,627	50,750	262,411	314,795
1969	r. Beginning of year balance to be reimbursed: 1. Calif. Water Resources Development Bond Fund 2. All other funds			7 1,627	50,750 1,113,820	6,786,748 3,375,361	6,839,132 4,489,181
	s. Disbursements during year: 1. Calif. Water Resources Development Bond Fund 2. All other funds	577 145	18,753 4,887	7,073 123,307	88,778 58,971	9,834 17,136	125,015 204,446
	t. Reimbursements during year applied to: 1. Calif. Water Resources Development Bond Fund 2. All other funds						
	u. End of year balance, without interest for: 1. Calif. Water Resources Development Bond Fund 2. All other funds	577 145	18,760 4,887	8,700 123,307	139,528 1,172,791	6,796,582 3,392,497	6,964,147 4,693,627
	v. Interest accrual on average balance of r(1) & u(1):	12	378	208	3,834	273,704	278,136
SUMMARY: 1952 thru 1970	w. Beginning of 1971/ balance to be reimbursed: 1. Calif. Water Resources Development Bond Fund 2. All other funds Total	589 145 734	19,138 4,887 24,025	8,908 123,307 132,215	143,362 1,172,791 1,316,153	7,070,286 3,392,497 10,462,783	7,242,283 4,693,627 11,935,910
	x. Disbursements, 1952 thru 1970: 1. Calif. Water Resources Development Bond Fund 2. All other funds Total	64,830 1,547,591 1,612,421	1,017,475 3,950,771 4,968,246	3,917,719 676,335 4,594,054	5,842,743 3,089,769 8,932,512	5,843,064 3,392,497 9,235,561	16,685,831 12,656,963 29,342,794
	y. Reimbursements applied thru 1970 to: 1. Calif. Water Resources Development Bond Fund 2. All other funds Total	66,606 1,547,446 1,614,052	1,089,304 3,945,884 5,035,188	4,288,189 553,028 4,841,217	6,319,032 1,916,978 8,236,010		11,763,131 7,963,336 19,726,467
				1,227,222		2,319,583	

WATER RESOURCES DEVELOPMENT BOND FUND DISBURSEMENTS

@ 4.030% per annum)

COSTS OF ACQUIRING LAND FOR RECREATION DEVELOPMENTS									GRAND TOTAL
Frenchman Dam and Lake	Grizzly Valley Dam and Lake Davis	Oroville Division	Del Valle Dam and Lake Del Valle	San Luis Dam and Reservoir and O'Neill Forebay	California Aqueduct	Castaic Dam and Lake	Cedar Springs Dam and Silverwood Lake	Total	
2,575	53,513	1,754,802	110,460	-20,702	811,386	452,778	183,654	3,348,466	15,682,597
49,360	8,536	188,230	31,562	59,700	105,244	9,478	10,458	462,568	11,382,289
87	3,902	80,328	7,542	- 6,493	38,667	12,702	17,775	154,510	812,890
2,662	57,415	1,835,130	118,002	-27,195	850,053	465,480	201,429	3,502,976	16,495,487
49,360	8,536	188,230	31,562	59,700	105,244	9,478	10,458	462,568	11,382,289
541	158,242	81,643	493,411	4,262	100,247	759,485	39,281	1,637,212	5,176,791
		-33,973		-316	-707	-75		-35,071	197,180
3,203								3,203	1,111,141
49,360								49,360	3,888,859
	215,657	1,916,773	611,413	-22,933	950,300	1,224,965	240,810	5,136,985	20,561,137
	8,536	154,257	31,562	59,384	104,537	9,403	10,458	378,137	7,690,610
54	5,502	75,601	14,698	-1,010	36,277	34,062	8,911	174,095	746,691
54	221,159	1,992,374	626,111	-23,943	986,577	1,259,027	249,721	5,311,080	21,307,828
	8,536	154,257	31,562	59,384	104,537	9,403	10,458	378,137	7,690,610
222	-14,695	-16,812	-70,837	1,260	16,690	-8,564	3,934	-88,802	460,678
228	431	91,498	-81,598	2,124	7,497	-115,225	-153,152	-248,197	384,186
276	206,464							206,740	8,150,386
228	8,967							9,195	1,849,614
		1,975,562	555,274	-22,683	1,003,267	1,250,463	253,655	5,015,538	13,618,120
		245,755	-50,036	61,508	112,034	-105,822	-142,694	120,745	6,225,182
1	4,456	79,954	23,805	-940	40,095	50,566	10,143	208,080	703,756
1	4,456	2,055,516	579,079	-23,623	1,043,362	1,301,029	263,798	5,223,618	14,321,876
		245,755	-50,036	61,508	112,034	-105,822	-142,694	120,745	6,225,182
41	110	10,806	- 1,556	791	12,741	160	40,347	63,440	201,066
75	352	15,027	543	1,022	5,633	357	567,895	590,904	1,259,066
42	4,566							4,608	2,716,155
75	352							427	2,283,845
		2,066,322	577,523	-22,832	1,056,103	1,301,189	304,145	5,282,450	11,806,787
		260,782	-49,493	62,530	117,667	-105,465	425,201	711,222	5,200,403
	90	83,055	23,306	-936	42,304	52,435	11,444	211,698	526,493
	90	2,149,377	600,829	-23,768	1,098,407	1,353,624	315,589	5,494,148	12,333,280
		260,782	-49,493	62,530	117,667	-105,465	425,201	711,222	5,200,403
86	183	1,887	630	3,840	4,041	379	11,360	22,406	147,421
	35,766	3,708	107	129	1,809	50	21,181	62,750	267,196
86	273	2,151,264	601,459	-19,928	1,102,448	1,354,003	326,949	5,516,554	12,480,701
	35,766	264,490	-49,386	62,659	119,476	-105,415	446,382	773,972	5,467,599
2	7	86,658	24,226	-880	44,347	54,559	12,947	221,866	500,002
88	280	2,237,922	625,685	-20,808	1,146,795	1,408,562	339,896	5,738,420	12,980,703
	35,766	264,490	-49,386	62,659	119,476	-105,415	446,382	773,972	5,467,599
88	36,046	2,502,412	576,299	41,851	1,266,271	1,303,147	786,278	6,512,392	18,448,302
3,465	197,353	1,832,326	532,108	-10,549	945,105	1,204,238	278,676	4,982,722	21,668,553
49,663	45,085	264,490	-49,386	62,659	119,476	-105,415	446,382	832,954	13,489,917
53,128	242,438	2,096,816	482,722	52,110	1,064,581	1,098,823	725,058	5,815,676	35,158,470
3,521	211,030							214,551	11,977,682
49,663	9,319							58,982	8,022,318
53,128	220,349							273,533	20,000,000
144	13,957	405,596	93,577	-10,259	201,690	204,324	61,220	970,249	3,289,832

DERIVATION OF ALLOCATION PERCENTAGES FOR THE OROVILLE DIVISION

THE OROVILLE DIVISION is being operated for flood control, water supply, power generation, recreation and enhancement. An allocation of Oroville Division costs among these purposes is required for administration of:

- The payment provisions of 31 water supply contracts executed between the State and local water agencies.
- The Davis-Dolwig Act provision that the Department shall report to the Legislature the costs of the State Water Project that are allocated to recreation and enhancement.

Special Requirements

For compliance with the above administrative requirements, the allocation of Oroville Division costs must follow the Department's "Standard Provisions for Water Supply Contract".

The Oroville Division is classified by the "Standard Provisions" as part of the "initial project conservation facilities", i.e., facilities whose construction was specifically authorized by the Burns-Porter Act for the primary purpose of conserving and making project water available in the Sacramento-San Joaquin Delta. Since located in and above the Delta, the Oroville Division is subject to the following allocation requirements of the "Standard Provisions" [Article 22(e)]:

- Costs shall be allocated among project purposes by the "separable cost-remaining benefits" method.
- "Allocations to purposes the costs of which are to be paid by the United States shall be as determined by the United States".

The last item above is especially pertinent in regard to the Oroville Division since the United States is contributing funds for the costs thereof allocated to the purpose of flood control. Under the "Standard Provisions", the final allocation of Oroville Division costs to flood control must correspond with the actual federal payments received by the State for that purpose.

Federal Payments

The agreement⁽¹⁾ which provides for federal payments for the costs of the Oroville Division allocated to flood control was signed on March 8, 1962. The Secretary of the Army transmitted a report⁽²⁾ to Congress on June 6, 1962, containing the complete record of the Federal Government's interest in, and approval of, the Oroville Division.

The agreement provides for a total contribution equal to 22 percent of the actual "first" costs (i.e., capital costs less interest costs dur-

ing the construction period) of Oroville Dam (exclusive of works related to Oroville Intake Structure and Penstocks and Edward Hyatt Powerplant), Lake Oroville, and Feather River Fish Hatchery. The contribution so computed covers not only the first costs of the Division allocated to flood control, but also a capitalized share of projected operation, maintenance, and replacement costs. As of December 31, 1970, payments under the agreement received by the Department or outstanding under issued invoices totaled \$69,166,977. This amount is herein assumed to be final. However, there may be a future adjustment following the United States' final audit of the Department's accounting records.

(1) DA-04-167 CIVEng-62-56; DWR-152012.

(2) H.D. No. 434, 8th Cong. 2nd Sess. dated June 18, 1962.

The agreement was supported by a derivation of allocation percentages (herein referred to as the "federal allocation") which was prepared under negotiations commencing in July 1957 among the U. S. Army Engineer District, Sacramento; the Department of Water Resources; the Bureau of Reclamation; and the Federal Power Commission. The derivation which was developed under these negotiations was modified by the Chief of Engineers, Department of the Army, and by the Board of Engineers for Rivers and Harbors. The modified derivation of allocation percentages is described in the Department's Bulletin 153-65, "Allocations of Costs Among Purposes of the California State Water Project", January 1965 (pp. 75-87).

The data which supported the federal allocation is approximately 13 years old. Furthermore, recreation and enhancement were not then included as purposes of the Oroville Division. At the time the federal allocation was prepared, the Department of the Army was not required to assign costs to those purposes, and the Department of Water Resources was not authorized to do so, as such negotiations occurred before enactment of the Davis-Dolwig Act. In view of considerations summarized below, a complete revision of the federal allocation of the Oroville Division is required under the "Standard Provisions" and the Davis-Dolwig Act:

- Treatment of Flood Control. In the federal allocation, flood control was treated as one of several multiple purposes of the Oroville Division and was assigned a percentage of the costs of features jointly used. However, the "Standard Provisions" require that the flood control allocation be "frozen" to equal the costs paid by the United States and that the "nonfederal" costs of Oroville Division be suballocated among the remaining purposes.
- Treatment of Recreation and Enhancement. The federal allocation did not include recreation and

enhancement as purposes of the Oroville Division. The Davis-Dolwig Act requires an allocation of Oroville Division costs to these purposes.

- Treatment of Power Generation. The federal allocation classified the following as single-purpose power features: Oroville Intake Structure, Oroville Penstocks, Thermalito Diversion Dam, Thermalito Power Canal, Thermalito Forebay Dam, and Thermalito Afterbay. Actually, these features also serve purposes of water supply, recreation, and enhancement.⁽³⁾ The economic costs of "taxes foregone" were associated with power generation costs in the federal allocation--a procedure which is now obsolete. The federal allocation was based on an assumed net annual benefit of \$17,364,000 annually, after deducting \$1,902,000 annually for energy consumed in the pump-back operation. Under the Oroville-Thermalito Power Sale Contract, executed November 29, 1967, the value of power generation is estimated to average \$16,550,000 annually.
- Treatment of Water Supply. The federal allocation was based on procedures whereby water supply benefits are estimated separately for irrigation use and municipal and industrial use. Under the "Standard Provisions", no distinction is made between irrigation use and municipal and industrial use as far as cost allocations are concerned.
- Applicable Interest Rate. In the federal allocation, benefits and costs were estimated on the basis

(3) The Thermalito Facilities will supplement the water yield of Lake Oroville to a small extent through the 57,000 AF of active storage and the pump-back operation provided for by the facilities. Recreation and enhancement features have been constructed at Thermalito Forebay and additional features are planned for construction at Thermalito Forebay.

of equal annual equivalents of 4 percent and 3-1/2 percent, respectively. Under the "Standard Provisions", both equal annual equivalent benefits and costs should be computed at the "project interest rate"; the rate basic to payments

of reimbursable State Water Project costs. As of December 31, 1970, this rate was 4.030 percent. It is herein assumed that the rate will eventually escalate to at least 4.357 percent under future bond sales.

Derivation Method

The current derivation of allocation percentages for the joint costs of the Oroville Division is summarized in Table 5. Computational steps for the derivation are outlined in Table 5a.

The costs of a multiple-purpose facility are estimated and accounted as the sum of specific costs (those for physical features of the facility which can be readily identified as serving one project purpose exclusively -- such as recreation developments) and joint costs (those for physical features which generally serve more than one purpose -- such as multiple-purpose dams and reservoirs). The specific costs of recreation developments (except for associated land costs) are accounted by agencies other than the Department of Water Resources and are financed by funds other than project funds. All other specific costs and all joint costs of the State Water Project facilities are accounted by the Department and financed by project funds.

The costs of a multiple-purpose facility also may be estimated (but not accounted) on the basis of separable and remaining joint costs. (Separable costs are estimated for each purpose of a multiple-purpose facility as the difference in the estimated total costs of the facility less the estimated costs of a similar facility designed so as to exclude the particular purpose. The separable costs of a facility are the total separable costs for all purposes of the facility. The remaining joint costs are the differences in the estimated total costs of the facility less the estimated separable costs of the facility.)

Justifiable costs are the estimated maximum expenditures which theoretically would be justified to realize the benefits of a multiple-purpose facility. Remaining justifiable costs are those justifiable costs in excess of the sum of the separable costs of the facility.

The derivation of allocation percentages for the Oroville Division, as shown in Table 5, must follow the separable cost-remaining benefits method which is required by the "Standard Provisions". Under this method, total costs of the multiple-purpose facility are allocated to each purpose to be accommodated by the facility by the sum of:

- The estimated separable costs of each purpose (Item 4 of Table 5).
- A share of the estimated remaining joint costs allocated among purposes (Item 7 of Table 5) on the basis of remaining justifiable costs of each purpose (Items 5 and 6).

Conventionally, the total costs allocated to each purpose (Item 8), expressed as a percentage of such total costs (Item 9), are the final result of the allocation procedure. However, since some of the specific costs of the State Water Project are accounted by agencies other than the Department of Water Resources, the percentage of each purpose's allocation of the estimated total costs must be adjusted to a percentage applicable to the estimated joint costs (Item 12) by deducting the estimated specific costs. The resulting percentages can then be applied to the actual joint costs of project facilities as accounted by the Department.

TABLE 5: DERIVATION OF ALLOCATION PERCENTAGES

Applicable to the Costs of Features Jointly Used
by Project Purposes, Exclusive of Flood Control Costs
(thousands of dollars unless otherwise noted)

Item:	Item of benefit or cost ^(a)	Water Supply:	Power Gen- eration:	Recreation and Enhancement:	Total
1.	Benefits	31,067	16,401	2,780	50,248
2.	Alternative Costs	14,126	16,401	14,092	44,619
3.	Justifiable Costs	14,126	16,401	2,780	33,307
4.	Separable Costs:				
	Total	0	15,889	2,123	18,012
	Capital	0	11,976	1,066	13,042
	OMP&R	0	3,913	1,057	4,970
5.	Remaining Justifiable Costs	14,126	512	657	15,295
6.	Percent Distribution of Remaining Justifiable Costs	92.4%	3.3%	4.3%	100.0%
7.	Remaining Joint Costs:				
	Total	12,392	442	577	13,411
	Capital	11,738	419	546	12,703
	OMP&R	654	23	31	708
8.	Total Allocated Project Costs: ^(b)				
	Total	12,392	16,331	2,700	31,423
	Capital	11,738	12,395	1,612	25,745
	OMP&R	654	3,936	1,088	5,678
9.	Percent Distribution of Total Project Costs to be Allocated: ^(b)				
	Total	39.4%	52.0%	8.6%	100.0%
	Capital	45.6%	48.1%	6.3%	100.0%
	OMP&R	11.5%	69.3%	19.2%	100.0%
10.	Specific Costs:				
	Total	0	6,961	2,123	9,084
	Capital	0	5,532	1,066	6,598
	OMP&R	0	1,429	1,057	2,486
11.	Total Allocated Costs of Features Jointly Used: ^(b)				
	Total	12,392	9,370	577	22,339
	Capital	11,738	6,863	546	19,147
	OMP&R	654	2,507	31	3,192
12.	Percent Distribution Costs of Features Jointly Used: ^(b)				
	Total	55.5%	41.9%	2.6%	100.0%
	Capital	61.3%	35.8%	2.9%	100.0%
	OMP&R	20.5%	78.5%	1.0%	100.0%

a) Annual benefits and costs through the year 2018, converted to equal annual equivalent at 4.357 percent interest, for the 50-year period 1969-2018.

b) Exclusive of flood control costs.

Table 5a: OUTLINE OF CALCULATIONS FOR DERIVING ALLOCATION PERCENTAGES (a)

Step No.	Calculation
1	alternative water supply costs = Justifiable water supply costs(b) (\$14,126,000) (\$14,126,000)
2	power generation benefits (alternative costs) = Justifiable power generation costs(b) (\$16,401,000) (\$16,401,000)
3	recreation benefits = Justifiable recreation costs(b) (\$2,780,000) (\$2,780,000)
4	total project costs - hypothetical power generation, flood control, and recreation project costs = separable water supply costs (\$35,256,000) (\$35,256,000) (\$0)
5	total project costs - hypothetical water supply, flood control, and recreation project costs = separable power generation costs (\$35,256,000) (\$19,367,000) (\$15,889,000)
6	total project costs - hypothetical water supply, power generation, and flood control project costs = separable recreation costs (\$35,256,000) (\$33,133,000) (\$2,123,000)
7	Justifiable water supply costs - separable water supply costs = remaining Justifiable water supply costs (\$14,126,000) (\$0) (\$14,126,000)
8	Justifiable power generation costs - separable power generation costs = remaining Justifiable power generation costs (\$16,401,000) (\$15,889,000) (\$512,000)
9	Justifiable recreation costs - separable recreation costs = remaining Justifiable recreation costs (\$2,780,000) (\$2,123,000) (\$657,000)
10	remaining Justifiable power generation costs + remaining Justifiable water supply costs + remaining Justifiable recreation costs = total remaining Justifiable costs (\$512,000) (\$14,126,000) (\$657,000) (\$15,295,000)
11	$\frac{\text{remaining Justifiable water supply costs}}{\text{total remaining Justifiable costs}} \times 100 = \text{percent distribution of remaining Justifiable water supply costs}$ (\$14,126,000) (92.4%) (\$15,295,000)
12	$\frac{\text{remaining Justifiable power generation costs}}{\text{total remaining Justifiable costs}} \times 100 = \text{percent distribution of remaining Justifiable power generation costs}$ (\$512,000) (3.3%) (\$15,295,000)
13	$\frac{\text{remaining Justifiable recreation costs}}{\text{total remaining Justifiable costs}} \times 100 = \text{percent distribution of remaining Justifiable recreation costs}$ (\$657,000) (4.3%) (\$15,295,000)
14	total allocated project costs - separable project costs = remaining joint project costs (\$31,423,000) (\$18,012,000) (\$13,411,000)
15	remaining joint project costs x percent distribution of remaining Justifiable water supply costs = remaining joint water supply costs (\$13,411,000) (92.4%) (\$12,392,000)
16	remaining joint project costs x percent distribution of remaining Justifiable power generation costs = remaining joint power generation costs (\$13,411,000) (3.3%) (\$442,000)
17	remaining joint project costs x percent distribution of remaining Justifiable recreation costs = remaining joint recreation costs (\$13,411,000) (4.3%) (\$577,000)
18	remaining joint water supply costs + separable water supply costs = total costs allocated to water supply (\$12,392,000) (\$0) (\$12,392,000)
19	remaining joint power generation costs + separable power generation costs = total costs allocated to power generation (\$442,000) (\$15,889,000) (\$16,331,000)
20	remaining joint recreation costs + separable recreation costs = total costs allocated to recreation (\$577,000) (\$2,123,000) (\$2,700,000)
21	specific water supply costs + specific power generation costs + specific recreation costs = total specific project costs (\$0) (\$6,961,000) (\$2,123,000) (\$9,084,000)
22	total allocated water supply costs - specific water supply costs = joint costs allocated to water supply (\$12,392,000) (\$0) (\$12,392,000)
23	total allocated power generation costs - specific power generation costs = joint costs allocated to power generation (\$16,331,000) (\$6,961,000) (\$9,370,000)
24	total allocated recreation costs - specific recreation costs = joint costs allocated to recreation (\$2,700,000) (\$2,123,000) (\$577,000)
25	joint costs allocated to water supply + joint costs allocated to power generation + joint costs allocated to recreation = total joint project costs (\$12,392,000) (\$9,370,000) (\$577,000) (\$22,339,000)
26	$\frac{\text{joint costs allocated to water supply}}{\text{total joint project costs}} \times 100 = \text{percent of joint costs allocated to water supply}$ (\$12,392,000) (55.5%) (\$22,339,000)
27	$\frac{\text{joint costs allocated to power generation}}{\text{total joint project costs}} \times 100 = \text{percent of joint costs allocated to power generation}$ (\$9,370,000) (41.9%) (\$22,339,000)
28	$\frac{\text{joint costs allocated to recreation}}{\text{total joint project costs}} \times 100 = \text{percent of joint costs allocated to recreation}$ (\$577,000) (2.6%) (\$22,339,000)
29	percent of joint costs allocated to water supply + percent of joint costs allocated to power generation + percent of joint costs allocated to recreation = 100% (55.5%) (41.9%) (2.6%)

a) Applicable to the total costs (Capital and O&M) of features jointly used by project purposes, exclusive of Flood Control costs
 b) Justifiable costs for each purpose are the total benefits of that purpose or the costs of the least expensive single-purpose alternative providing the same benefits, whichever are less.

Benefits

Benefits are the net value of goods and services that directly result from the operation of the Oroville Division.

Water Supply Benefits

The purpose of water supply includes both the development of a water supply in project conservation facilities and the conveyance of that supply in project transportation facilities to project service areas.

Measure of Benefits. Water supply benefits are measured at the points of delivery from the project facilities and are evaluated by different methods for agricultural use and for municipal and industrial use.

The measure of water supply benefit to lands within agricultural service areas is taken as the difference between net returns from farming operations with and without project water, reduced by the costs of the local distribution system between the project facility and farm headgates. The net return from farming operations is considered to be gross income less all farm costs except water and land costs, but including land reclamation costs.

The measure of benefit for municipal and industrial use is taken as the cost of an equivalent water supply so used from the least expensive of any source -- multiple-purpose or single-purpose -- other than project facilities, as limited by the estimated maximum price users are willing to pay.

The estimated water supply benefits of the State Water Project, exclusive of the Upper Feather Division, are shown in Table 6. These estimates reflect entitlement water serv-

(4) Based on preliminary calculations, the associated water supply benefits of the Oroville Division are considerably greater than the estimated costs of the least expensive of any single-purpose alternative water supply source (which, in this case, is the

ice under long-term contracts. Excluded are surplus water service under short-term contracts and federal water service from joint state-federal facilities.(4)

The unit benefits shown in Table 6 for entitlements for contractors in the Feather River, North and South Bay, and San Joaquin Valley service areas are for the most part those estimated during the formulation of the State Water Project, updated to account for higher interest costs. The unit values for the project water supply to be applied to municipal and industrial use in the Central Coastal and Southern California service areas are based on the estimated minimum future cost of desalting ocean water--the least expensive source other than the State Water Project.

The Department estimates that nearly 90 percent of the Project's eventual water supply benefit will result from use in Central Coastal and Southern California service areas. Studies basic to these estimates are outlined in the following paragraphs.

The Central Coastal and Southern California service areas are divided into the following three "desalting areas" for estimating the alternative costs of water supply:

- ° Desalting Area I, the Santa Clara River system, would use Castaic Lake for regulatory and emergency storage requirements, and would include service areas to be supplied from the West Branch of the California Aqueduct.
- ° Desalting Area II, the Santa Ana River System, would use Lake Perris and Buttes Reservoir for regulatory and emergency storage requirements,

Division hypothetically resized to accommodate water supply only. Since the justifiable costs of water supply are therefore governed by the single-purpose alternative costs, an extremely precise estimate of benefits is not warranted.

and would include service areas to be supplied from the East Branch of the California Aqueduct.

- ° Desalting Area III, the Santa Maria River System, would include the Santa Barbara County and San Luis Obispo County Flood Control and Water Conservation Districts. No regulatory or emergency storage would be provided in the Transportation facilities, and service would begin in 1980.

Each area would include a plant and transportation facilities required to convey water from the plant to the same delivery points of the respective water supply contractors

as those delivery points from the California Aqueduct. (Under more refined estimates, possible water exchanges would be taken into account which would reduce the indicated costs of transportation facilities.) These transportation facilities would consist entirely of pipelines, tunnels, and pumping plants. Installation of pumping units would be staged in accordance with entitlement amounts shown in the respective water supply contracts.

The studies were based on the assumption that the cost of desalted water at ocean side would be about \$0.25 per 1,000 gallons.

Table 6: TOTAL WATER SUPPLY BENEFITS OF THE STATE WATER PROJECT^(a)

Service Area	Maximum Annual Entitlement: (b) (acre-feet)	Equal Annual Equivalent Entitlements: (c) (acre-feet)	Estimated Unit Net Benefits: ^(d) (dollars per acre-foot)	Equal Annual Equivalent Net Benefits: ^(c) (thousands of dollars)
Feather River	37,100	15,893	10.00	159
North Bay	67,000	28,440	23.87	679
South Bay	188,000	145,336	38.00	5,523
San Joaquin Valley	1,355,000	831,872	31.47	26,179
Central Coastal	82,700	30,999	181.81	5,636
Southern California	<u>2,497,500</u>	<u>1,408,910</u>	<u>204.41</u>	<u>287,999</u>
TOTAL, STATE WATER PROJECT	4,227,300	2,461,450	132.52	326,193

- a) Excluding the facilities in the Upper Feather Division.
- b) Existing or assumed as of January 1, 1971 (Bulletin 132-70), not including 2,700 acre-feet for the Upper Feather Division.
- c) Annual values through 2017, converted to equal annual equivalents for the 50-year period, 1968-2017, at 4.357 percent interest.
- d) Measured at the points of delivery from project facilities.

Distribution Among Project Facilities. Water supply benefits are derived from the combined operation of project conservation facilities and project transportation facilities (except for the relatively minor reservoirs in the Upper Feather Division, which are operated primarily for local needs). Costs of these facilities are allocated separately among project purposes. To compute such cost allocations, total project

water supply benefits are distributed among the component facilities of the State Water Project including the Upper Eel River Development, in the same proportion as the water supply costs of those facilities.

The portion of the total water supply benefits of the Project which are assignable to the Oroville Division is estimated to be \$31,652,000 on an equal annual equivalent basis:

- a) Estimated total costs of Oroville Division allocable to water supply.....\$ 12,392,000
- b) Estimated total costs of State Water Project, excluding Upper Feather Division, allocable to water supply.....\$130,111,000
- c) Percent (a) of (b).....9.524%
- d) Estimated total water supply benefits of State Water Project, excluding Upper Feather Division (from Table 6).....\$332,333,000
- e) Total water supply benefits assigned to Oroville Division\$ 31,652,000

Power Generation Benefits

The Oroville-Thermalito Power Sale Contract guarantees payment of \$16,150,000 annually for the period from the "full operation date" (July 20, 1969) extending to either 50 years from the date of execution (November 20, 2018) or to the date when all those bonds secured by revenues under the contract have been retired -- whichever date is later. The payments to the State under the Contract, and, thus, the power generation benefits, take into account the reduction in total generation due to energy consumed in the pump-back operation by Oroville Division powerplants. In addition, miscellaneous payments will be made for net energy generation in excess of 2.1 billion kilowatt-hours annually, and other reimbursements will be made for energy and generative capability under the interim letter agreements. On an equal annual equivalent basis, Oroville power generation benefits for the 50-year period 1969-2018 at 4.357 percent interest are estimated to be \$16,401,000. (For estimated annual values of Oroville power revenues, see Bulletin 132-70, p. 203.)

Recreation and Enhancement Benefits

Recreation areas for the Oroville Division are indicated on Figure 2. The type and number of initial on-shore developments, together with a completion schedule and estimated

capital expenditures for the initial developments, are shown in Table 7.

Projected recreation use and associated benefits of the Oroville Division, exclusive of the Oroville Borrow Area, are based on studies conducted during the summer and fall of 1969 by the Department of Parks and Recreation. The resulting data supersedes that shown in the Department's Bulletin 117-6, "Oroville Reservoir, Thermalito Forebay, Thermalito Afterbay-Water Resources Recreation Report", December 1966. The updated data are based on current levels of expenditures from the General Fund for recreation developments, which are less than those assumed at the time Bulletin 117-6 was prepared. Projected recreation use and associated benefits for the Oroville Borrow Area are based on the Department's Bulletin 117-18 "Oroville Borrow Area - Water Resources Recreation Report", June 1968, except that these values have been adjusted to reflect an interest rate of 4.357 percent.

Unit values used by the Department of Parks and Recreation in evaluating general recreation benefits vary from \$0.50 to \$2.50 per recreation day. Two factors are used to determine these units values: (1) variety and quality of recreation (the type of recreation activity; quality of experience; and quality of development, operation, and maintenance of the facilities and area), and (2) esthetic qualities of the site. The types of recreation activity evaluated are: boating, bathing, camping, fishing, picnicking, enjoyment and/or harvesting of wildlife, water skiing, riding-hiking-cycling, and scientific-historic appreciation. The esthetic qualities evaluated are: water surface fluctuations, geologic-topographic factors, vegetative cover, climate, and other environmental influences.

The Department of Parks and Recreation has established procedures for rating each of the aforementioned factors. These rating procedures provide up to 100 points for each factor or a maximum of 200 points.

The points are directly convertible to cents. The dollar value of a recreation day is obtained by adding the rated value for the two factors to the \$0.50 minimum. Thus, the maximum value resulting from this evaluation is \$2.50 per recreation day.

Department of Parks and Recreation has signed a contract with Southern

California Financial Corporation for operation of concessions at Oroville Dam and Lake Oroville. Terms of this contract provide for a payment to the State of 3 percent of the gross annual receipts for the first five years of operation and, of the gross annual receipts thereafter, 3 percent of the first \$500,000, 4 percent of the next \$1,000,000 and 5 percent of all over \$1,500,000.

Table 7: INITIAL RECREATION DEVELOPMENT SCHEDULE

Completion Date	Recreation Area	No. of Units		No. of Parking Stalls				Boat Ramp	First Cost (\$1,000)
		Camp	Picnic	Picnic	Beach	Car and Trailer	Lanes		
May 1968	Thermalito Forebay North	-	50	145	125	85	2	152	
July 1971								200 ^(a)	
May 1968	Thermalito Forebay South	-	-	-	-	50	4	4	
May 1968	Spillway Ramp	-	-	-	-	600	12	593	
July 1969								10 ^(b)	
May 1969	Loafer Creek	32 ^(c)	-	-	-	150	3	1,039 ^(d)	
July 1970		-	100	150	100	-	-	977	
July 1971		136	-	-	-	-	-	661	
July 1972								350 ^(e)	
July 1975		150	125	60	100	-	-	1,638	
July 1970	Bidwell Canyon	-	-	-	-	-	-	400 ^(f)	
July 1973	Oroville Borrow	-	50	-	-	-	-	186 ^(g)	
TOTAL		286	325	355	325	885	21	6,210	

a) Permanent sanitary facilities.
b) Floating dock.
c) Primitive camp units.
d) Includes water and sanitary systems.
e) Maintenance yard and access road.
f) Road connection to marina.
g) Includes 11 small parking areas and equipment for shaping ponds and controlling vegetation

Estimates of concessionaire payments are herein based on the assumptions that concessions will be in operation in 1973 and that recreationists will spend an average of \$0.50 per recreation day. These estimates of payments are added herein to the

recreation use benefits to arrive at a total benefit figure for the Oroville Division.

Projected recreation use attributable to the Oroville Division, estimated recreation and enhancement

benefits and concessionaire payments are summarized in Table 8. The total equal annual equivalent recreation benefit for the Oroville Division

for the 50-year period 1969-2018 at 4.357 percent interest is estimated to be \$2,780,000.

Table 8: RECREATION AND ENHANCEMENT BENEFITS
(all units in thousands)

Decade	Use (Recreation Days)		Use (Recreation Days)	Increase Due to Oroville Division Benefits (dollars)		
	Without Oroville Division	With Oroville Division		Recreation Use Totals	Conces- sionaire Payments ^(a)	Equal Annual Equivalent
<u>Lake Oroville^(b)</u>						2,488
1969-78	1,280	2,830	1,550	3,062	59	
1979-88	1,525	7,970	6,445	12,935	120	
1989-98	1,775	19,360	17,585	34,315	340	
1999-08	2,025	35,765	33,740	65,274	690	
2009-18	2,275	52,005	49,730	95,917	1,078	
<u>Thermalito Forebay^(c)</u>						156
1968-78	0	371	371	623		
1979-88	0	910	910	1,538		
1989-98	0	1,270	1,270	2,146		
1999-08	0	1,630	1,630	2,755		
2009-18	0	1,990	1,990	3,363		
<u>Oroville Borrow Area^(d)</u>						136
1970-78	189	582	393	546		
1979-88	266	1,272	1,006	1,266		
1989-98	320	1,840	1,520	1,864		
1999-08	368	2,408	2,040	2,465		
2009-18	408	2,938	2,530	3,028		
TOTAL, OROVILLE DIVISION						2,780

Based on the following unit values per recreation day:

a) \$0.50 per recreation day.
b) \$1.50, without Oroville Division; \$1.54 for 1969-1972 and \$1.91 for 1973-2018, with Oroville Division.
c) \$1.64 for 1968-1971 and \$1.69 for 1972-2018, with Oroville Division.
d) \$0.50, without Oroville Division; \$1.10 for entire period, with Oroville Division.

Total Project Costs

The estimated actual costs (multiple-purpose) of Oroville Division features are summarized in Table 9, in terms of both first costs and equal annual

equivalent costs. Also shown are the corresponding estimates of single-purpose and separable costs of these features for the various purposes.

Table 9: COSTS OF OROVILLE

Type of Costs and Project Features	Multiple-purpose (Complete Division)		Single-purpose			
	Capacity	Cost	Water Supply		Recreation and Enhancement	
			Capacity	Cost	Capacity	Cost
	(1)	(2)	(3)	(4)	(5)	(6)
FIRST COSTS:						
Joint Features						
Oroville Dam and Lake Oroville	3,538,000AF	\$193,838,000	1,697,000AF	\$114,788,000	1,231,000AF	\$ 81,620,000
Feather River Fish Hatchery and Fish Barrier Dam	-	7,441,000	-	7,441,000	-	7,441,000
Thermalito Diversion Dam	13,000AF	10,914,000	-	0	-	0
Thermalito Power Canal	17,000cfs	9,580,000	-	0	-	0
Thermalito Forebay and Afterbay	69,000AF	19,864,000	-	0	-	0
Western Pacific Railroad Relocation	-	43,973,000	-	43,973,000	-	43,973,000
U. S. 40A Relocation	-	14,016,000	-	14,016,000	-	14,016,000
Other Relocations	-	49,634,000	-	46,346,000	-	46,346,000
Lands and Easements	-	27,440,000	-	7,084,000	-	6,979,000
General	-	20,214,000	-	11,420,000	-	9,157,000
Subtotal, Joint Features		\$396,914,000		\$245,068,000		\$209,532,000
Specific Power Features						
Edward Hyatt Powerplant	644,250KW	\$ 69,838,000	-	\$ 0	-	\$ 0
Thermalito Powerplant	115,100KW	32,713,000	-	0	-	0
Oro-Thermalito Bus Lines	-	2,387,000	-	0	-	0
Subtotal, Specific Power Features		\$104,938,000		\$ 0		\$ 0
Specific Recreation Features						
On-shore Recreation Development	-	\$ 50,228,000	-	\$ 0	-	\$ 50,228,000
Recreation Lands, Roads, and Clearing	-	3,159,000	-	0	-	3,159,000
Subtotal, Specific Recreation Features		\$ 53,387,000		\$ 0		\$ 53,387,000
Total First Costs		\$555,239,000		\$245,068,000		\$262,919,000
(Less) Flood Control Costs paid by United States		\$ 69,167,000		\$ 0		\$ 0
Total Nonfederal First Costs		\$486,072,000		\$245,068,000		\$262,919,000
Present Worth of Nonfederal First Costs to 1968 at 4.357%		\$520,872,000		\$275,608,000		\$257,314,000
EQUAL ANNUAL EQUIVALENT COSTS:^d						
Nonfederal Capital Costs ^e		\$ 25,745,000		\$ 13,623,000		\$ 12,718,000
OMP&R Costs:						
Joint Features		\$ 3,192,000		\$ 503,000		\$ 0
Specific Power Features		1,429,000		0		0
Specific Recreation Features		1,057,000		0		1,374,000
Subtotal, OMP&R Costs		\$ 5,678,000		\$ 503,000		\$ 1,374,000
Total Equal Annual Equivalent Costs		\$ 31,423,000		\$ 14,126,000		\$ 14,092,000

a) Column 2 Less Column 8.
 b) Column 2 Less Column 10.
 c) Column 2 Less Column 12.
 d) For the 50-year period of analysis 1969 thru 2018, at 4.357% interest.
 e) Equals the product of the present worth of nonfederal first costs multiplied by capital recovery factor (0.04943).

DIVISION, BY FEATURE

Multiple-purpose, but without:						Separable Costs		
Water Supply		Power Generation		Recreation and Enhancement		Water Supply ^(a)	Power Generation ^(b)	Recreation and Enhancement ^(c)
Capacity	Cost	Capacity	Cost	Capacity	Cost			
(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
3,538,000AF	\$193,838,000	2,800,000AF	\$160,102,000	3,538,000AF	\$193,838,000	\$ 0	\$ 33,736,000	\$ 0
-	7,441,000	-	7,441,000	-	7,441,000	0	0	0
13,000AF	10,914,000	-	0	13,000AF	10,914,000	0	10,914,000	0
17,000cfs	9,580,000	-	0	17,000cfs	9,580,000	0	9,580,000	0
69,000AF	19,864,000	-	0	69,000AF	19,864,000	0	19,864,000	0
-	43,973,000	-	43,973,000	-	43,973,000	0	0	0
-	14,016,000	-	14,016,000	-	14,016,000	0	0	0
-	49,634,000	-	48,355,000	-	49,634,000	0	1,279,000	0
-	27,440,000	-	9,048,000	-	27,440,000	0	18,392,000	0
-	20,214,000	-	14,618,000	-	20,214,000	0	5,596,000	0
	<u>\$396,914,000</u>		<u>\$297,553,000</u>		<u>\$396,914,000</u>	\$ 0	<u>\$ 99,361,000</u>	\$ 0
644,250KW	\$ 69,838,000	-	\$ 0	644,250KW	\$ 69,838,000	\$ 0	\$ 69,838,000	\$ 0
115,100KW	32,713,000	-	0	115,100KW	32,713,000	0	32,713,000	0
-	2,387,000	-	0	-	2,387,000	0	2,387,000	0
	<u>\$104,938,000</u>		<u>\$ 0</u>		<u>\$104,938,000</u>	\$ 0	<u>\$104,938,000</u>	\$ 0
-	\$ 50,228,000	-	\$ 50,228,000	-	\$ 0	\$ 0	\$ 0	\$50,228,000
-	3,159,000	-	3,159,000	-	0	0	0	3,159,000
	<u>\$ 53,387,000</u>		<u>\$ 53,387,000</u>		<u>\$ 0</u>	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$53,387,000</u>
	<u>\$555,239,000</u>		<u>\$350,940,000</u>		<u>\$501,852,000</u>	\$ 0	<u>\$204,299,000</u>	<u>\$53,387,000</u>
	<u>\$ 69,167,000</u>		<u>\$ 69,167,000</u>		<u>\$ 69,167,000</u>	\$ 0	<u>\$ 0</u>	<u>\$ 0</u>
	<u>\$486,072,000</u>		<u>\$281,773,000</u>		<u>\$432,685,000</u>	\$ 0	<u>\$204,299,000</u>	<u>\$53,387,000</u>
	<u>\$520,872,000</u>		<u>\$278,582,000</u>		<u>\$499,281,000</u>	\$ 0	<u>\$242,290,000</u>	<u>\$21,591,000</u>
	\$ 25,745,000		\$ 13,769,000		\$ 24,679,000	\$ 0	\$ 11,976,000	\$ 1,066,000
	\$ 3,192,000		\$ 708,000		\$ 3,192,000	\$ 0	\$ 2,484,000	\$ 0
	1,429,000		0		1,429,000		1,429,000,	0
	1,057,000		1,057,000		0		0	1,057,000
	<u>\$ 5,678,000</u>		<u>\$ 1,765,000</u>		<u>\$ 4,621,000</u>	\$ 0	<u>\$ 3,913,000</u>	<u>\$ 1,057,000</u>
	<u>\$ 31,423,000</u>		<u>\$ 15,534,000</u>		<u>\$ 29,300,000</u>	\$ 0	<u>\$ 15,889,000</u>	<u>\$ 2,123,000</u>

Power Generation Specific Costs

The specific costs of power generation are the costs of those physical features of the Oroville Division which can be readily identified as exclusively serving that single purpose.

The specific costs of power generation are estimated to be \$6,961,000 on an equal annual equivalent basis for the 50-year period 1969-2018. (Estimated annual costs of power generation features of the Oroville Division were those used in preparation of the Department's Bulletin 132-70. The Revenue Bond Resolution

shows the specific OMP&R costs of Oroville power generation features to be \$1,500,000 annually. Table 9 shows a lower figure, \$1,429,000 on an equal annual equivalent basis, because of a portion of the OMP&R costs for 1969 are included in the first costs of Oroville power.)

Recreation and Enhancement Specific Costs

The estimated costs of specific recreation and enhancement features, which have been furnished by the Department of Parks and Recreation and the Department of Fish and Game, are summarized in Table 10.

Table 10: SPECIFIC COSTS OF RECREATION AND ENHANCEMENT FEATURES

Decade	No. of Units		No. of Parking Stalls			Boat	Costs (\$1,000)	
	Camp	Picnic	Picnic	Beach	Trailer	Ramp	First	EAE ^(a)
<u>Onshore Developments</u>								
1969-78	286	325	355	325	885	21	6,210	-
1979-88	852	875	1,685	670	1,170	19	12,475	-
1989-98	515	540	1,345	280	845	17	8,200	-
1999-08	610	680	1,700	350	1,005	21	10,223	-
2009-18	685	900	2,250	450	1,357	27	13,120	-
SUBTOTAL	2,948	3,320	7,335	2,075	5,262	105	50,228	919
Costs of acquiring associated recreation lands.....							1,828	102
Costs of constructing recreation access roads.....							977	27
Costs of special reservoir clearing and land leveling.....							354	18
TOTAL CAPITAL COSTS.....							53,387	1,066
TOTAL OMP&R COSTS.....							-	1,057
TOTAL COSTS.....							53,387	2,123
a) Equal annual equivalent costs at 4.357 percent interest for the 50-year period 1969-2018.								

Total Costs to be Allocated

Under the "Standard Provisions", "...allocations to purposes the costs of which are to be paid by the United States shall be as determined by the United States...." [Article 22(e)].

Actual payments by the United States for flood control costs of the Oroville Division through December 31, 1970 are as follows:

1962.....	\$13,950,000
1964.....	13,040,000
1965.....	8,000,000
1966.....	12,405,000
1967.....	7,255,236
1968.....	1,974,764
1969.....	9,907,465
1970.....	1,096,035
Subtotal actual payments.....	\$67,628,500
Projected payments, under outstanding invoices....	\$ 1,538,477
Total actual and projected payments.....	\$69,166,977

These payments are equivalent to \$3,833,000 annually at 4.357 percent interest for the 50-year period 1969-2018, and must equal the equivalent annual costs of the Oroville Division assigned to flood control. Since payments by the United States are based on a percent of certain joint first costs of the Division, the

costs assigned to flood control represent a portion of the equivalent equal annual capital costs of "features jointly used by project purposes" as shown in Table 9.

The allocation percentages derived herein are essentially a suballocation of nonfederal costs of the Oroville Division.

Alternative Costs

In project formulation and cost allocation studies, the "alternative costs" of a purpose included in a multiple-purpose facility are estimated as the costs of the least expensive single-purpose alternative means that would provide the same benefits for that purpose as would the multiple-purpose facility. Alternative means include the possible construction of a single-purpose facility at the same site as the multiple-purpose facility. Inclusion of a purpose in a multiple-purpose facility is justified only if the costs allocated to the purpose do not exceed the alternative costs or the benefits of the purpose, whichever is less.

Water Supply Alternative Costs

The least expensive alternative means of providing the same water yield and water supply benefits as the complete Oroville Division is estimated to be a single-purpose dam and reservoir at the Oroville site with a gross storage capacity of 1,697,000 acre-feet-- compared with Lake Oroville's capacity of 3,538,000 acre-feet and the Thermalito Facilities' active storage capacity of about 57,000 acre-feet (69,000 acre-feet gross). The single-purpose facility would not include power generation features, recreation and enhancement features, or the Thermalito Facilities.

The total estimated costs of this hypothetical facility are summarized in Table 9.

Power Generation Alternative Costs

The alternative costs of power generation as included in the Oroville Division are equivalent to the charges utility companies are willing to pay for Oroville power as an alternative to constructing their own power facilities. (These payments are less than the estimated costs of a single-purpose power generation facility constructed at the Oroville site.) Payments under the Oroville-Thermalito Power Sale Contract, which also are the current measure of Oroville power benefits, are estimated to be equivalent to \$16,401,000 annually at 4.357 percent interest for the 50-year period 1969-2018.

Recreation and Enhancement Alternative Costs

The least expensive alternative means of providing the same recreation and enhancement benefits as the Oroville Division is estimated to be a single-purpose reservoir at the Oroville site with a gross storage capacity of 1,231,000 acre-feet, together with essentially the same recreation and fish and wildlife features as the Oroville Division will have. Table 9 summarizes the total estimated costs of this hypothetical single-purpose facility.

Separable Costs

In project formulation and cost allocation studies, the "separable costs" of a particular purpose for a multiple-purpose facility are the estimated costs of accommodating

that purpose in the planned operation of the multiple-purpose facility. The "separable costs" of a particular purpose are estimated as the differences between the following

two cost estimates: (a) the total costs of the multiple-purpose facility, and (b) the total estimated costs of a hypothetical facility planned to accommodate all purposes of the original multiple-purpose facility except the particular purpose. The total "separable costs" of the multiple-purpose facility are the total of the "separable costs" for all purposes accommodated in the planned operation of the facility.

Water Supply Separable Costs

If the Oroville Division were redesigned to accommodate all project purposes except water supply, the Division would include the same features and would be sized to the same capacity. There are no features constructed solely for the purpose of project water supply in the Division. Therefore, the water supply separable costs are zero.

Power Generation Separable Costs

The separable costs of power generation for the Oroville Division summarized in Table 9 are estimated as the differences between the total estimated costs of the complete Division and the estimated costs of a

hypothetical facility which would provide the same flood control, water supply, and recreation and enhancement benefits as the complete Division.

The hypothetical facility would include a 2,800,000-acre-foot reservoir and essentially the same recreation features as the complete Division. Thermalito Diversion Dam, Power Canal, Forebay, Afterbay, and power generation features would not be included.

Recreation and Enhancement Separable Costs

The separable costs of recreation and enhancement are estimated to be the differences between the total estimated costs of the complete Oroville Division and the estimated costs of a modified division which would exclude the recreation and enhancement features of the complete Division. The remaining features would be essentially of the same capacities as the complete Division. Therefore, the estimated separable costs of recreation and enhancement are the same as the estimated specific costs of recreation and enhancement features summarized in Table 10.



DWR 3888-1

Memorandum

To : Honorable William R. Gianelli, Director
Department of Water Resources
Resources Building
1416 Ninth Street, Room 1115-1

Date : March 22, 1971

Subject: Bulletin 132-71, Appendix D
Cost of Recreation and
Fish and Wildlife
Enhancement

From : Director of Navigation and Ocean Development

In accordance with the Water Code, Section 11912, as amended by California Statutes of 1970, Chapter 1428, you requested the Department of Navigation and Ocean Development's written comments on the above report which presents State Water Project cost allocations to recreation and fish and wildlife enhancement.

The draft of Appendix D to Bulletin 132-71 was reviewed by the staff of the Department of Navigation and Ocean Development. Upon noting that our comments have been considered and included in the revised draft, we concur with the data as shown.

Our review consisted mainly of evaluating the technical correctness of the report rather than an extensive analysis of the cost disbursements. This review responsibility is relatively new to the Department of Navigation and Ocean Development; and, as a result, our staff was involved at the midway point of the report. We will render a more thorough analysis on the next year's Bulletin 132-72.


ROBERT C. WALKER, Director

Memorandum

To : Honorable William R. Gianelli, Director
Department of Water Resources
Room 1115-1
Resources Building

Date : March 15, 1971

Subject: Cost Allocation to
Recreation and Fish and
Wildlife Enhancement,
State Water Project

From : Department of Parks and Recreation

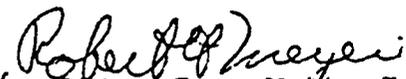
Thank you for your memorandum of February 26, 1971 requesting a review of Appendix D, Bulletin 132-71, The California State Water Project in 1971.

As you know, an interdepartmental group composed of the Departments of Water Resources, Fish and Game, Navigation and Ocean Development, and Parks and Recreation was established in 1970 for the purpose of coordinating the development and review of State Water Project allocations. My staff reports this series of monthly meetings to have been very productive and have given us the opportunity to present our impressions in regard to cost allocation procedures. This exchange of viewpoints has been very fruitful.

I am pleased to learn and report that most of the major problems have been resolved in conference and our comments are concerned primarily with some of the smaller issues.

Table 3 of your report refers to land acquisition at Castaic Lake. There are approximately 611 acres included in this amount that were originally purchased for recreation purposes but which now possess no utility for recreation following the decision of your Department to create a forebay associated with the pump-back scheme in Castaic Canyon. I understand these lands will soon be disposed of and the appropriate amount credited in Table 1 of future reports.

A similar situation exists with respect to Silverwood Lake. These lands should be treated in an equivalent manner.


William Penn Mott, Jr.
Director

Memorandum

To : Honorable William R. Gianelli, Director Date: March 5, 1971
Department of Water Resources
1416 Ninth Street - Room 1115-1

From : Department of Fish and Game

Subject: WP - State of California, Department of Water Resources - State Water Project - 1971 Cost Allocation to Recreation and Fish and Wildlife Enhancement

Pursuant to Water Code Section 11912, as amended by California Statutes of 1966, Chapter 27, you requested our written comments on State Water Project costs allocated to recreation and fish and wildlife enhancement, as reported in the review draft of Appendix D to Bulletin No. 132-71.

Appendix D presents new and revised allocations of joint project costs in the amount of \$12,896,562 for recreation and fish and wildlife enhancement. The new allocation is for adjustments in previous capital expenditures and the addition of the Oroville Division. This division includes Lake Oroville, Thermalito Forebay, and Oroville Borrow Area, which are slated for substantial recreation development and public use. The allocation for this division is \$10,462,783, plus \$342,440 for recreation land acquisition.

We have reviewed the recreation and fish and wildlife data that were used to calculate allocation percentages and we are satisfied that these data are sufficiently accurate for the initial allocation for the Oroville Division. In that context, we concur with the costs shown in Appendix D.

We did not check data which were not directly related to recreation, fish and wildlife enhancement. We did, however, review the assumptions and procedure by which the allocation was made. To the extent that the input data and the mathematical calculations are correct, we are satisfied with the method employed and concur with the allocation presented.

March 5, 1971

There is a distinct possibility that the recreation, fish and wildlife enhancement benefits on which the cost allocation is based will not materialize for one reason or another. Therefore, a periodic review would be in order. We are happy to see, at the beginning of Bulletin 132-71, that a schedule listing tentative review dates for segments of the project has been prepared and included in the report. This should be most helpful in maintaining a fair and equitable allocation of costs for the State Water Project.



FOR Director

Figure 2: OROVILLE DIVISION RECREATION LAND USE PLAN

