



STATE OF CALIFORNIA

The Resources Agency

Department of Water Resources

BULLETIN No. 132-70

The California
State Water Project
In 1970

APPENDIX D

COSTS
OF RECREATION AND
FISH AND WILDLIFE ENHANCEMENT

MAY 1970

NORMAN B. LIVERMORE, JR.
Secretary for Resources
The Resources Agency

RONALD REAGAN
Governor
State of California

WILLIAM R. GIANELLI
Director
Department of Water Resources

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Copies of this bulletin are available without charge from:

STATE OF CALIFORNIA
Department of Water Resources
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LOCATION OF FACILITIES

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

THE CALIFORNIA STATE WATER PROJECT



FOREWORD

This appendix is published in compliance with Section 11912 of the California Water Code, which 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 Parks and Recreation and to the Department of Fish and Game. 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

By enactment of Senate Bill 429 (California Statutes of 1969, Chapter 663), the 1969 Legislature approved recreation and fish and wildlife enhancement costs reported for the State Water Project through December 31, 1968, in the amount of \$14,951,431. As shown in Table 1 (pages 6 and 7) of this appendix, the Department hereby reports an additional \$10,600,309 through December 31, 1969, and requests that this increased amount be approved so that a like amount of Long Beach tideland gas and oil revenues may be made available to the Department for expenditure from continuing appropriations 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).

This report includes, for the first time, the costs of the California Aqueduct facilities from the Delta to Dos Amigos Pumping Plant that are allocated to recreation and fish and wildlife enhancement. These allocations are described in detail in Exhibit I (pages 13-25). Written comments by the Departments of Parks and Recreation and Fish and Game concerning these allocations are presented as Exhibits II and III (pages 27 and 31).



William R. Gianelli, Director
Department of Water Resources
The Resources Agency
State of California
May 9, 1970

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State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

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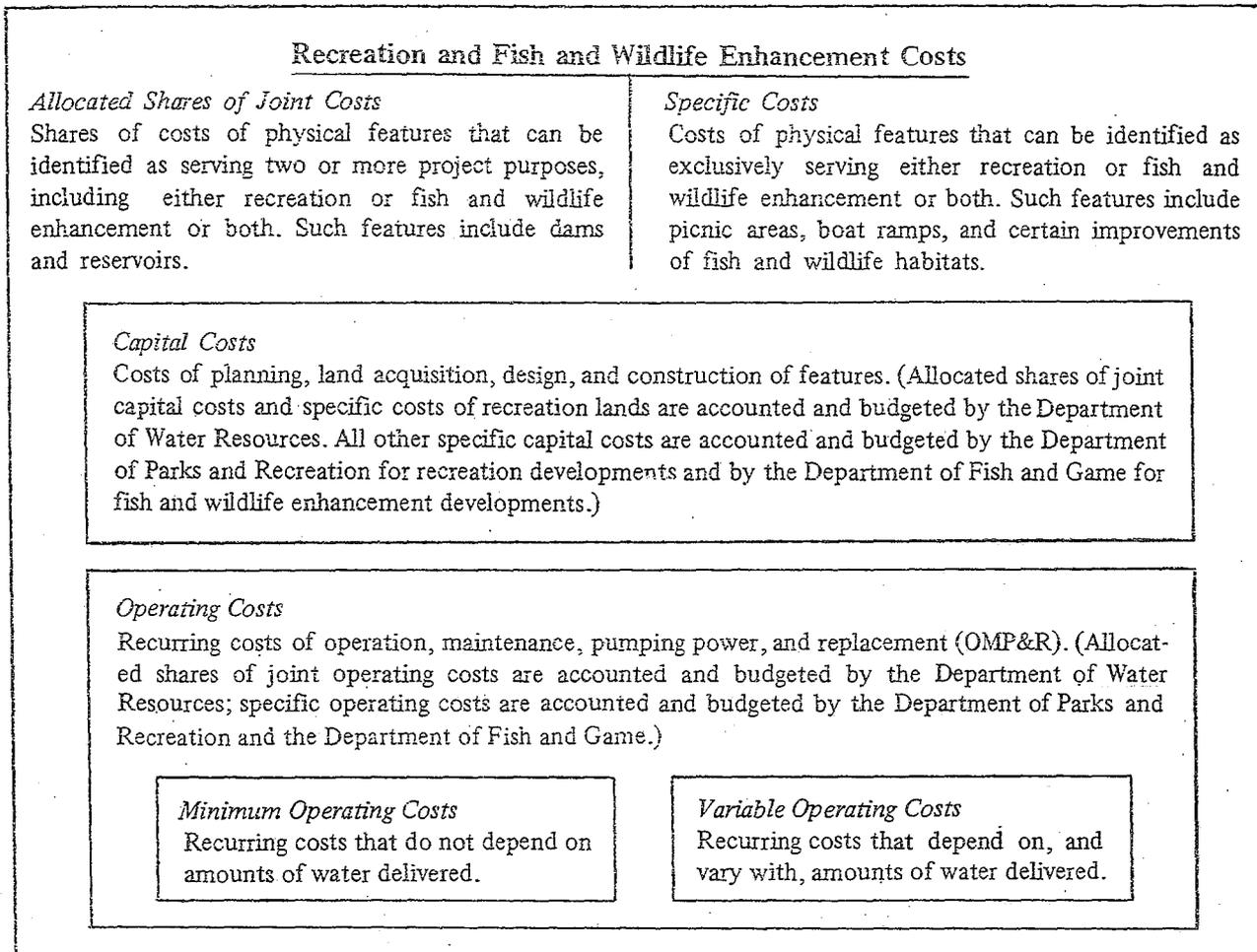
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ABSTRACT

This is the Department of Water Resources' fourth annual report to the Legislature in response to Water Code Section 11912, enacted by California Statutes of 1966 (First Extraordinary Session), Chapter 27. In compliance with this law, the Department reports that the joint capital costs of the State Water Project that have been allocated to recreation and fish and wildlife enhancement through December 31, 1969, total \$20,478,421 and that expenditures for acquiring rights-of-way, easements, and property for recreation development associated with project facilities through December 31, 1969, total \$5,073,319. The total amount reported (\$25,551,740) includes costs and expenditures already approved by California Statutes of 1969, Chapter 663 (\$14,951,431). This Appendix describes the Department's derivation of cost allocation percentages for the facilities of the California Aqueduct from the Delta to Dos Amigos Pumping Plant and reports for the first time the joint capital costs of those facilities allocated to recreation and fish and wildlife enhancement. Copies of letters from the Department of Parks and Recreation and Department of Fish and Game which comment on the derivation are included in this Appendix, as specifically required by Water Code Section 11912 in the event the Department of Water Resources reports new or revised cost allocations.

COST CATEGORIES

For each project facility, a cost attributed to recreation and fish and wildlife enhancement may be either an allocated share of joint costs or a specific cost. Each such cost is also either a capital cost or an operating cost. Each operating cost, in turn, is either a minimum or a variable operating cost. These categories are defined and the relationships between them are illustrated in the following chart.



COST REPORTING

Shares of joint capital costs of a facility that are allocated to recreation and fish and wildlife enhancement are reported to the Legislature following completion of construction of the facility. The shares of joint operating costs of a facility that are allocated to recreation and fish and wildlife enhancement are included in the Department's budget and are financed by annual appropriations from the State General Fund. The shares of joint costs are determined by applying certain percentages to the capital costs and operating costs, respectively. Such percentages are derived by the Department by applying conventional allocation procedures, such as the Separable Costs-Remaining Benefits method. Cost allocation percentages may be subsequently revised by the Department on the basis of a formal demonstration that such revision is warranted by

reason of substantial changes in the factors that supported the previous derivation.

Specific costs for acquiring rights-of-way, easements, and property for recreation developments are reported to the Legislature regardless of whether or not the shares of joint capital costs have been reported for the associated project facilities. The amounts of such reported costs are subject to some revision due to the subsequent receipt by the Department of federal "open-space" grants, changes in recreation land use boundaries, and other cost accounting adjustments.

The annual amounts of these costs and the sources of funds reported to the Department through December 31, 1969, are presented in Table 1 (pages 6 and 7).

RECREATION AND FISH AND WILDLIFE ENHANCEMENT COSTS OF THE STATE WATER PROJE

Type of Costs, Project Facility, and Source of Funds	Disbursement							
	1952- 1956	1957	1958	1959	1960	1961	1962	1963
JOINT CAPITAL COSTS ALLOCATED TO RECREATION AND FISH AND WILDLIFE ENHANCEMENT: ^(e)								
<u>Frenchman Dam and Lake (50.0%)</u>								
California Water Resources Development Bond Fund							-373	
All other funds	1,617	110,551	247,110	498,348	498,348	409,687	218,339	64,
Subtotal	1,617	110,551	247,110	498,348	498,348	409,687	217,966	65,
<u>Antelope Dam and Lake (100.0%)</u>								
California Water Resources Development Bond Fund					-203	-300	10	26,
All other funds	2,636	2,808	30,391	34,983	200,060	787,980	2,642,	
Subtotal	2,636	2,808	30,391	34,780	199,760	787,990	2,668,	
<u>Grizzly Valley Dam and Lake Davis (94.9%)</u>								
California Water Resources Development Bond Fund							81	22,
All other funds	2,194	2,354	12,945	13,973	2,171	119,232	161,	
Subtotal	2,194	2,354	12,945	13,973	2,171	119,313	183,	
<u>California Aqueduct, Delta to Dos Amigos P.P. (3.5%)</u>								
California Water Resources Development Bond Fund					-19	1,755	674	236,
All other funds	6,110	1,191	2,839	14,994	49,403	44,390	133,832	870,
Subtotal	6,110	1,191	2,839	14,994	49,384	46,145	134,506	1,106,
TOTAL	6,110	7,638	118,552	305,440	596,485	657,763	1,259,775	4,024
SPECIFIC COSTS OF ACQUIRING LAND FOR RECREATION DEVELOPMENTS: ^(f)								
<u>Frenchman Dam and Lake</u>								
California Water Resources Development Bond Fund							-154	
All other funds			42,082					
Subtotal			42,082				-154	
<u>Grizzly Valley Dam and Lake Davis</u>								
California Water Resources Development Bond Fund							26,878	96
Oroville Dam and Lake Oroville					11,021	4,178	24,149	-6
All other funds					11,021	4,178	51,027	89
Subtotal							81,054	181
<u>Thermalito Facilities</u>								
California Water Resources Development Bond Fund							-176	36
All other funds						6,521		
Subtotal						6,521	-176	36
<u>Del Valle Dam and Lake Del Valle</u>								
California Water Resources Development Bond Fund								-5
All other funds							2,783	7
Subtotal							2,783	2
<u>San Luis Dam and Reservoir and O'Neill Forebay^(g)</u>								
California Water Resources Development Bond Fund					388	338	11,284	
All other funds	448	1,688	2,231	21,398	1,147		9	
Subtotal	448	1,688	2,231	21,398	1,535	338	11,293	1
<u>California Aqueduct</u>								
California Water Resources Development Bond Fund							7,652	-8
All other funds					1,076	20,811	8,535	9
Subtotal					1,076	20,811	16,187	1
<u>Castaic Dam and Lake</u>								
California Water Resources Development Bond Fund							2,705	5
All other funds							2,705	
Subtotal							5,410	
<u>Cedar Springs Dam and Silverwood Lake</u>								
California Water Resources Development Bond Fund								48
All other funds						1,374	1,971	
Subtotal						1,374	1,971	47
TOTAL	448	1,688	2,231	63,480	13,632	33,222	85,636	184
TOTAL RECREATION AND FISH AND WILDLIFE ENHANCEMENT COSTS								
California Water Resources Development Bond Fund					166	1,793	45,876	454
All other funds	6,558	9,326	120,783	368,920	609,951	689,192	1,299,535	3,754
GRAND TOTAL	6,558	9,326	120,783	368,920	610,117	690,985	1,345,411	4,208

Footnotes a - h are presented on page 9.

ported to the California Legislature in response to Water Code Section 11912)

Calendar Year ^(b)						Total Disbursements thru 1969	Add: Interest Accruals Thru 1969 ^(c)	Total Costs Reported Thru 1969	Comparison with Costs Previously Reported	
1964	1965	1966	1967	1968	1969				Thru 1968	Increase (d)
5,647	2,632	10,628	22,390	1,285	151	43,930	1,511	45,441	53,593	-8,152
1,598	-49	-5	-161	375	1,901	1,554,149		1,554,149	1,542,732	11,417
3,245	2,583	10,623	22,229	1,660	2,052	1,598,079	1,511	1,599,590	1,596,325	3,265
4,494	257,819	34,772	137,454	-120	9,678	970,342	91,035	1,061,377	1,044,953	16,424
3,290	6	-11	-322	39,406	205,477	3,967,733		3,967,733	3,701,826	265,907
5,784	257,825	34,761	137,132	39,286	215,155	4,938,075	91,035	5,029,110	4,746,779	282,331
1,636	966,778	1,703,818	474,241	176,751	25,199	3,861,396	372,367	4,233,763	4,377,948	-144,185
2,509	3,337	34,448	12,205	13,166	158,382	566,018		566,018	355,586	230,432
3,145	970,115	1,738,266	486,446	189,917	183,581	4,427,414	372,367	4,799,781	4,713,534	86,247
5,059	1,523,433	1,901,876	1,517,527	258,945	85,865	6,352,327	725,715	7,078,042		7,078,042
3,968	18,934	46,239	32,152	200,160	162,548	1,971,898		1,971,898		1,971,898
5,027	1,542,367	1,948,115	1,549,679	459,105	248,413	8,324,225	725,715	9,049,940		9,049,940
3,201	2,772,890	3,731,765	2,195,486	689,968	649,201	19,287,793	1,190,628	20,478,421	11,056,638	9,421,783
-26	-26	-26	-66	-42	-12	-634	-88	-722	-715	-7
-26	-26	-26	-66	-42	-12	42,082	-88	42,082	42,082	-7
922	3,832	22,571	154,022	-15,896	-9	41,448		41,360	41,367	
732	500,643	829,645	53,201	-24,372	3,582	191,442	13,297	204,739	186,385	18,354
045			27,839	11,132	9,131	1,665,857	305,371	1,971,228	1,418,393	552,835
687	500,643	829,645	25,362	-13,240	12,713	23,044		23,044	167,423	-144,379
269	7,494	73,592	-2,615	-1		1,688,901	305,371	1,994,272	1,585,818	408,456
269	7,494	73,592	-2,615	-1		132,244	26,935	159,179	128,913	30,266
373	56,740	1	492,539	-151,726	-680	6,521		6,521	43,436	-36,915
735	-339	-255	-371	-48	570	138,765	26,935	165,700	172,349	-6,649
638	56,401	-254	492,168	-151,774	-110	406,711	54,969	461,680	485,208	-23,528
16	-1,880	-6	-206	6	81	9,336		9,336		9,336
692	29,930	-10,572	998	11,397	28,626	416,047	54,969	471,016	485,208	-14,192
708	28,050	-10,578	792	11,403	28,707	101,183	3,959	105,142	22,742	82,400
020	605,859	13,732	103,097	12,656	21,109	789,801	140,126	929,927	531,540	398,387
982	-26	-41	-54	3,475	3,018	48,115		48,115	17,583	30,532
002	605,833	13,691	103,043	16,131	24,127	837,916	140,126	978,042	549,123	428,919
209	62,254	344,518	759,485	-522,657	1,392	657,804	113,191	770,995	851,803	-80,808
831			-75	51,894	968	61,601		61,601		61,601
040	62,254	344,518	759,410	-470,763	2,360	719,405	113,191	832,596	851,803	-19,207
603	59,553		9,361	-79,141	11,977	50,020	22,059	72,079		72,079
603	59,553		9,361	-259,664	464,406	208,373		208,373		208,373
843	1,324,034	1,273,159	1,541,477	-962,987	544,159	258,393	22,059	280,452		280,452
351	4,045,131	4,935,121	3,720,430	-344,312	158,333	4,393,500	679,819	5,073,319	3,894,793	1,178,526
693	51,793	69,803	16,533	71,293	1,035,027	15,131,752	1,870,447	17,002,199	9,099,351	7,902,848
044	4,096,924	5,004,924	3,736,963	-273,019	1,193,360	8,549,541		8,549,541	5,852,080	2,697,461
						23,681,293	1,870,447	25,551,740	14,951,431	10,600,309 ^(h)

TABLE 2. METHODS OF DETERMINING AND FUNDING RECREATION AND FISH AND WILDLIFE ENHANCEMENT COSTS

<u>Type of Costs</u>	<u>Method of Determining Costs</u>	<u>Method of Funding</u>
<u>Joint Costs (of features jointly used for various project purposes, including either recreation or fish and wildlife enhancement or both)</u>		
Capital costs	Percentages of total actual costs (percentages determined by the Department of Water Resources)	Initially from project funds, reimbursed by tideland oil and gas revenues(a)
Minimum OMP&R Costs	Percentages of total actual costs (percentages determined by the Department of Water Resources)	Annual appropriations made in advance from the General Fund
Variable OMP&R Costs	Actual annual acre-feet delivered multiplied by cost per acre-foot	Annual appropriations made in advance from the General Fund
<u>Specific Costs (of features used exclusively for either recreation or fish and wildlife enhancement or both)</u>		
Capital costs of recreation land	Total actual costs	Initially from project funds, reimbursed by tideland oil and gas revenues (a)
Other capital and all operating costs	Total actual costs	Annual appropriations made in advance from the General Fund or certain special funds

- a) *California Statutes of 1966 (First Extraordinary Session), Chapter 27, provides for:*
- *Reimbursement by tideland oil and gas revenues pursuant to Water Code Section 11915, depending on a reporting and approval procedure defined in Water Code Section 11912.*
 - *Deposit of \$5 million appropriation of the State's annual share of such revenues in the Central Valley Water Project Construction Fund, for release in amounts equal to the approved costs of recreation and fish and wildlife enhancement.*

**TABLE 3. GENERAL FUND APPROPRIATIONS FOR RECREATION AND FISH AND WILDLIFE ENHANCEMENT COSTS
(in thousands of dollars)**

	Fiscal Year								
	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71(a)
<i>Joint Operating Costs (b</i>									
Frenchman Lake	11	11	9	7	15	9	11	12	11
Antelope Lake	—	15	15	16	17	18	26	23	23
Lake Davis	—	—	—	10	15	17	17	20	19
California Aqueduct	—	—	—	—	—	—	500	400	480
Subtotal	11	26	24	33	47	44	554	455	533
<i>Specific Capital Costs</i>									
<i>Other Than for Land</i>									
Planning	96	119	209	198	237	235	155	191	155
Design & Construction (d	488	689	1,126	2,553	6,297	30	1,991	2,606	286
Subtotal	584	808	1,335	2,751	6,534	265	2,146	2,797	441
<i>Specific Operating Costs</i>	—	—	—	—	106(c)	148(c)	201(c)	215(c)	459(c)
TOTAL	595	834	1,359	2,784	6,687	457	2,901	3,467	1,433

- a) *Proposed budget amounts.*
 b) *Not including allocated general operating costs.*
 c) *For recreation developments at Lake Oroville and San Luis Reservoir.*
 d) *Includes appropriations from the Harbors and Watercraft Revolving Fund.*

Footnotes to Table 1 (pages 6 and 7)

a) The various types of recreation and fish and wildlife enhancement costs are determined and funded as indicated in Table 2. Recreation and fish and wildlife enhancement costs not reported in response to Water Code Section 11912 are covered by annual appropriations from the General Fund, as authorized by Section 11913 of the Water Code. These funds are used to pay joint operating costs of project facilities allocated to recreation and fish and wildlife enhancement and to pay specific capital costs (other than those for acquiring land) and specific operating costs of recreation developments associated with project facilities. These appropriations are listed in Table 3.

b) Negative values result from application of miscellaneous income (such as right-of-way rentals and sales and federal open-space grants) to the capital costs of the associated project facility.

c) The calculation of interest accruals is shown in Table 4. Interest charges are accrued only on the portion of annual disbursements financed by the California Water Resources Development Bond Fund and cease when such disbursements, together with cumulative interest accruals thereon, have been reimbursed. Calculations are based on the weighted average interest rate on the sale of bonds authorized under the Burns-Porter Act (4.021% on the \$1,150,000,000 sold through December 31, 1969).

As of December 31, 1969, a total of \$20,000,000 had been deposited in the Central Valley Water Project Construction Fund under the continuing annual \$5,000,000 appropriation of the State's tideland oil and gas revenues authorized by California Statutes of 1966 (First Extraordinary Session), Chapter 27. Deposits by annual appropriation and by month are as follows:

Month	Fiscal Year Appropriation (\$)			
	1966-67	1967-68	1968-69	1969-70
February	74,744	640,726		
March	1,451,434	1,899,350		
April	1,840,800	1,710,255		
May	1,277,402	749,669		
June	355,620			
November			3,086,607	1,706,515
December			1,913,393	3,293,485
TOTAL	5,000,000	5,000,000	5,000,000	5,000,000

d) Major cost changes from those shown in Table 1 of last year's Appendix D, Bulletin 132-69, are briefly

explained in the paragraphs below. These changes reflect not only the additional amounts disbursed in 1969 but also retroactive cost adjustments for the entire 1952 through 1969 period.

Reported joint capital costs allocated to recreation and fish and wildlife enhancement increased \$9,421,783. Most of this increase is due to the joint capital costs for the California Aqueduct facilities from the Delta to Dos Amigos Pumping Plant (\$9,049,940) which are reported herein for the first time. Most of the remaining increase is due to the allocated share of additional capital costs incurred for Antelope Dam and Lake (\$198,000 for settlement of a construction contractor claim) and Grizzly Valley Dam and Lake Davis (\$127,000 for a final payment on a construction contract.)

Reported specific costs of acquiring land for recreation development increased \$1,178,526. This overall increase is the net effect of many cost adjustments combined. Most of the increase is due to the following items (approximated) which are reported herein for the first time: land acquisition costs for recreation developments associated with Cedar Springs Dam and Lake (\$300,000); costs of department personnel engaged in land acquisition activities for recreation developments (\$1,900,000); and credits applied due to receipt of federal open-space grants (-\$1,000,000).

e) The derivations of the percent of joint capital costs allocated to recreation and fish and wildlife enhancement are described in the Department's Bulletin 153-68, "Allocations of Costs Among Purposes of the California State Water Project", February 1968, for Frenchman Dam and Lake (50.0%), Antelope Dam and Lake (100.0%), and Grizzly Valley Dam and Lake Davis (94.9%). The derivation of the percent for California Aqueduct facilities from the Delta to Dos Amigos Pumping Plant (3.5%) is described in Exhibit I of this appendix.

f) Under the authority of Section 346 of the California Water Code, the Department uses available project funds to purchase lands for associated recreation developments concurrently with lands required for project facilities.

g) Amounts shown are 55% (State share) of total costs of acquiring land.

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

CALCULATION OF INTEREST ACCRUALS ON CALIFORNIA WATER RESOURCE

YEAR	ITEM	JOINT CAPITAL COSTS ALLOCATED TO RECREATION AND FISH AND WILDLIFE ENHANCEMENT				Total
		Frenchman Dam and Lake	Antelope Dam and Lake	Grizzly Valley Dam and Lake Davis	California Aqueduct, Delta to Dos Amigos Pumping Plant	
1952-66	(1) Disbursements: (a) California Water Resources Development Bond Fund (b) All other funds	20,104 1,552,034	823,330 3,723,172	3,185,205 382,265	4,489,990 1,577,038	8,518,6 7,234,5
	(2) Interest on (1a) accrued to end of 1966	1,076	72,652	147,785	252,646	474,1
1967	(3) Beginning of year balance to be reimbursed: (a) California Water Resources Development Bond Fund (b) All other funds	21,180 1,552,034	895,982 3,723,172	3,332,990 382,265	4,742,636 1,577,038	8,992,7 7,234,5
	(4) Disbursements during year: (a) California Water Resources Development Bond Fund (b) All other funds	22,390 -161	137,454 -322	474,241 12,205	1,517,527 32,152	2,151,6 43,8
	(5) Reimbursements made available during year applied to: (a) California Water Resources Development Bond Fund (b) All other funds	43,570 1,551,873	1,033,436 2,329,695			1,077,0 3,881,5
	(6) End of year balance, without interest accrual, for: (a) California Water Resources Development Bond Fund (b) All other funds		1,393,155	3,807,231 394,470	6,260,163 1,609,190	10,067,3 3,396,8
	(7) Interest accrual on average annual balance of (3a)&(6a):	426	18,014	143,554	221,211	383,2
	(8) Beginning of year balance to be reimbursed: (a) California Water Resources Development Bond Fund (b) All other funds	426 1,393,155	18,014 1,393,155	3,950,785 394,470	6,481,374 1,609,190	10,450,5 3,396,8
	(9) Disbursements during year: (a) California Water Resources Development Bond Fund (b) All other funds	1,285 375	-120 39,406	176,751 13,166	258,945 200,160	436,8 253,1
(10) Reimbursements made available during year applied to: (a) California Water Resources Development Bond Fund (b) All other funds	1,711 375	17,894 1,432,561	4,127,536 407,636	3,812,027	7,959,1 1,840,5	
(11) End of year balance without interest accrual for: (a) California Water Resources Development Bond Fund (b) All other funds				2,928,292 1,809,350	2,928,2 1,809,3	
(12) Interest accrual on average annual balance of (8a)&(11a):	9	362	79,431	189,181	268,98	
1969	(13) Beginning of year balance to be reimbursed: (a) California Water Resources Development Bond Fund (b) All other funds	9	362	79,431	3,117,473 1,809,350	3,197,2 1,809,3
	(14) Disbursements during year: (a) California Water Resources Development Bond Fund (b) All other funds	151 1,901	9,678 205,477	25,199 158,382	85,865 162,548	120,8 528,3
	(15) Reimbursements made available during year applied to: (a) California Water Resources Development Bond Fund (b) All other funds	160 1,901	10,040 205,477	104,630 158,382	3,203,338 1,311,746	3,318,1 1,677,5
	(16) End of year balance, without interest accrual, for: (a) California Water Resources Development Bond Fund (b) All other funds				660,152	660,15
	(17) Interest accrual on average annual balance of (13a)&(16a):		7	1,597	62,677	64,281
SUMMARY: 1952 thru 1969	(18) Beginning of 1970, balance to be reimbursed: (a) California Water Resources Development Bond Fund (b) All other funds Total		7	1,597	62,677 660,152 722,829	64,281 660,152 724,433
	(19) Disbursements, 1952 thru 1969: (a) California Water Resources Development Bond Fund (b) All other funds Total	43,930 1,554,149 1,598,079	970,342 3,967,733 4,938,075	3,861,396 566,018 4,427,414	6,352,327 1,971,898 8,324,225	11,227,995 8,059,798 19,287,793
	(20) Reimbursements applied thru 1969 to: (a) California Water Resources Development Bond Fund (b) All other funds Total	45,441 1,554,149 1,599,590	1,061,370 3,967,733 5,029,103	4,232,166 566,018 4,798,184	7,015,365 1,311,746 8,327,111	12,354,342 7,399,646 19,753,988
	(21) Total interest accruals, 1952 thru 1969	1,511	91,035	372,367	725,715	1,190,628

ELOPMENT BOND FUND DISBURSEMENTS (in dollars @ 4.021% per annum)

COSTS OF ACQUIRING LAND FOR RECREATION DEVELOPMENTS										GRAND TOTAL
Year	Grizzly Valley Dam and Lake Davis	Oroville Dam and Lake Oroville	Thermalito Facilities	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	
14	53,325	1,633,446	134,860	66,578	10,631	652,939	419,584	107,823	3,078,672	11,597,301
82		30,620	6,521	9,185	49,650	41,676	8,814	3,631	192,179	7,426,688
76	3,482	85,465	9,130	4,244	2,348	41,094	12,088	10,792	168,567	642,726
90	56,807	1,718,911	413,990	70,822	12,979	694,033	431,672	118,615	3,247,239	12,240,027
82		30,620	6,521	9,185	49,650	41,676	8,814	3,631	192,179	7,426,688
66	154,022	53,201	-2,615	492,5399	-206	103,097	759,485	9,361	1,568,818	3,720,430
		-27,839		-371	998	-54	-75		-27,341	16,533
56									- 656	1,076,350
82									42,082	3,923,650
	210,829	1,772,112	141,375	563,361	12,773	797,130	1,191,157	127,976	4,816,713	14,884,107
		2,781	6,521	8,814	50,648	41,622	8,739	3,631	122,756	3,519,571
12	5,381	70,187	5,737	12,750	518	29,980	32,627	4,958	162,126	545,331
12	216,210	1,842,299	147,112	576,111	13,291	827,110	1,223,784	132,934	4,978,839	15,429,438
		2,781	6,521	8,814	50,648	41,622	8,739	3,631	122,756	3,519,571
42	-15,896	-24,372	- 1	-151,726	6	12,656	-522,657	- 79,141	-781,173	-344,312
		11,132		48	11,397	3,475	51,894	-259,664	-181,814	71,293
54	200,314								200,260	8,159,428
										1,840,572
		1,817,927	147,111	424,385	13,297	839,766	701,127	53,793	3,997,406	6,925,698
		13,913	6,521	8,766	62,045	45,097	60,633	-256,033	-59,058	1,750,292
	4,347	-73,589	5,915	20,115	535	33,513	38,700	3,754	180,468	449,451
	4,347	1,891,516	153,026	444,500	13,832	873,279	739,827	57,547	4,177,874	7,375,149
		13,913	6,521	8,766	62,045	45,097	60,633	-256,033	- 59,058	1,750,292
12	- 9	3,582	- 680	81	21,109	1,392	11,977	37,440	37,440	158,333
		9,131	570	28,626	3,018	968	464,406	506,719	506,719	1,035,027
12	4,338								4,326	3,322,494
										1,677,506
		1,895,098	153,026	443,820	13,913	894,388	741,219	69,524	4,210,988	4,210,988
		23,044	6,521	9,336	90,671	48,115	61,601	208,373	447,661	1,107,813
	87	76,130	6,153	17,860	558	35,539	29,776	2,555	168,658	232,939
	87	1,971,228	159,179	461,680	14,471	929,927	770,995	72,079	4,379,646	4,443,927
		23,044	6,521	9,336	90,671	48,115	61,601	208,373	447,661	1,107,813
	87	1,994,272	165,700	471,016	105,142	978,042	832,596	280,452	4,827,307	5,551,740
14	191,442	1,665,857	132,244	406,711	10,512	789,801	657,804	50,020	3,903,757	15,131,752
12		23,044	6,521	9,336	90,671	48,115	61,601	208,373	489,743	8,549,541
8	191,442	1,688,901	138,765	416,047	101,183	837,916	719,405	258,393	4,393,500	23,681,293
12	204,652								203,930	12,558,272
2									42,082	7,441,728
0	204,652								246,012	20,000,000
8	13,297	305,371	26,935	54,969	3,959	140,126	113,191	22,059	679,819	1,870,447

EXHIBIT I

DERIVATION OF ALLOCATION PERCENTAGES
FOR THE CALIFORNIA AQUEDUCT,
SACRAMENTO-SAN JOAQUIN DELTA TO DOS AMIGOS PUMPING PLANT

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CALIFORNIA AQUEDUCT DELTA TO DOS AMIGOS PUMPING PLANT

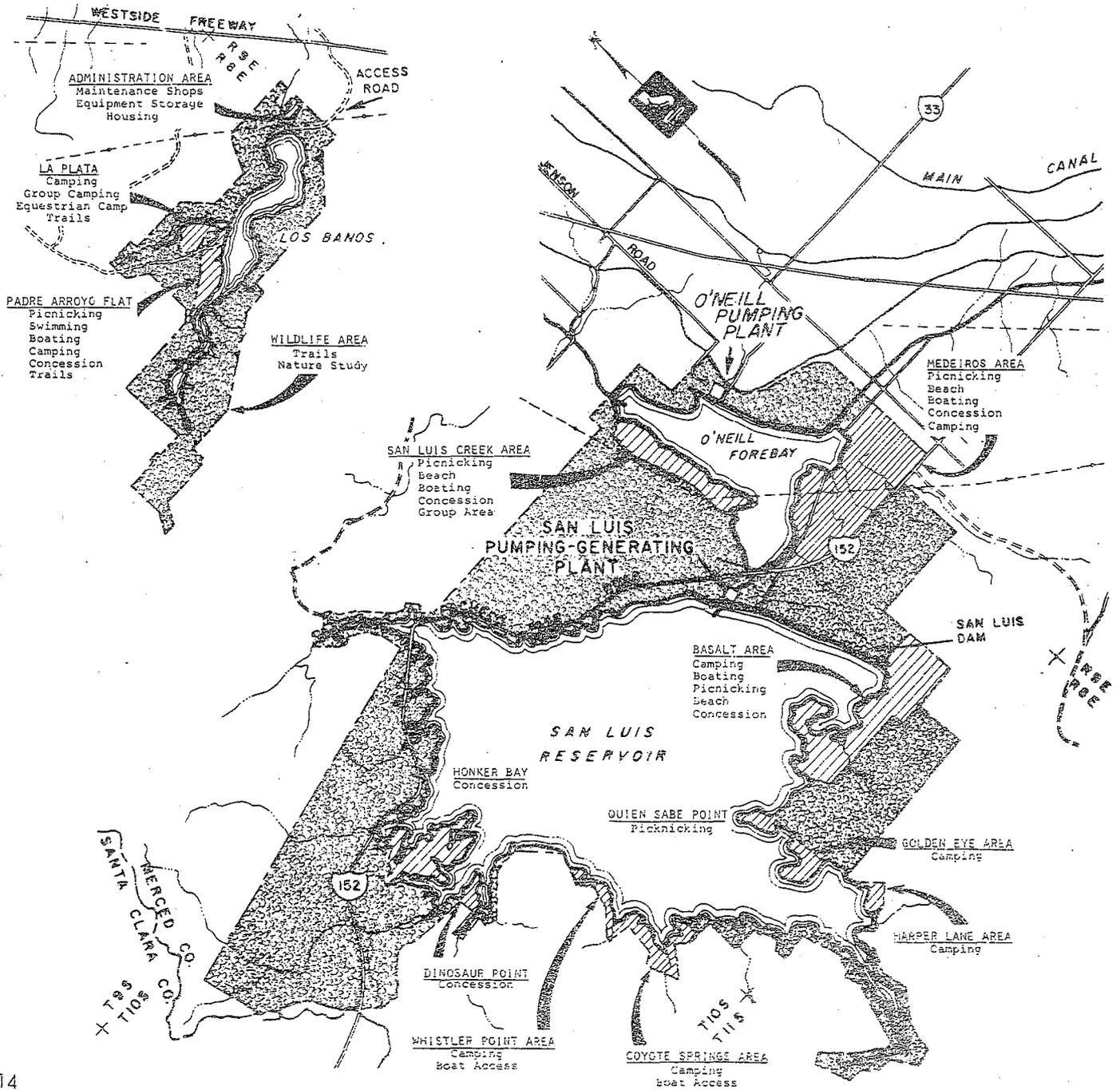
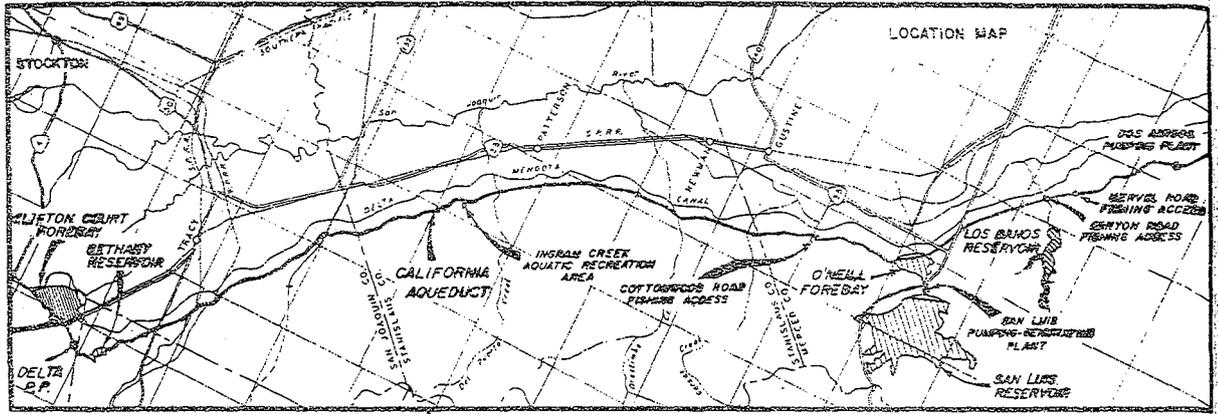


EXHIBIT I

DERIVATION OF ALLOCATION PERCENTAGES FOR THE CALIFORNIA AQUEDUCT, SACRAMENTO-SAN JOAQUIN DELTA TO DOS AMIGOS PUMPING PLANT

Facilities of the California Aqueduct from the Sacramento-San Joaquin Delta to the Dos Amigos Pumping Plant are operated for purposes of water supply, power generation, and recreation and fish and wildlife enhancement. (In accordance with the Department's procedures concerning cost allocations of the State Water Project, recreation and fish and wildlife enhancement is treated as one combined purpose.) An allocation of facility costs among these purposes is required for the Department's administration of:

* The payment provisions of 31 contracts executed under the "Standard Provisions for

Water Supply Contract" between the State and local water wholesaling and retailing agencies.

* The Davis-Dolwig Act provision that the Department shall report to the Legislature the State Water Project facility costs allocated to recreation and fish and wildlife enhancement.

Portions of these facilities are defined by the "Standard Provisions" as "project conservation facilities"—i.e., those constructed primarily to make a project water supply available in the Sacramento-San Joaquin Delta. The "project conservation facilities" include:

* A portion of Clifton Court Forebay, Delta Pumping Plant, O'Neill Forebay, Los Banos

Reservoir, and the Aqueduct from the Delta to, but excluding, the Dos Amigos Pumping Plant.

* All of San Luis Dam, Reservoir, and Pumping-Generating Plant.

The remaining portions of the California Aqueduct facilities from the Delta to Dos Amigos Pumping Plant are defined as "project transportation facilities"—i.e., those constructed primarily to convey a project water supply from the Delta to the distribution systems of water contractors. The significance of "project conservation facilities" and "project transportation facilities" is that the reimbursable costs thereof are assessed water contractors under separate and distinct criteria.

Special Requirements re the Allocation Method

While the "Standard Provisions" require that costs of all project facilities be allocated among reimbursable and nonreimbursable purposes, they do not specify the method by which costs of those project facilities below the Sacramento-San Joaquin Delta shall be allocated.

Under the Department's procedures, costs of those project facilities of the California Aqueduct which are defined in whole or in part as "project conservation facilities" are to be allocated in one allocation among reimbursable and nonreimbursable purposes by the separable cost-remaining benefits method; costs of those project facilities of the California Aqueduct which are defined solely as "project transportation facilities" are to be allocated in one allocation among purposes by the alternative justifiable expenditure method.

Certain of the project facilities from the Delta to the Dos Amigos Pumping Plant are shared jointly by the State and the United States (O'Neill Forebay, Los Banos Reservoir, the Aqueduct between O'Neill Forebay and Dos Amigos Pumping Plant, and San Luis Dam, Reservoir, and Pumping-Generating Plant). Under a

1961 agreement,(1) the Department is paying 55 percent, and the Bureau of Reclamation 45 percent, of the joint construction costs of these state-federal facilities, as well as those from and including Dos Amigos Pumping Plant to Kettleman City. Under the proposed operating agreement for these state-federal facilities, annual joint operating costs, excluding power and energy costs and revenues, will be shared in the same 55:45 ratio, subject to redetermination on June 30, 1975.

Under the Department's procedures, the State's 55 percent share of the joint costs for the state-federal facilities is distributed among the component facilities in proportion to the products of the total joint cost multiplied by the State's percent share of total capacity for each facility. The State's share of capacity ranges from 84.43 percent (for the aqueduct reach terminating at Kettleman City) to 52.38 percent (for San Luis Reservoir and Pumping-Generating Plant, O'Neill Forebay, Los Banos Reservoir, and the aqueduct reach to Dos Amigos Pumping Plant).

By 1965 letter agreement,(2) the Bureau of Reclamation is bearing, as a federal-only responsibility, the costs of Los Banos Reservoir which are allocable to flood protection of the area downstream from the California Aqueduct. The costs of the Reservoir that are allocable to flood protection of the Aqueduct itself are borne by the Department and the Bureau in accordance with the 55:45 ratio as costs in lieu of more expensive crossings of streams traversed by the joint-use Aqueduct.

Under a 1969 agreement,(3) the Department of Parks and Recreation will pay 55 percent, and the Bureau of Reclamation 45 percent (not to exceed \$3,015,000), of the construction costs of the initial recreation developments for the joint-use facilities. After construction by the Bureau, Parks will take possession and control; administer these developments as part of the State Parks System; and, at Parks' expense, operate and maintain these facilities. Presumably, Parks will bear the costs of constructing and operating those future developments which will be necessary to satisfy the continuing growth in recreation demands at the joint-use facilities.

Footnotes for Exhibit I appear on page 25.

Current Derivation of Allocation Percentages

Three major steps, in the following sequence, are required to allocate the total costs of California Aqueduct facilities from the Delta to the Dos Amigos Pumping Plant among purposes of the project conservation facilities and project transportation facilities:

1. Separate those costs (and benefits) allocated to the United States from the total for San Luis Dam, Reservoir, and Pumping-Generating Plant; O'Neill Forebay; Los Banos Reservoir; and the Aqueduct between O'Neill Forebay and Dos Amigos Pumping Plant.

2. Allocate the State's share of total costs for the facilities from the Delta to Dos Amigos Pumping Plant by the separable cost--remaining benefits method among the State Water Project purposes of water supply, power generation, and recreation and fish and wildlife enhancement. [This step is necessary for determining those costs to be reported to the Legislature under the Davis-Dolwig Act and for computing the unit surcharge under Article 30(b) of the Standard Provisions, which is to be assessed project water applied on "excess lands".]

3. Divide the State's share of total costs, by purpose, between project conservation facilities and project transportation facilities by the proportionate use of facilities method, as specified in Article 22(e) of the Standard Provisions. (This step is necessary for determining annual water charges.)

The following sections of this exhibit describe, in detail, the State's share of costs and benefits for California Aqueduct facilities from the Delta to the Dos Amigos Pumping Plant [(1) of the sequence described above] The derivation of the percentages of the State's multiple-purpose costs allocated to the purposes of water supply, power generation, and recreation and fish and wildlife enhancement is shown in the upper portion of Table I-1 [(2) of the sequence described above] The derivation of the percentages applicable to project conservation facilities and project transportation facilities from the Delta to the Dos Amigos Pumping Plant is shown on the lower portion of Table I-1 [(3) of the sequence described above] Computational steps summarized in Table I-1 are outlined in Figure I-2.

The costs of a multiple-purpose facility may be 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

TABLE I-1

DERIVATION OF ALLOCATION PERCENTAGES--CALIFORNIA
AQUEDUCT: DELTA TO DOS AMIGOS PUMPING PLANT

(in thousands of dollars unless otherwise noted)

Item of Benefit or Cost (a)	Water Supply	Power Generation	Recreation (b)	Total
1. Benefits	51,014	619	1,741	53,374
2. Alternative Costs	20,882	619	2,443	23,944
3. Justifiable Costs	20,882	619	1,741	23,242
4. Separable Costs:				
Total	15,318	0	1,084	16,402
Capital	9,201	0	397	9,598
OMP&R	6,117	0	687	6,804
5. Remaining Justifiable Costs	5,564	619	657	6,804
6. Distribution of Remaining Justifiable Costs	81.3%	9.1%	9.6%	100.0%
7. Remaining Joint Costs:				
Total	4,524	506	534	5,564
Capital	3,311	371	391	4,073
OMP&R	1,213	135	143	1,491
8. Total Allocated Project Costs:				
Total	19,842	506	1,618	21,966
Capital	12,512	371	788	13,671
OMP&R	7,330	135	830	8,295
9. Distribution of Total Project Costs:				
Total	90.3%	2.3%	7.4%	100.0%
Capital	91.5%	2.7%	5.8%	100.0%
OMP&R	88.4%	1.6%	10.0%	100.0%
10. Specific Costs:				
Total	3,155	-	871	4,026
Capital (Recreation Features) (b)	0	-	313	313
OMP&R (Recreation Features) (b)	0	-	523	523
Variable OMP&R for Features Jointly Used (c)	3,155	-	35	3,190
11. Allocated Costs of Features Jointly Used:				
Total, Excluding Variable OMP&R	16,687	506	747	17,940
Capital	12,512	371	475	13,358
Minimum OMP&R	4,175	135	272	4,582
12. Distribution of Costs of Features Jointly Used:				
Total, Excluding Variable OMP&R	93.0%	2.8%	4.2%	100.0%
Capital	93.7%	2.8%	3.5%	100.0%
Minimum OMP&R	91.1%	3.0%	5.9%	100.0%
<u>Project Conservation Facilities</u>				
13. Allocated Costs of Features Jointly Used: (d)				
Total, Excluding Variable OMP&R	8,216	506(e)	376	9,098
Capital	6,315	371	247	6,933
Minimum OMP&R	1,901	135	129	2,165
14. Distribution of Costs of Features Jointly Used:				
Total, Excluding Variable OMP&R	90.3%	5.6%	4.1%	100.0%
Capital	91.1%	5.4%	3.5%	100.0%
Minimum OMP&R	87.8%	6.3%	5.9%	100.0%
<u>Project Transportation Facilities</u>				
15. Allocated Costs of Features Jointly Used: (d)				
Total, Excluding Variable OMP&R	8,471	-	371	8,842
Capital	6,197	-	228	6,425
Minimum OMP&R	2,274	-	143	2,417
16. Distribution of Costs of Features Jointly Used:				
Total, Excluding Variable OMP&R	95.8%	-	4.2%	100.0%
Capital	96.5%	-	3.5%	100.0%
Minimum OMP&R	94.1%	-	5.9%	100.0%

a) Annual benefits and costs thru year 2018 converted to equal annual equivalent values, at 4.35% interest, for 50-year period 1968-2017. Items 1-12 associated with separable cost--remaining benefits method; Items 13-16 associated with proportionate use of facilities method.
 b) Includes associated purpose of fish and wildlife enhancement.
 c) Shown herein as "specific" cost to simplify presentation.
 d) Distributed by percentages shown in Table I-6.
 e) All power generation costs of San Luis Pumping-Generating Plant are associated with "project conservation facilities".

FIGURE I-2
 ILLUSTRATIVE CALCULATIONS OF ALLOCATION PERCENTAGES FOR TOTAL (CAPITAL + OMP&R)
 JOINT COSTS OF CALIFORNIA AQUEDUCT: DELTA TO DOS AMIGOS PUMPING PLANT

Step No.	Calculation
1	alternative water supply costs (\$20,882,000) = justifiable water supply costs* (\$20,882,000)
2	power generation benefits alternative power generation costs (\$619,000) = justifiable power generation costs* (\$619,000)
3	recreation benefits (\$1,741,000) = justifiable recreation costs* (\$1,741,000)
4	total project costs (\$21,966,000) - hypothetical power generation and recreation project costs (\$6,648,000) = separable water supply costs (\$15,318,000)
5	total project costs (\$21,966,000) - hypothetical water supply and recreation project costs (\$21,966,000) = separable power generation costs (\$0)
6	total project costs (\$21,966,000) - hypothetical water supply and power generation costs (\$20,822,000) = separable recreation costs (\$1,084,000)
7	justifiable water supply costs (\$20,882,000) - separable water supply costs (\$15,318,000) = remaining justifiable water supply costs (\$5,564,000)
8	justifiable power generation costs (\$619,000) - separable power generation costs (\$0) = remaining justifiable power generation costs (\$619,000)
9	justifiable recreation costs (\$1,741,000) - separable recreation costs (\$1,084,000) = remaining justifiable recreation costs (\$657,000)
10	remaining justifiable water supply costs (\$5,564,000) + remaining justifiable power generation costs (\$619,000) + remaining justifiable recreation costs (\$657,000) = total remaining justifiable costs (\$6,840,000)
11	$\frac{\text{remaining justifiable water supply costs } (\$5,564,000)}{\text{total remaining justifiable costs } (\$6,840,000)} \times 100 = \text{percent distribution of remaining justifiable water supply costs } (81.3\%)$
12	$\frac{\text{remaining justifiable power generation costs } (\$619,000)}{\text{total remaining justifiable costs } (\$6,840,000)} \times 100 = \text{percent distribution of remaining justifiable power generation costs } (9.1\%)$
13	$\frac{\text{remaining justifiable recreation costs } (\$657,000)}{\text{total remaining justifiable costs } (\$6,840,000)} \times 100 = \text{percent distribution of remaining justifiable recreation costs } (9.6\%)$
14	total allocated project costs (\$21,966,000) - separable project costs (\$16,402,000) = remaining joint project costs (\$5,564,000)
15	remaining joint project costs (\$5,564,000) \times percent distribution of remaining justifiable water supply costs (81.3%) = remaining joint water supply costs (\$4,524,000)
16	remaining joint project costs (\$5,564,000) \times percent distribution of remaining justifiable power generation costs (9.1%) = remaining joint power generation costs (\$506,000)
17	remaining joint project costs (\$5,564,000) \times percent distribution of remaining justifiable recreation costs (9.6%) = remaining joint recreation costs (\$534,000)
18	remaining joint water supply costs (\$4,524,000) + separable water supply costs (\$15,318,000) = total costs allocated to water supply (\$19,842,000)
19	remaining joint power generation costs (\$506,000) + separable power generation costs (\$0) = total costs allocated to power generation (\$506,000)
20	remaining joint recreation costs (\$534,000) + separable recreation costs (\$1,084,000) = total costs allocated to recreation (\$1,618,000)
21	specific water supply costs (\$3,155,000) + specific power generation costs (\$0) + specific recreation costs (\$871,000) = total specific costs (\$4,026,000)
22	total allocated water supply costs (\$19,842,000) - specific water supply costs (\$3,155,000) = joint costs allocated to water supply (\$16,687,000)
23	total allocated power generation costs (\$506,000) - specific power generation costs (\$0) = joint costs allocated to power generation (\$506,000)
24	total allocated recreation costs (\$1,618,000) - specific recreation costs (\$871,000) = joint costs allocated to recreation (\$747,000)
25	joint costs allocated to water supply (\$16,687,000) + joint costs allocated to power generation (\$506,000) + joint costs allocated to recreation (\$747,000) = total joint project costs (\$17,940,000)
26	51.90% of capital costs of total joint project costs (\$6,933,000) + 47.25% of OMP&R costs of total joint project costs (\$2,165,000) = total joint project costs allocated to conservation facilities (\$9,098,000)
27	48.10% of capital costs of total joint project costs (\$6,425,000) + 52.75% of OMP&R costs of total joint project costs (\$2,417,000) = total joint project costs allocated to transportation facilities (\$8,842,000)
28	51.90% of capital costs of joint costs allocated to recreation (\$247,000) + 47.25% of OMP&R costs of joint costs allocated to recreation (\$129,000) = total joint conservation facility costs allocated to recreation (\$376,000)
29	48.10% of capital costs of joint costs allocated to recreation (\$228,000) + 52.75% of OMP&R costs of joint costs allocated to recreation (\$143,000) = total joint transportation facility costs allocated to recreation (\$371,000)
30	joint costs allocated to power generation (\$506,000) = total joint conservation facility costs allocated to power generation (\$506,000)
31	total joint project costs allocated to conservation facilities (\$9,098,000) - total joint conservation facility costs allocated to recreation (\$376,000) - total joint conservation facility costs allocated to power generation (\$506,000) = total conservation facility costs allocated to water supply (\$8,216,000)
32	$\frac{\text{total joint conservation facility costs allocated to water supply } (\$8,216,000)}{\text{total joint project costs allocated to conservation facilities } (\$9,098,000)} \times 100 = \text{percent of total joint conservation facility costs allocated to water supply } (90.3\%)$
33	$\frac{\text{total joint conservation facility costs allocated to power generation } (\$506,000)}{\text{total joint project costs allocated to conservation facilities } (\$9,098,000)} \times 100 = \text{percent of total joint conservation facility costs allocated to power generation } (5.6\%)$
34	$\frac{\text{total joint conservation facility costs allocated to recreation } (\$376,000)}{\text{total joint project costs allocated to conservation facilities } (\$9,098,000)} \times 100 = \text{percent of total joint conservation facility costs allocated to recreation } (4.1\%)$
35	percent of total joint conservation facility costs allocated to water supply (90.3%) + percent of total joint conservation facility costs allocated to power generation (5.6%) + percent of total joint conservation facility costs allocated to recreation (4.1%) = 100%
36	total joint project costs allocated to transportation facilities (\$8,842,000) - total joint transportation facility costs allocated to recreation (\$371,000) = total joint transportation facility costs allocated to water supply (\$8,471,000)
37	$\frac{\text{total joint transportation facility costs allocated to water supply } (\$8,471,000)}{\text{total joint project costs allocated to transportation facilities } (\$8,842,000)} \times 100 = \text{percent of total joint transportation facility costs allocated to water supply } (95.8\%)$
38	$\frac{\text{total joint transportation facility costs allocated to recreation } (\$371,000)}{\text{total joint project costs allocated to transportation facilities } (\$8,842,000)} \times 100 = \text{percent of total joint transportation facility costs allocated to recreation } (4.2\%)$
39	percent of total joint transportation facility costs allocated to water supply (95.8%) + percent of total joint transportation facility costs allocated to recreation (4.2%) = 100%

* Justifiable costs are the total benefits of a purpose or the costs of the cheapest single-purpose alternative providing the same benefits, whichever are less.

recreation features) 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 features (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 derived *separable* and *remaining joint* costs. (*Separable costs for each purpose* of a multiple-purpose facility are derived 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 of a facility* 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 purposes to be accommodated by a multiple-purpose facility.

Under the *separable cost-remaining benefits* method, the estimated total costs of a multiple-purpose facility are allocated to each purpose of the facility by the sum of:

* The estimated *separable* costs of each purpose (Item 4 of Table I-1).

* A share of the estimated *remaining joint* costs allocated among purposes (Item 7 of Table I-1) on the basis of *remaining justifiable* costs of each purpose (Items 5 and 6 of Table I-1).

Conventionally, the total costs allocated to each purpose (Item 8 of Table I-1), expressed as a percentage of such total costs (Item 9 of Table I-1), are the final result of the allocation procedure.

However, because 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 of Table I-1) by deducting the *estimated specific* costs. The resulting percentages can then be applied to the actual joint costs of project facilities of the California Aqueduct from the Delta to Dos Amigos Pumping Plant as accounted by the Department.

For cost allocations of the project transportation facilities, total operation, maintenance, power, and replacement (OMP&R) costs are classified as either *minimum OMP&R* costs (those incurred irrespective of the amount of project water deliveries) or *variable OMP&R* costs (those incurred in an amount which is dependent upon and varies with the magnitude of project water deliveries). *Minimum OMP&R* costs are allocated among purposes and among contractors on the basis of percentages that are constant for all years. However, *variable OMP&R* costs are distributed annually in proportion to the actual water quantities delivered for each purpose and for each contractor. Thus, for derivations of allocation percentages applicable to the costs of project transportation facilities, estimated *variable OMP&R* costs are deducted from estimated total annual OMP&R costs (Item 10, Table I-1) so that the resulting percentages are applicable to the capital and *minimum OMP&R* costs only.

The estimated joint costs are allocated between project conservation facilities and project transportation facilities (Items 13 and 15 of Table I-1, respectively) by the proportionate use of facilities method, as described in the

Department's Bulletin 132-69, "The California State Water Project in 1969", June 1969 (p. 108). [Joint costs allocated to power generation are associated only with the project conservation facilities, since the San Luis Pumping-Generating Plant is defined as such a facility. The joint costs allocated to nonreimbursable purposes (recreation and fish and wildlife enhancement) are distributed between project conservation facilities and project transportation facilities in the same ratio that joint costs allocated to reimbursable purposes (water supply and power generation) are distributed between these two classifications of facilities.] The resulting percentages (Items 14 and 16 of Table I-1) can then be applied to the *actual joint* costs of the project conservation facilities and project transportation facilities for the California Aqueduct from the Delta to the Dos Amigos Pumping Plant as accounted by the Department.

All items of benefits and costs shown in Table I-1 are stated in terms of equal annual equivalent values for the 50-year period 1968 through 2017 at 4.357 percent interest. The period of analysis represents the first 50 years of operation of the features jointly used by purposes for California Aqueduct facilities from the Delta to the Dos Amigos Pumping Plant.

The applicable interest rate represents the projection shown in Bulletin 132-69 (p. 71) of the "project interest rate". The "project interest rate", which is the rate basic to payments of reimbursable State Water Project costs, is defined in Article 1(r) of the Standard Provisions as the weighted average interest costs on cumulative sales of Burns-Porter bonds.(4) Currently, this rate is 4.021 percent for the \$1,150 million of such bonds sold to date. Assuming that the remaining \$600 million of such bonds will be sold at the current statutory limit of 5 percent, the rate will eventually escalate to 4.357 percent.

The remainder of this exhibit explains the bases of each item shown in Table I-1.

Benefits are the net value of goods and services that will directly result from operation of California Aqueduct facilities from the Delta to the Dos Amigos Pumping Plant.

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 benefit for agricultural use is taken as the difference between net returns from farming operations with and without project water, reduced by the costs of local distribution systems between project facilities and farm headgates. The net return from farming operations is considered to be the remainder of gross income less all farm expenses (except water costs and either land rental or interest on land investment).

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 I-2. These estimates reflect entitlement water service under long-term contracts. Excluded are sur-

plus water service under short-term contracts and federal water service from joint state-federal facilities.(5)

The unit benefits shown in Table I-2 for entitlements of 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, and would include service areas to be supplied from the East Branch of the California Aqueduct.
- Desalting Area III, the Santa Maria 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 desalting plant and transportation facilities required to convey water from the plant to the same delivery points to 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 could 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—approximately \$81 per acre-foot.

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 that are assignable to the California Aqueduct facilities from the Delta to the Dos Amigos Pumping Plant is estimated to be \$51,014,000 annually:

- (a) Estimated total costs of California Aqueduct, Delta to Dos Amigos Pumping Plant allocable to water supply.....\$ 19,842,000
- (b) Estimated total costs of the State Water Project, excluding the Upper Feather Division, allocable to water supply\$129,266,000
- (c) Percent (a) of (b) ... 15.35%
- (d) Estimated total water supply benefits of the State Water Project, excluding the Upper Feather Division (from Table I-2)\$332,333,000
- (e) Total water supply benefits assigned to the California Aqueduct, Delta to Dos Amigos Pumping Plant ... \$ 51,014,000

TABLE I-2

TOTAL WATER SUPPLY BENEFITS FROM FACILITIES OF STATE WATER PROJECT (EXCEPT UPPER FEATHER DIVISION)

	Maximum Annual Entitlement (a) (acre-feet)	Equal Annual Equivalent Entitlement(b) (acre-feet)	Estimated Unit Net Benefits(c) (dollars per acre-foot)	Equal Annual Equivalent Net Benefits(b) (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	38.87	32,337
Central Coastal	82,700	30,999	181.81	5,636
Southern California	2,497,500	1,408,910	204.41	287,999
PROJECT TOTAL	4,227,300	2,461,450	135.02	332,333

a) Not including 2,700 acre-feet for Upper Feather Division.
 b) Annual values thru 2017, converted to equal annual equivalents for 50-year period 1968-2017, at 4.357% interest.
 c) Measured at points of delivery from project facilities.

Power Generation Benefits

San Luis Reservoir is being operated on a seasonal basis. Water is placed into reservoir storage during the fall, winter, and spring, when surplus flows are generally available in the Delta; and water is released from storage during the summer to meet delivery requirements south of the Dos Amigos Pumping Plant. Water is pumped into the Reservoir through San Luis Pumping-Generating Plant during offpeak periods; and water is released from the Reservoir, and power generated, during either onpeak or offpeak periods.

For the estimates basic to this exhibit (and to those shown in Bulletin 132-69), the costs of pumping water into San Luis Reservoir and the value of power generated by releases thereof are incidental to the delivery of project water entitlements under long-term water supply contracts. As such, estimated power generation benefits represent the gross value of the generation—not reduced by associated pumping costs. The Department, in cooperation with the Bureau of Reclamation, is investigating the possibility of a "pumped storage" operation at San Luis Reservoir and O'Neill Forebay. Under such an operation, the value of power generation would be noticeably increased over those estimates basic to this exhibit. Also, inclusion of future surplus water deliveries under short-term contracts would tend to increase the value of power generation over those estimates basic to this exhibit; however, such deliveries could not be estimated now with any certainty.

Under executed interim and proposed long-term operating agreements, the State and the Bureau of Reclamation will share the power capacity and energy generated by operation of the San Luis Pumping-Generating Plant in proportion to the water delivery quantities derived from San Luis Reservoir releases which are made to downstream service areas of the State Water Project and the Central Valley Project, respectively.

Table 1-3 presents the estimated state share of annual energy generation by San Luis Pumping-Generating Plant, during both onpeak and offpeak periods, and the estimated annual value (benefit) to be realized from such generation. The estimated value of that portion of recovery-plant generation which would be used to meet part of the Project's power requirement for pumping entitlement water is estimated as being equivalent to the cost of power capacity and energy

which would otherwise have to be purchased from alternative sources. These alternative sources include the Edward Hyatt and Thermalito Powerplants (until April 1, 1969), Canadian Entitlement power contracts, Bureau of Reclamation, Bonneville Power Administration, and the California Suppliers. Estimated values of onpeak power generation through 1977 are based on projections of the planned operation of the State Water Project and the provisions of contracts covering these power sources. However, lower power costs for the State Water Project may be expected in the future if the State is able to realize a share of the economies due to construction of large nuclear generating units by the electric utilities in California. In estimating power costs for Bulletin 132-69, the Department assumed that such economies will be realized by the Project commencing in 1978. (See pages 58 and 65, Bulletin 132-69.)

The equal annual equivalent state share of power generation benefits for the San Luis Pumping-Generating Plant, based on 4.357 percent interest for the 50-year period 1968-2017, is estimated to be \$619,000.

TABLE I-3
POWER GENERATION BENEFITS
(STATE SHARE)

Decade	Generation (kilowatt-hours)	Value of Generation
1968-77	538,000,000	\$ 3,193,000
1978-87	1,141,000,000	8,864,000
1988-97	1,363,000,000	7,936,000
1998-07	1,530,000,000	7,670,000
2008-17	1,530,000,000	7,670,000
TOTAL	6,102,000,000	\$35,333,000
Equal annual equivalent benefits at 4.357% interest for 50-year period 1968-2017.....		\$ 619,000

Recreation and Fish and Wildlife Enhancement Benefits

For this exhibit, estimated recreation and fish and wildlife enhancement benefits for the California Aqueduct from the Delta to the Dos Amigos Pumping Plant include those associated with initial and future recreation and fish and wildlife enhancement features adjacent to San Luis Reservoir, O'Neill Forebay, and Los Banos Reservoir.

In addition to the above features, recreation development plans are in various stages of formulation for Clifton Court Forebay, Bethany Reservoir, and

Ingram Creek Aquatic Recreation Area. Already completed and in operation are fishing access sites on the California Aqueduct at Canyon Road, Mervel Road, and Cottonwood Road. The benefits that may be associated with these recreation and fish and wildlife enhancement features are not included in this exhibit for the following reasons:

- Recreation development of Clifton Court Forebay will probably be privately financed and operated. Recreation costs and benefits of such developments are not available at this time.
- A recreation development plan for Bethany Reservoir is now being prepared by the Department of Parks and Recreation. Estimated recreation costs and benefits will not be available until the end of fiscal year 1969-70.
- Under Resources Agency policy,(6) the construction of Ingram Creek Aquatic Recreation Area(7) is of very low priority. In view of limited state funds, the time when this development will be in operation is impossible now to predict.
- Fishing access sites for state water projects are constructed and operated by the Wildlife Conservation Board of the Resources Agency, pursuant to Chapter 411, California Statutes of 1968. The estimated costs and benefits of these sites are quite minor in relation to those constructed or planned at San Luis Reservoir, O'Neill Forebay, and Los Banos Reservoir. (The total construction cost of the three fishing access sites now in operation was less than \$25,000.)

For this exhibit, the data shown in the Department's Bulletin 117-7, "San Luis Reservoir and Forebay Recreation Development Plan", May 1965, were updated during the spring of 1969 by the Department of Parks and Recreation, under a service agreement with the Department of Water Resources. The updated data reflect current levels of expenditures for recreation and fish and wildlife enhancement features, which are considerably less than when Bulletin 117-7 was prepared. Unit recreation and fish and wildlife enhancement benefits were also updated. These unit benefits for San Luis Reservoir and O'Neill Forebay are estimated to vary from \$1.92 per recreation day commencing in 1968, to \$1.80 per recreation day for 1988 and thereafter. The projected decrease in unit benefit is due to expected increases in water surface fluctuations as water entitlements increase to the maximum annual amounts provided for by the water supply contracts.

Recreation use at Los Banos Reservoir was estimated in 1967 by the Department of Parks and Recreation. Unit recreation values and specific re-

TABLE I-4

TOTAL (STATE AND FEDERAL) RECREATION AND
FISH AND WILDLIFE ENHANCEMENT USE AND BENEFITS

Decade	Recreation Use (recreation days)	Unit Value (dollars per recreation day)	Total Benefits (dollars)
San Luis Reservoir and O'Neill Forebay			
1968-77	1,465,000	1.92	2,813,000
1978-87	7,000,000	1.92	13,440,000
1988-97	15,000,000	1.80	27,000,000
1998-07	20,050,000	1.80	36,090,000
2008-17	32,500,000	1.80	58,500,000
Subtotal	76,015,000		137,843,000
Equal annual equivalent benefit at 4.357% interest for 50-year period 1968-2017.....			
			1,712,000
Los Banos Reservoir			
1968-77	300,000	1.83	549,000
1978-87	1,160,000	1.83	2,123,000
1988-97	2,300,000	1.83	4,209,000
1998-07	3,025,000	1.83	5,536,000
2008-17	3,830,000	1.83	7,009,000
Subtotal	10,615,000		19,426,000
Equal annual equivalent benefit at 4.357% interest for 50-year period 1968-2017.....			
			230,000
Total equal annual equivalent benefits at 4.357% interest for 50-year period 1968-2017.....			
			1,942,000

creation costs were determined in the spring of 1969 by the Department of Parks and Recreation expressly for this exhibit. The unit benefit is estimated to be \$1.83 per recreation day based on natural flow into Los Banos Reservoir (in lieu of a possible pump diversion from the California Aqueduct which would stabilize the reservoir water surface during the recreation season).

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 unit values: (a) 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 (b) esthetic qualities of site (fluctuations in water surface of reservoir and other aquatic factors, geologic-topographic factors, vegetative cover, climate, and other environmental influences). Point scores of these factors are established as follows:

Factor	Rating	Point Score
Variety and quality of of recreation	Poor	1
	Fair	3
	Good	5
Esthetic qualities of the site	Poor	1
	Fair	3
	Good	5

The point scores resulting from ap-

plication of these factors are added to the minimum value of \$0.50 per recreation day; with each point valued at \$0.20. Thus, the maximum value resulting from this evaluation is \$2.50 per recreation day.

Current estimates of the total (both state and federal shares) recreation use and benefits for San Luis Reservoir, O'Neill Forebay, and Los Banos Reservoir are summarized in Table I-4.

Under the agreement between the Bureau of Reclamation and the Department of Parks and Recreation, (8) estimates are that the Bureau will contribute \$2,497,000 of the \$5,550,000 required to construct the initial recreation and fish and wildlife enhancement features at San Luis and Los Banos Reservoirs and O'Neill Forebay. Of the estimated total \$2,497,000 in federal contributions, \$2,289,000 will be for features at San Luis Reservoir and O'Neill Forebay, and \$208,000 will be for features at Los Banos Reservoir. The State has assumed responsibility for the operation, maintenance and replacement costs of these initial recreation and fish and wildlife enhancement features. In addition, \$11,627,000 will be required to construct future features to satisfy the continuing growth in recreation demand. Presumably, the State will assume the responsibility for construction, operation, maintenance, and replacement costs for these future features. The estimated division of total specific recreation and fish and wildlife enhancement costs between the State and the Bureau for both initial and future features is shown in Table I-5.

TABLE I-5

TOTAL (STATE AND FEDERAL) RECREATION AND
FISH AND WILDLIFE ENHANCEMENT SPECIFIC COSTS

(thousands of dollars)

Recreation and Fish and Wildlife Enhancement Features	First Costs (a)	Equal Annual Equivalent Costs at 4.357% Interest for 50-Year Period 1968-2017		
		Capital	OMP&R	Total
San Luis Reservoir and O'Neill Forebay				
Federal share	2,289	87	0	87
State share	11,807	258	449	707
Total	14,096	345	449	794
Los Banos Reservoir				
Federal share	208	8	0	8
State share	2,873	55	74	129
Total	3,081	63	74	137
Total, Delta to Dos Amigos Pumping Plant				
Federal share	2,497	95	0	95
State share	14,680	313	523	836
Total	17,177	408	523	931

a) "First" costs represent total capital costs exclusive of interest charges during construction period.

Recreation and fish and wildlife enhancement benefits realized at the joint-use facilities are assumed to be divided between the state and federal projects in proportion to the equal annual equivalent recreation and fish and wildlife enhancement costs financed by each. The State's share of these benefits, for project facilities from the Delta to the Dos Amigos Pumping Plant, is derived as follows:

(Equal Annual Equivalent Values unless otherwise noted)

San Luis Reservoir and O'Neill Forebay		Los Banos Reservoir	
a. State's share of recreation costs.....	\$ 707,000	a. State share of recreation costs.....	\$ 129,000
b. Total recreation costs.....	794,000	b. Total recreation costs.....	137,000
c. Percent a of b.....	89.0%	c. Percent a of b.....	94.2%
d. Total recreation benefits.....	\$1,712,000	d. Total recreation benefits.....	\$ 230,000
e. State share of recreation benefits.....	\$1,524,000	e. State share of recreation benefits.....	\$ 217,000

Total Facilities From Delta to Dos Amigos Pumping Plant

State share of recreation benefits.....\$1,741,000

Total Project Costs

The estimated state share of costs of California Aqueduct facilities from the Delta to the Dos Amigos Pumping Plant are summarized in Table I-6. As previously stated, these facilities are defined by the Standard Provisions as either "project conservation facilities" or "project transportation facilities". These facilities, in turn, consist of (a) features that are jointly used by purposes (water supply, power generation, and recreation and fish and wildlife enhancement) and (b) recreation and fish and wildlife enhancement features.

The estimated state shares of costs of features that are jointly used by purposes are shown in Bulletin 132-69. As described in that bulletin (page 108), the estimated capital and minimum OMP&R costs of these features are divided between project conservation facilities and project transportation facilities in the following proportions (conservation facilities : transportation facilities):

Delta to O'Neill Forebay..... 31:69
 O'Neill Forebay to Dos Amigos Pumping Plant (including Los Banos Reservoir)..... 27:73
 San Luis Dam, Reservoir, and Pumping-Generating Plant.....100:00

Variable OMP&R costs (primarily power and energy costs consumed in the operation of the Delta Pumping Plant) are allocated on the basis of annual water quantities placed in San Luis Reservoir storage (conservation) and conveyed directly from the Delta to the Dos Amigos Pumping Plant (transportation). Such costs which are associated with the San Luis Reservoir storage, including the pumping costs of the San Luis Pumping-Generating Plant, are reclassified as minimum OMP&R costs—rather than variable OMP&R costs. (Power generation values are treated in this exhibit as benefits and

not as negative OMP&R costs which would be applied to reduce the OMP&R costs of pumping water through the San Luis Pumping-Generating Plant.)

For a year when San Luis Reservoir storage is being withdrawn to provide for downstream deliveries, the actual

variable OMP&R costs of the Delta Pumping Plant for the year are increased. This increase is in proportion to the ratio of the annual delivery quantity derived from San Luis Reservoir storage divided by the actual annual delivery quantity conveyed through the Plant.

TABLE I-6

TOTAL PROJECT COSTS (STATE SHARE)

(thousands of dollars unless otherwise noted)

Facilities and Features	First Costs	Capital Costs	Equal Annual Equivalent Costs at 4.357% Interest for 50-Year Period 1968-2017			
			OMP&R Costs			Total
			Minimum	Variable	Total	
Features Jointly Used by Purposes						
<i>Delta to O'Neill Forebay</i>						
Project Conservation Facilities	50,518	2,536	989	0	989	3,525
Project Transportation Facilities	112,444	5,644	2,233	3,190	5,423	11,067
<i>O'Neill Forebay to Dos Amigos Pumping Plant</i>						
Project Conservation Facilities	5,355	289	68	0	68	357
Project Transportation Facilities	14,470	781	184	0	184	965
<i>San Luis Dam, Reservoir, and Pumping-Generating Plant</i>						
Project Conservation Facilities	75,375	4,108	1,108	0	1,108	5,216
Project Transportation Facilities	0	0	0	0	0	0
TOTALS, DELTA TO DOS AMIGOS PUMPING PLANT						
Project Conservation Facilities	131,248	6,933	2,165	0	2,165	9,098
Project Transportation Facilities	126,914	6,425	2,417	3,190	5,607	12,032
<i>Percent Distribution</i>						
Project Conservation Facilities	-	51.90%	47.25%	0	27.86%	43.06%
Project Transportation Facilities	-	48.10%	52.75%	100.0%	72.14%	56.94%
Associated Recreation and Fish and Wildlife Enhancement Features						
<i>San Luis Reservoir and O'Neill Forebay (state share)</i>						
Los Banos Creek Reservoir (state share)	11,807	258	449	0(a)	449	707
	2,873	55	74	0(a)	74	129
Total California Aqueduct Facilities, From Delta to Dos Amigos Pumping Plant						
Features jointly used	258,162	13,358	4,582	3,190	7,772	21,130
Recreation and fish and wildlife enhancement features (a)	14,680	313	523	0	523	836
TOTAL	272,842	13,671	5,105	3,190	8,295	21,966
a) Certain annual operating costs of conveying recreation water from features jointly used for uses within recreation and fish and wildlife enhancement features will be of a "variable" character. However, all such costs are included herein under the "minimum" category, since the Standard Provisions do not apply.						

The increase of such costs for repayment (under the Transportation Charge) is offset by credits to the minimum OMP&R costs of San Luis Reservoir (repaid under the Delta Water Charge). This "banking" procedure is accounted for in the estimated OMP&R costs shown in Table I-6.

The values under the first heading of Table I-6 show the division of costs of

features jointly used by purposes between the project conservation facilities and the project transportation facilities and develop the percents of total costs assigned to these two types of facilities. These percents apply for dividing the costs (and benefits) of recreation and fish and wildlife enhancement features between the project conservation facilities and the project transportation

facilities.

The state shares of specific costs of recreation and fish and wildlife enhancement features are summarized under the second heading of Table I-6 (from Table I-5). The total state shares of costs of all project facilities from the Delta to the Dos Amigos Pumping Plant are shown under the third heading of Table I-6.

Alternative Costs

In project formulation and cost allocation studies, the alternative costs of a purpose included in the planned operation of 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. For water supply, the alternative means also include a desalting plant or a waste-water reclamation plant. For recreation and fish and wildlife enhancement, the alternative means also include enlargement of an existing, water-related recreational development in the immediate vicinity. Inclusion of a purpose in the planned operation of 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 are less.

cluded in the multiple-purpose facilities. Thus, the cost of the alternative single-purpose facilities is equal to the total costs of the multiple-purpose facilities, less:

- The specific costs of recreation and fish and wildlife enhancement features.
- The incremental costs of providing the last 74 cubic feet per second of capacity in the Aqueduct from the Delta to Dos Amigos Pumping Plant, which is required for the conveyance of recreation water to use below Dos Amigos.
- The estimated reduction in costs of Los Banos Reservoir if sized to a total capacity of 22,000 acre-feet for flood protection of the California Aqueduct only rather than the present capacity of 35,500 acre-feet for flood protection and recreation.
- A \$100,000 reduction in operating costs for San Luis Reservoir due to slightly decreased pumping lifts at San Luis Pumping-Generating Plant and to slightly decreased evaporation

losses. (The capacity of San Luis Reservoir could be decreased from a total of 2,040,552 acre-feet to a total of 2,021,000 acre-feet; however, the effect on capital costs of the Reservoir would be insignificant.)

The total estimated costs of this hypothetical facility are summarized in Table I-7.

Power Generation Alternative Costs

In this exhibit, the alternative costs of power generation are assumed to be those additional payments the State would have to make under executed power purchase contracts to obtain additional power capacity and energy in the same amounts as are made available for project pumping by San Luis Pumping-Generating Plant. These alternative costs, estimated to be \$619,000 on an equal annual equivalent basis, also constitute the measure for estimating power generation benefits. They have been discussed previously in this exhibit.

Water Supply Alternative Costs

The least expensive single-purpose means of providing the same water supply benefits as will be provided by the multiple-purpose California Aqueduct facilities from the Delta to the Dos Amigos Pumping Plant are estimated to be those multiple-purpose facilities resized so as to accommodate the purpose of water supply only. The costs of the single-purpose water supply facilities essentially would be the costs of the features jointly used by purposes of the complete multiple-purpose facilities. Recreation and fish and wildlife enhancement features would not be needed. Elimination of the power generation purpose would not save any costs, since reversible pumping-generating units would be required as the cheapest means of dissipating energy from San Luis Reservoir releases. Disposal of this energy would require transmission lines and switchyards as in-

TABLE I-7
WATER SUPPLY ALTERNATIVE COSTS (STATE SHARE)
(thousands of dollars)

Item	First Costs	Equal Annual Equivalent Costs at 4.357% Interest: 50-Year Period 1968-2017		
		Capital	OMP&R	Total
Total project costs	272,842	13,671	8,295	21,966
<i>Less: Costs attributable to recreation:</i>				
Cost of providing for 74 cubic feet per second of conveyance capacity	3,655	85	63	148
Specific costs of recreation and fish and wildlife enhancement features	14,162	300	523	823
Additional costs of Los Banos Reservoir as built (35,500 acre-feet capacity) over and above that size required only for flood protection of Aqueduct (22,000 acre-feet)	218	12	1	13
Additional pumping costs at San Luis Pumping-Generating Plant due to recreation	-	-	100	100
<i>remainder: Water supply alternative costs</i>	254,807	13,274	7,608	20,882

Recreation and Fish and Wildlife Enhancement Alternative Costs

The least expensive single-purpose means of providing the same recreation and fish and wildlife enhancement benefits as the multiple-purpose facilities from the Delta to the Dos Amigos Pumping Plant are estimated to include:

- An aqueduct from the Delta to San Luis Reservoir, sized to provide 274 cubic feet per second of conveyance capacity; 200 cubic feet per second of which is for maintaining a single-purpose San Luis Reservoir at a constant water surface elevation, and 74 cubic feet per second of which is to provide recreation water for use below Dos Amigos.
- The State's share of a San Luis Pumping Plant sized to pump 200 cubic feet per second of water into a San Luis Reservoir.
- The State's share of a San Luis Dam and Reservoir of 72,700 acre-feet gross capacity.
- The State's share of a Los Banos Reservoir of 20,500 acre-feet gross capacity.

• The State's share of recreation and fish and wildlife enhancement features essentially as planned for the multiple-purpose facilities.

Table I-8 summarizes the total estimated State's share of the costs of this hypothetical facility.

TABLE I-8
WATER SUPPLY SEPARABLE COSTS (STATE SHARE)
(thousands of dollars)

Item	First Costs	Equal Annual Equivalent Costs at 4.357% Interest: 50-Year Period 1968-2017		
		Capital	OMP&R	Total
Aqueduct from Delta to San Luis Reservoir	12,064	596	236	832
San Luis Dam, Reservoir, and Pumping Plant	10,534	521	54	575
Los Banos Dam and Reservoir	3,429	190	10	200
Recreation and fish and wildlife enhancement features	14,680	313	523	836
TOTAL, recreation and fish and wildlife enhancement alternative costs	40,707	1,620	823	2,443

Separable Costs

In project formulation and cost allocation studies, the separable cost of a particular purpose of a multiple-purpose facility is the estimated cost of accommodating that purpose in the planned operation of the multiple-purpose facility. The separable cost of a particular purpose is estimated as the difference 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 complete 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.

These hypothetical facilities are estimated to include the following:

- Those hypothetical facilities previously described for the alternative single-purpose recreation and fish and wildlife enhancement facilities, except that the storage capacity of a San Luis Reservoir would be increased from a total of 72,200 acre-feet to a total of 1,100,000 acre-feet. (The 200 cubic feet per second of conveyance capacity from the Delta to a San Luis Reservoir would be more than

sufficient to replenish annual evaporation and seepage losses from the larger reservoir.)

- A modified San Luis Pumping-Generating Plant.

- An O'Neill Forebay of the existing 56,426-acre-foot gross capacity, which would provide about 23,000 acre-feet of active forebay capacity--approximately the same active capacity as now provided by O'Neill Forebay and the aqueduct reach between the Forebay and Dos Amigos Pumping Plant.

TABLE I-9
WATER SUPPLY SEPARABLE COSTS (STATE SHARE)
(thousands of dollars)

Item	First Costs	Equal Annual Equivalent Costs at 4.357% Interest: 50-Year Period 1968-2017		
		Capital	OMP&R	Total
Total multiple-purpose facilities	272,842	13,671	8,295	21,966
<i>Less: Hypothetical facilities for recreation and fish and wildlife enhancement and for power generation:</i>				
Alternative facilities for recreation and fish and wildlife enhancement	40,707	1,620	823	2,443
Additional storage, San Luis Reservoir	20,000	790	310	1,100
Additional capacity, San Luis Pumping-Generating Plant	45,000	1,790	940	2,730
O'Neill Dam and Forebay	6,800	270	105	375
<i>remainder: Water supply separable costs</i>	<i>160,335</i>	<i>9,201</i>	<i>6,117</i>	<i>15,318</i>

Water Supply Separable Costs

The separable costs of water supply for California Aqueduct facilities from the Delta to the Dos Amigos Pumping Plant are the differences in estimated costs of (a) the State's total share for the multiple-purpose facilities and (b) the estimated costs of these facilities hypothetically sized so as to provide for the same power generation and recreation and fish and wildlife enhancement benefits as the multiple-purpose facilities, but no water supply benefits.

The estimated costs of these hypothetical facilities, which exclude water supply as a project purpose, and the estimated separable costs of water supply for project facilities from the Delta to Dos Amigos Pumping Plant are shown in Table I-9.

Power Generation Separable Costs

If the project facilities from the Delta to the Dos Amigos Pumping Plant were redesigned to accommodate all project purposes except power generation, the facilities would still include the same features and would be sized to the same capacity. No features in these facilities are constructed solely for the purpose of power generation. Therefore, the separable power generation costs are zero.

Reversible units would be required in a San Luis Pumping Plant as the most economical way of dissipating energy from San Luis Reservoir releases.

Recreation and Fish and Wildlife Enhancement Separable Costs

The separable costs of recreation and fish and wildlife enhancement are equal

to the total estimated costs of multiple-purpose facilities from the Delta to Dos Amigos Pumping Plant in excess of the estimated costs of hypothetical facilities sized only for water supply and power generation. Such hypothetical facilities are equivalent to the alternative

single-purpose water supply facilities previously described, the costs of which are shown in Table I-7. The estimated recreation and fish and wildlife enhancement separable costs for multiple-purpose facilities from the Delta to Dos Amigos Pumping Plant are shown in Table I-10.

TABLE I-10
RECREATION AND FISH AND WILDLIFE ENHANCEMENT
SEPARABLE COSTS (STATE SHARE)

(thousands of dollars)

Item	First Costs	Equal Annual Equivalent Costs at 4.357% Interest: 50-Year Period 1968-2017		
		Capital	OMP&R	Total
Total multiple-purpose facilities	272,842	13,671	8,295	21,966
less: Hypothetical facilities for water supply and power generation	254,807	13,274	7,608	20,882
remainder: Separable recreation and fish and wildlife enhancement costs	18,035	397	687	1,084

Footnotes to Exhibit I

(1) "Agreement between the United States of America and the Department of Water Resources of the State of California for the Construction and Operation of the Joint-Use Facilities of the San Luis Unit", December 30, 1961.

(2) Letter to Mr. William E. Warne, Director, Department of Water Resources, from Mr. C. H. Kadie, Assistant Regional Director, Region 2, Bureau of Reclamation, November 17, 1965.

(3) "Agreement between the United States of America and the Department of Parks and Recreation of the State of California for the Construction and Operation of the Initial Recreation Faci-

lities of the San Luis Unit", June 3, 1969.

(4) The contracts are being amended to provide that the interest costs of any future funds supplemental to Burns-Porter funds will be melded in the "project interest rate".

(5) For the project facilities from the Delta to Dos Amigos Pumping Plant, the associated water supply benefits 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 project facilities hypothetically resized to accommodate water supply only. Since the

justifiable costs of water supply are therefore governed by the single-purpose alternative costs, rather than by the benefits, an extremely precise estimate of such benefits is not justified.

(6) See Department's Bulletin 117, "Recreation and Fish and Wildlife Program for the State Water Project", December 1968 (see pages 30-31).

(7) See Department's Bulletin 117-20, "Ingram Creek Aquatic Recreation Area: Recreation Development Plan", December 1966.

(8) See footnote 3.

EXHIBIT II
COMMENTS
BY THE
DEPARTMENT OF PARKS AND RECREATION

EXHIBIT III
COMMENTS
BY THE
DEPARTMENT OF FISH AND GAME

Memorandum

To : Honorable William R. Gianelli, Director
Department of Water Resources
1416 9th Street, Room 1115-1
Resources Building

Date : May 6, 1970

Subject: Bulletin 132-70,
Appendix D, Costs of
Recreation and Fish
and Wildlife Enhancement

From : Department of Parks and Recreation

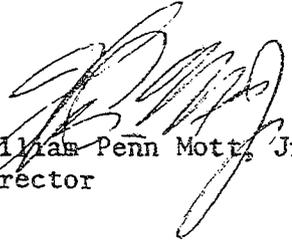
Pursuant to Water Code Section 11912, as amended by California Statutes of 1966, Chapter 27, your memorandum of March 13, 1970 requested our written comments on those State Water Project costs shown allocated to recreation and fish and wildlife enhancement in Table 1 of the review draft of Appendix D to Bulletin 132-70. Our Deputy Directors John R. Teerink and Ray B. Hunter met on May 1, 1970 in regard to this bulletin. As a result of that meeting, we concur with the costs which your department has compiled in relation to specific recreation lands and joint costs allocated to recreation and fish and wildlife enhancement.

We note in Table 1 of the draft that a cost allocation is being reported for the first time for California Aqueduct facilities between the Delta and Dos Amigos Pumping Plant -- for \$9,049,940 in joint capital costs allocated to recreation and fish and wildlife enhancement through 1969. These facilities include San Luis Reservoir, O'Neill Forebay, and Los Banos Reservoir. Under our projections, these reservoirs will receive substantial recreation use by the general public only if funds are forthcoming for continuing facilities development. We also note, in Table 3 of the draft, references to substantial General Fund appropriations for joint operating costs of the California Aqueduct allocated to recreation and fish and wildlife enhancement for fiscal years 1968-69 and 1969-70. We understand that these appropriations are based on a preliminary cost allocation of the entire California Aqueduct (including projected recreation use at Lake Perris, Silverwood Lake, and Castaic Lake) and that they are in the form of progress payments which will be adjusted once the allocation of the entire aqueduct has been established.

On page 5 of the draft, it is stated that your cost allocations are subject to subsequent revision "...on the basis of a formal demonstration that such a revision is warranted by reason of substantial changes in the factors that supported the previous derivation." We understand that demonstration of substantial changes in the supporting factors include the possible findings that (1) funds are not forthcoming for certain future recreation developments, with resultant decreases in projected recreation benefits and specific recreation costs, and (2) that a change in cost allocation method would produce more equitable results.

In view of the above qualification, we believe that the proposed allocation of joint capital costs is sufficiently accurate for the initial allocation for the California Aqueduct. In this context, we concur in the allocations of joint capital costs to recreation and fish and wildlife enhancement as shown in Table 1 of the draft report.

Concerning the specific costs of acquiring lands for recreation developments, we note the sum of \$978,042 for lands on the California Aqueduct proper and \$832,596 for lands at Castaic Lake. Certain of these acquisition costs were for lands not now required under current recreation plans, notably at Castaic Lake. These lands apparently are not necessary for the basic multiple-purpose facilities of the State Water Project. We understand that under your cost accounting procedures, the original costs of acquiring such lands will be reported as recreation costs until they are sold or otherwise disposed of, at which time the payments received will be reported as recreation credits and the costs to be presented in future annual reports will be reduced accordingly. With this understanding, we concur in the specific costs of acquiring lands for recreation developments as shown in Table 1 of the draft report.



William Penn Mott, Jr.
Director

March 18, 1970

Appendix D also presents the specific costs of acquiring land for recreation purposes and requests approval for reimbursement of \$1,178,526 that was spent since the 1969 cost allocation report was submitted to the Legislature. The recreation land referred to in Appendix D was recommended for purchase by the Department of Parks and Recreation and that Department is best qualified to comment on that aspect of the appendix.



FOR Director