C-WIN 18

Summary and Recommendations for the Department of Fish and Game's Testimony on the Tributaries to the Sacramento-San Joaquin Estuary

Presented to the State Water Resources Control Board
Interim Water rights Actions Phase
Bay-Delta Estuary Proceedings

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as other factors.

While the impact of any one water development project on Delta inflow and outflow may be relatively small, the major non-State or Federal projects together have a storage capacity which represents roughly 28 percent of the storage in the Central Valley as shown in Table 1. The impacts of a water storage facility on Delta outflow are more complex than this simple comparison of storage capacity, and can vary with factors such as hydropower operations, flood control storage operations, and frequency of spill, but this comparison provides a general indication of the magnitude of the relative impact.

In addition to the SWP and CVP, other water development projects on the tributaries to the Delta have contributed to decreased Delta outflow and associated effects on fisheries.

Table 1. Storage in Major Reservoirs on Rivers that Support Substantial Salmon Runs in the Central Valley.

Reservoir	Storage (acre-feet)
Shasta	4,552,000
Keswick	23,800
Oroville	3,540,000
New Bullards Bar	969,600
Folsom	1,010,000
Camanche/Pardee	641,500
New Don Pedro	2,030,000
New Melones	2,400,000
New McClure	1,000,000
Millerton	520,000
Total	16,686,900

Storage Operated by US Bureau of Reclamation	51%
Storage Operated by Department of Water Resources	21%
Storage Operated by Others	28%

In addition to the effects of these water development projects on Delta inflow and outflow, the major storage reservoirs upstream of the salmon spawning and rearing areas make minimum flow releases to provide habitat for these uses. Many of these minimum flow releases are not adequate to provide the habitat needed to optimize or in some cases to maintain anadromous fisheries habitat downstream and this limits the potential benefits of any change in Delta operation or outflow.

To offset some of the effects of other water development projects on Delta outflow and to provide conjunctive benefits to salmon and steelhead habitat in the tributaries, we suggest the SWRCB consider requiring flow contributions from the tributaries

to provide a fair share portion of Delta outflow. One way this contribution could be allocated is on the basis of unimpaired runoff. You could use the period of record from 1906 to the present, the 50 year averages, or the estimated annual unimpaired runoff published in Department of Water Resource's (DWR's) Bulletin 120. Water year types could be set annually or more frequently if needed.

For an example of how this concept could work, we used the 50 year average unimpaired runoff published in Bulletin 120-92. Table 2 shows the percent contribution for each tributary. This does not include the Cosumnes River because there is no major storage facility and does not include the tributaries on the west side of the Sacramento Valley because flow contributions from these reservoirs would have little conjunctive benefit for anadromous fisheries. The San Joaquin River at Millerton has been included because its historical contribution was quite large and there is a large water storage facility. This contribution to Delta outflow could be provided from the San Joaquin itself or, if this was infeasible, through alternative means such as water trades or transfers.

Table 2. Percent Contribution to Unimpaired Runoff by River.

Water	50 Year Estimated Unimpaired Runoff (MAF)	Percent Contribution
Sacramento River at Bend Bridge	8.664	34.75
Feather River at Oroville	4.617	18.52
Yuba River at Smartville	2.390	9.59
American River at Folsom	2.736	10.98
Mokelumne River at Pardee	0.748	3.00
Stanislaus River at New Melones	1.150	4.61
Tuolumne River at Don Pedro	1.882	7.55
Merced River at Exchequer	0.966	3.88
San Joaquin River at Millerton	1.776	7.12
TOTAL	24.929	

In Table 3, DFG used these percentages and the critical dry year flows presented in Alternative A of WRINT-DFG Exhibit 8, to determine what amount of flow would be needed from each tributary to provide Delta outflow. These flow amounts are not the total amount needed to protect instream habitat in the tributaries but are the amount to be dedicated to Delta outflow. In this simple example, these allocations could be measured at the mouth of each tributary for non-CVP/SWP rivers. This example does not take into account the downstream demands such as riparian diversions and diversions at the State and Federal pumps or other accretions or depletions. Nor does it deal with the priorities of water rights within or between these basins. It merely serves as an example of a method that could be used to allocate additional

TABLE 3. Contribution by Tributary to Alternative A Delta Outflow in a Critical Dry Year Allocated Using Distribution of Unimpaired Runoff (cubic feet per second).

CRITICAL DRY YEAR

	Sacramento	Feather	Yuba	American	Mokelumne	Stanislaus	Tuolumne	Merced	San Joaquin	Delta Outflow
February	2780	1482	767	878	240	369	604	310	570	8000
March	2502	1333	690	790	216	332	544	279	513	7200
April	2259	1204	623	713	195	300	491	252	463	6500
May	1981	1056	546	626	171	263	430	221	406	5700
June	1807	963	499	571	156	240	393	202	370	5200
July	1390	741	383	439	120	185	302	155	285	4000
August-December	1286	685	355	406	111	171	279	143	264	3700

Delta outflow needs that makes sense biologically. This method could be further refined by shifting flows among the various tributaries from months when it provides less fisheries benefits to months when it provides greater benefits. For example in rivers where there is little need for summer flows, contributions to Delta outflow could be shifted to other months when they would provide greater benefits in the tributary.

CURRENT STATUS AND TRENDS

In February 1992, DFG provided the Fish and Game Commission with a Status Report on California Salmon. That report found that:

> Based on present water supply forecasts for the State, it is clear that California is entering an unprecedented sixth year of low water supply. Our traditional indices of salmon abundance provide little expectation that the sport and commercial fisheries or spawner escapements will show any increase in the coming year. In fact, it is highly probable that further declines in the numbers of some races and stocks and further restrictions on the commercial and sport harvest of salmon may occur. Of particular concern are the winter-run chinook salmon of the upper Sacramento River, the spring-run chinook salmon of the upper Sacramento and the Klamath basins, the San Joaquin fall-run chinook salmon, and the coastal populations of coho salmon.

These population declines may not stabilize or have opportunity to recover unless significant changes and improvements are made in water supply and habitat conditions for spawning, rearing, and emigration. Specific information on the status of these Central Valley runs of particular concern are contained in WRINT-DFG Exhibit 14 and 25.

INTERIM MEASURES

Sacramento River

On an interim basis, DFG believes that the recommendations in WRINT-DFG Exhibit 14 related to flow stability criteria, balancing of instream flows with minimum carryover storage in Shasta Reservoir, and allocation of water for experimental releases for outmigration when Shasta Reservoir storage is above certain levels would provide protection and some restoration of the anadromous fisheries of the upper Sacramento River. The interim recommendations for balancing of carryover storage with instream flows will be revised considerably when a temperature control structure is constructed on Shasta Dam.