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More on the Winter-Run Salmon Decline

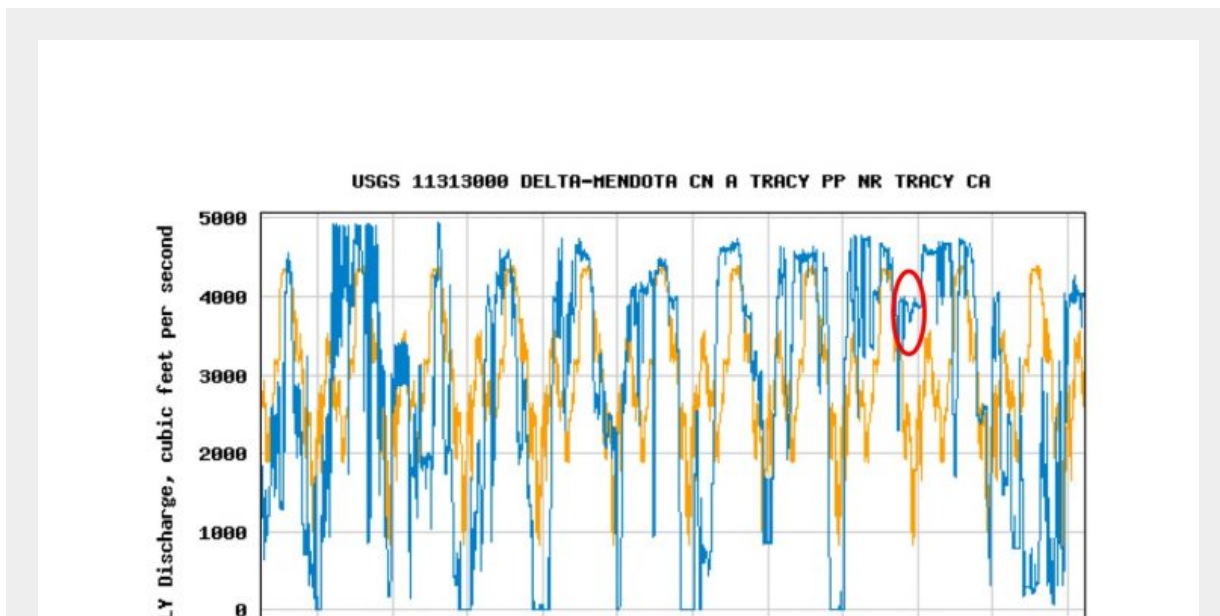
Posted on **June 6, 2018** by **Tom Cannon**

In a [March 14, 2018 post](#), I discussed my long-held theory that the winter-run salmon decline was caused in large part by high fall exports from the Delta that began in the mid 1970s. In this post, I add some further insights on the theory and why it is so important.

First, when the State Water Project came on line in the late 1960's, potential export pumping more than tripled from 4,400 cfs to 15,000 cfs. In reality, increases in previously low federal fall exports, along with higher state exports, led to much sharper increases in fall exports, particularly in 1975, 77, 80, 82, and 84, coincident with the primary period of winter-run decline from 1975-85. The fall export increase is very evident in the federal export record (Figure 1) and state export record (Figure 2).

Second, the high exports and high salmon salvage observed were not always associated with high Delta inflows. High salvage of winter-run sized juvenile salmon at south Delta export intakes occurred at the end of October 1984 (Figure 3) under low Delta inflow/outflow conditions (Figure 4). This is important because DWR, in its assessment of the WaterFix Project, is maintaining that export restrictions during the first fall and winter flow pulses will be protective of migrating juvenile salmon. But pulse restrictions alone would not be protective.

WaterFix would nearly double the export capacity of the State Water Project. Actual fall exports could increase by 50%, with much of the increase coming from the trio of new North Delta Diversion tunnel intakes that lie directly in the migration path of young winter-run salmon.



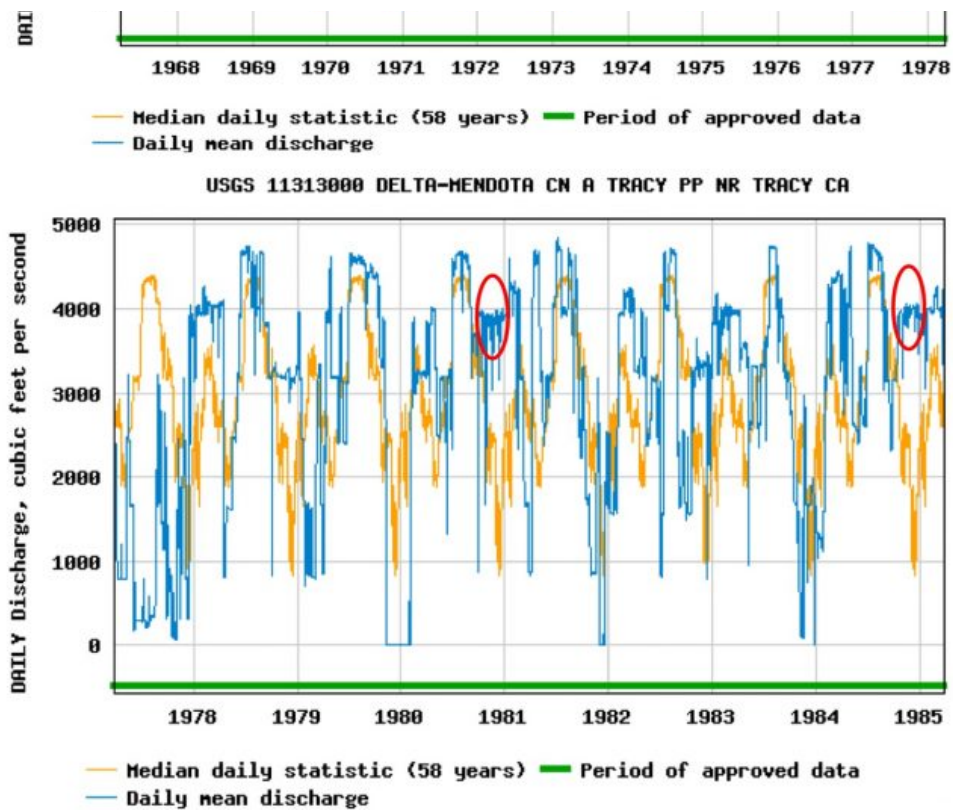


Figure 1. Unusually high federal exports occurred in fall 1975, 1980, and 1984 (red circles).

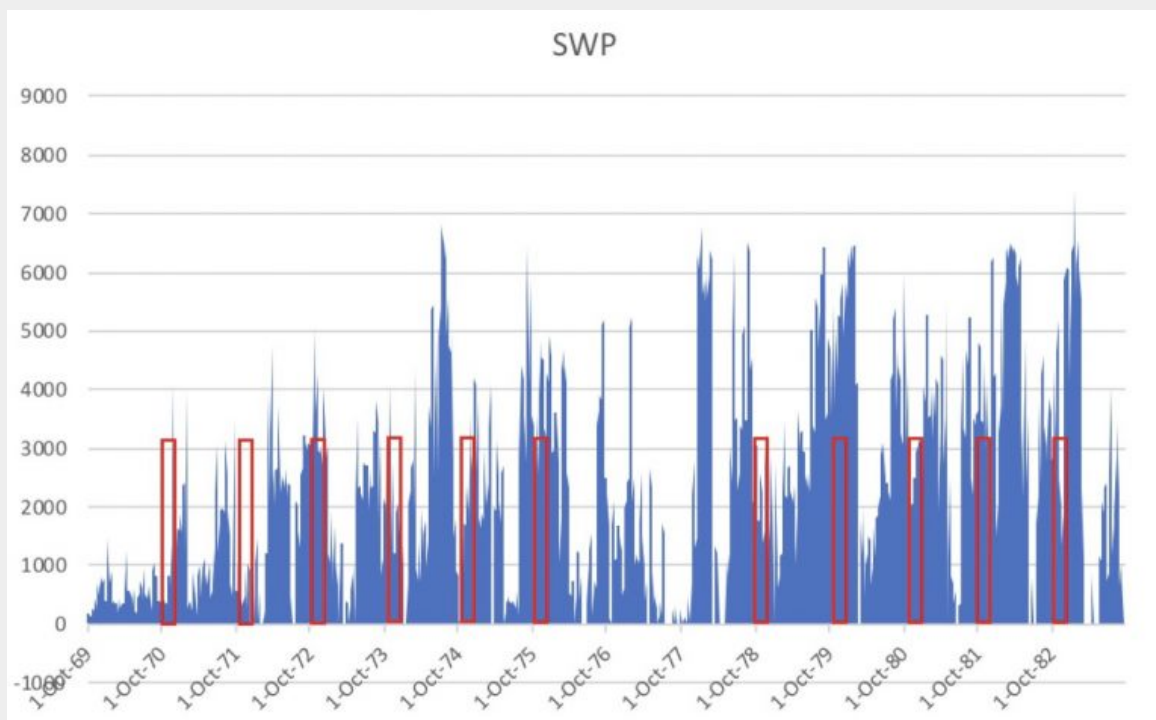


Figure 2 Delta SWP exports in daily average cubic feet per second from 1969 through 1983.

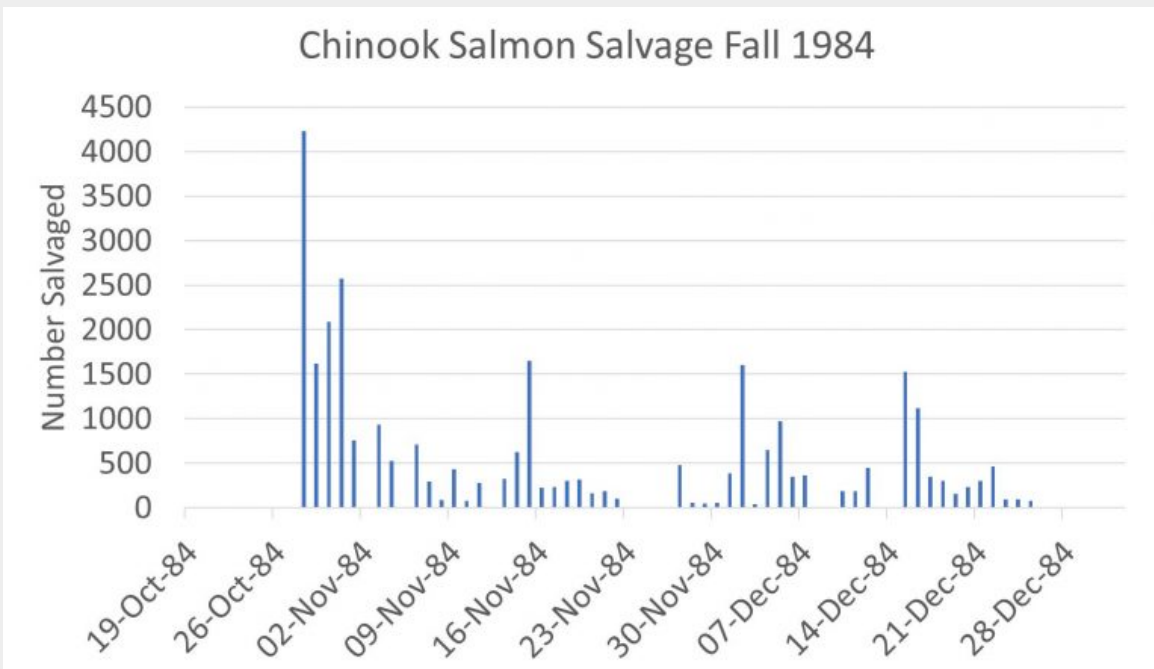


Figure 3. Chinook salmon south Delta export intakes salvage in fall 1984.

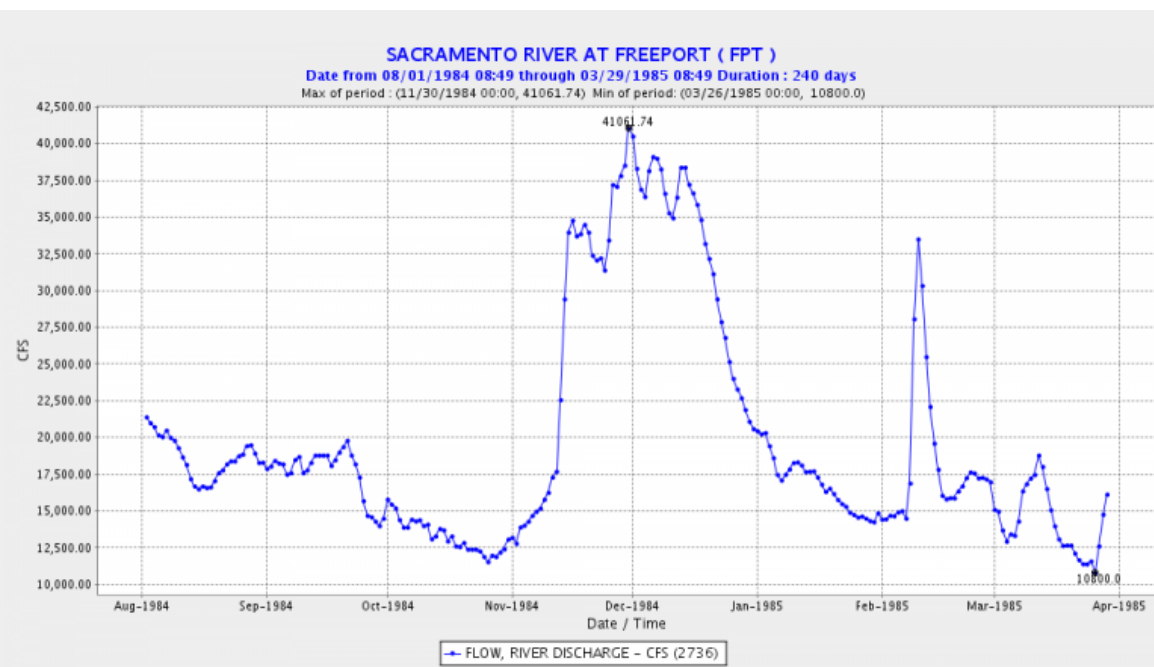


Figure 4. Delta inflow from the Sacramento River August 1984 through March 1985.

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