Balancing Public Trust Resources and Beneficial Uses

Comments of John Cain to the SWRCB regarding San Joaquin River Flows

March 20, 2013

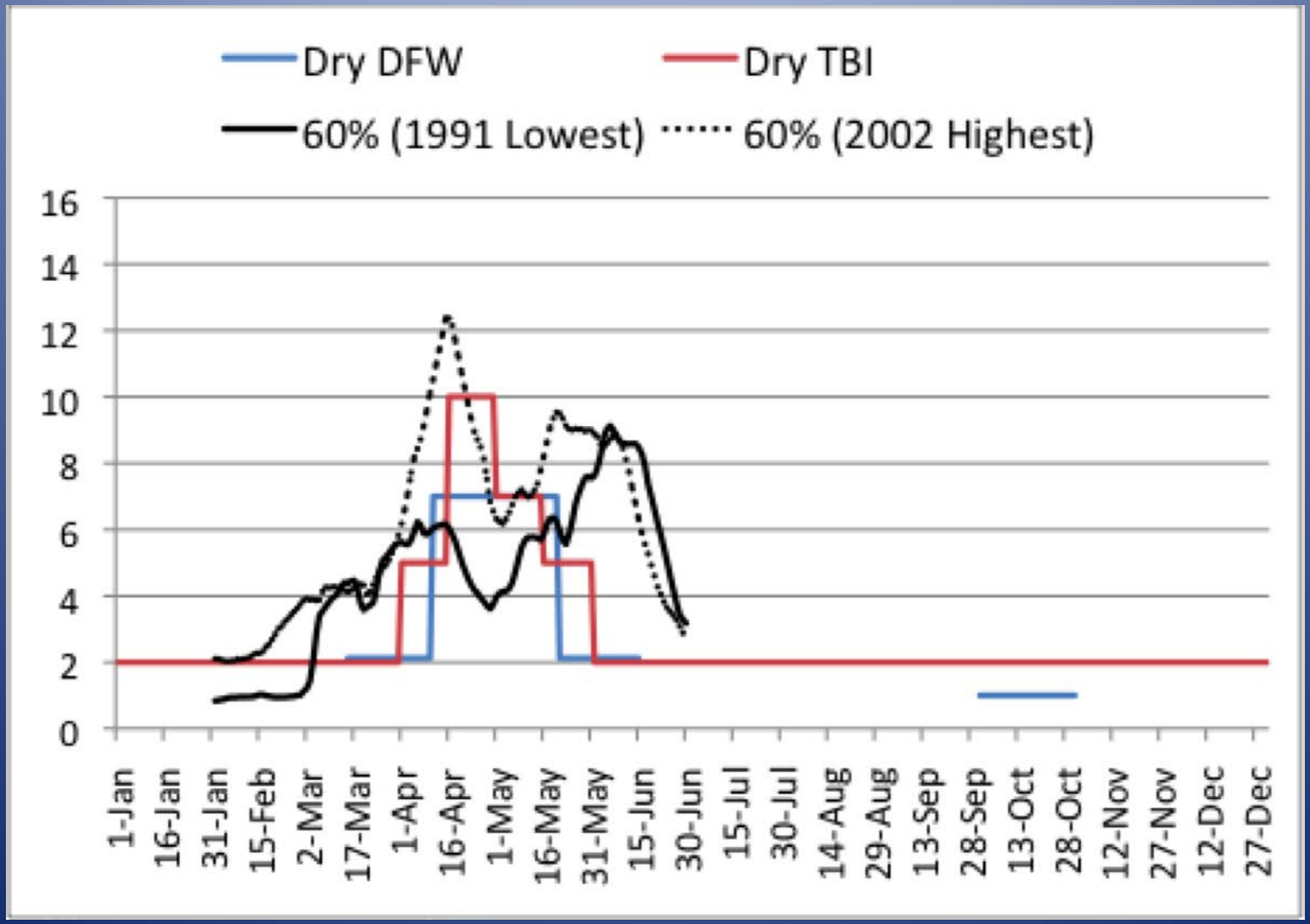
Four Step Process for Public Trust Balancing

I. Based on best available science, determine how much water the fish and public trust resources need.
II. Determine the *real* water supply and economic impacts AND benefits of meeting the true needs of the fish.
III. If the water supply and economic impacts are excessive, what measures could the Board or other parties take to mitigate the economic impacts.
IV. If impacts cannot be mitigated to an acceptable level, what non-flow actions can the board require to reduce the water supply costs on a time frame that will prevent further decline of public trust resources.

I. How much water do the fish Need?

- TBI, American Rivers, and NRDC as well as the trustee agencies submitted a science based estimate to this question in 2009.
- Nothing in the SED demonstrates that these previous flow recommendations are not necessary.
- The proposed range of 35-45% is insufficient to achieve these flow recommendations.
- Flow caps to limit high flow releases preclude achievement of critical ecological thresholds.

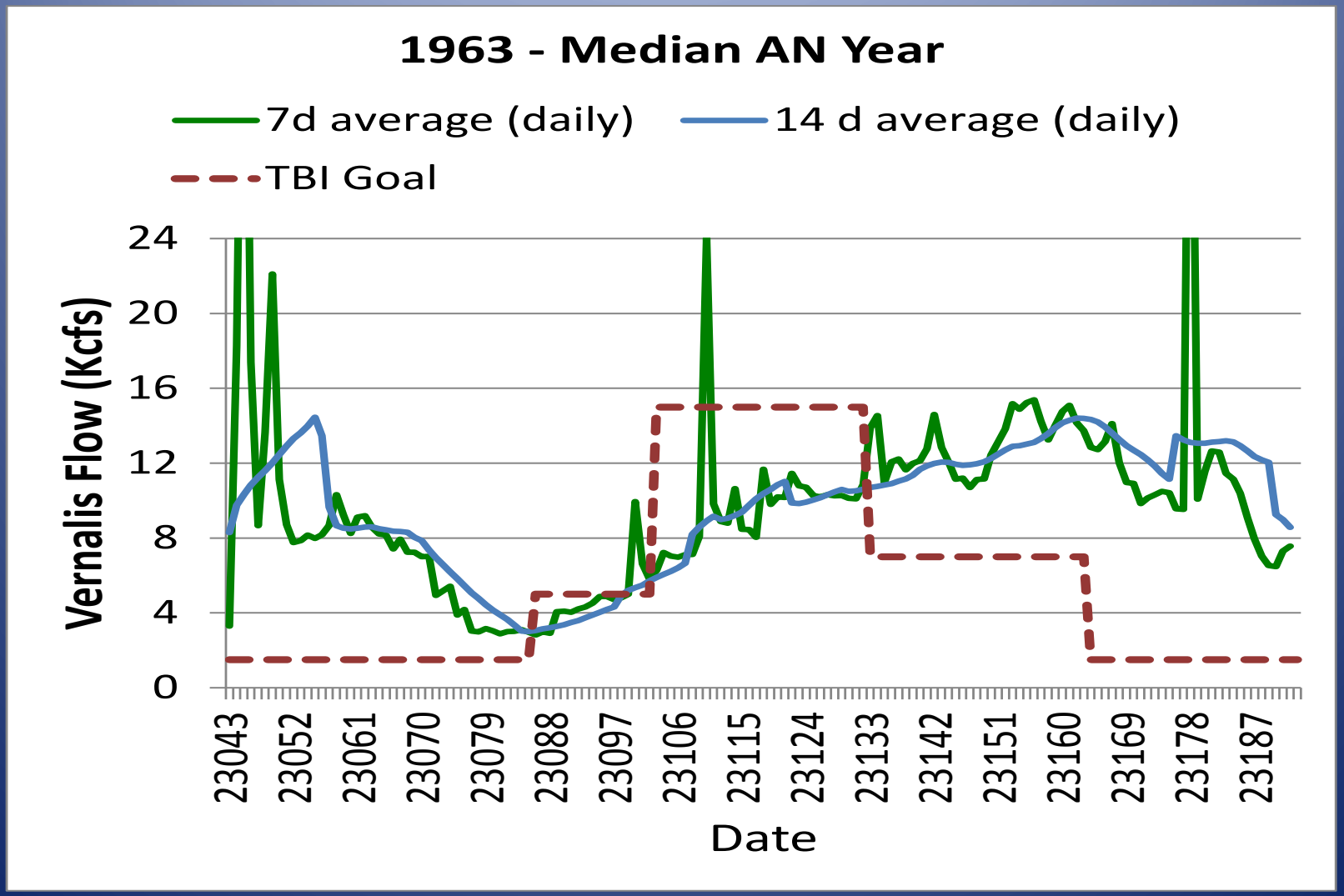
50% of UIF or more may be necessary



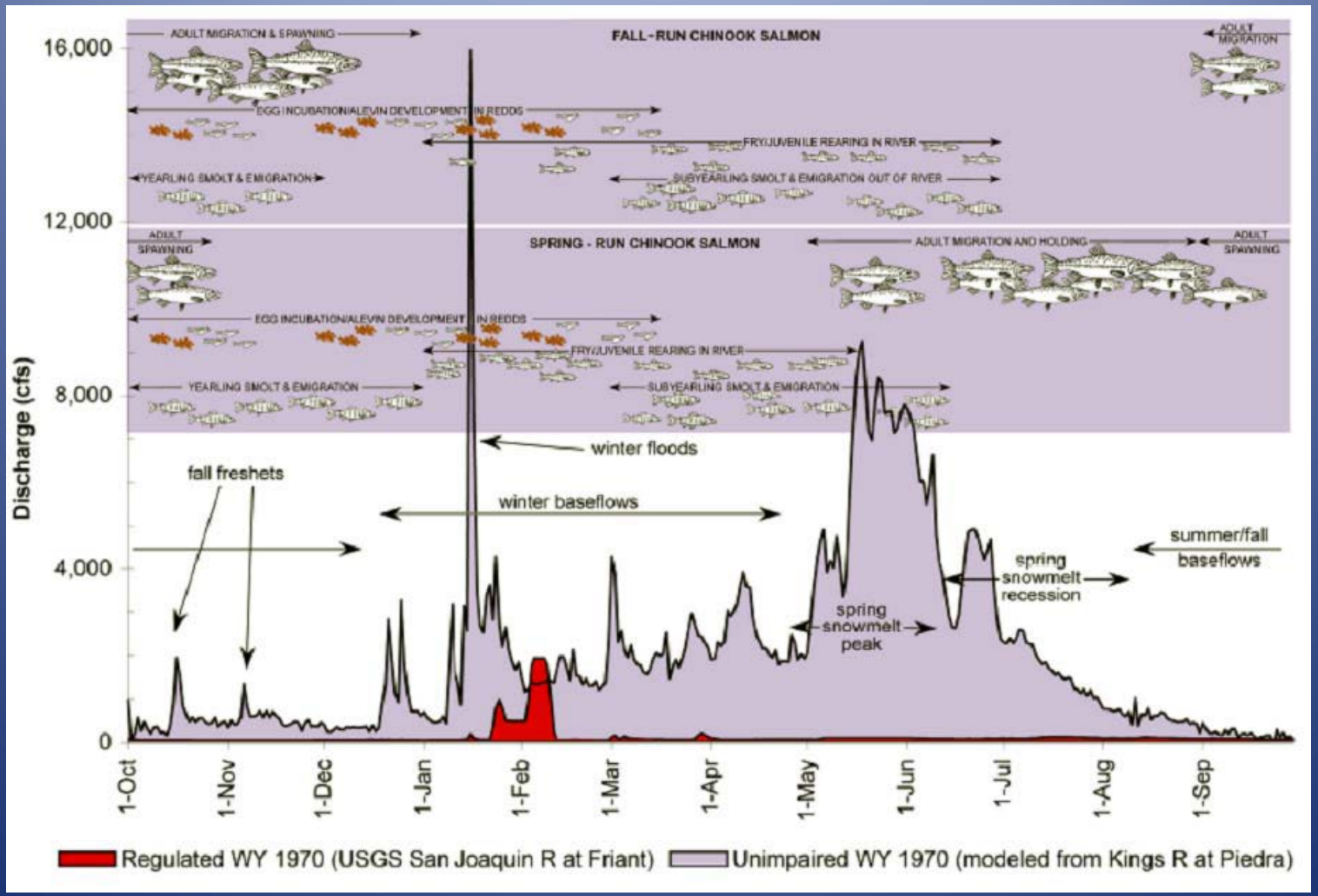
Unimpaired Flow Approach vs. Engineered Approach: Hybrid Approach

- The unimpaired hydrograph is generally the right approach, but not in every case.
- The 14 Day Average flow significantly dampens ecologically important flow pulses that may be necessary to achieve certain thresholds.
- Some engineering and real time operations of flow releases, within the natural hydrograph regime, will be necessary to achieve important ecological thresholds.
- Importantly, their must be a sufficient water budget to reshape the hydrograph to achieve critical thresholds and base flows. If 35-45% is not enough to meet base flows, then it will not be enough to reshape for ecological thresholds.

Fourteen Day Average Dampens Ecologically Important Pulse Flows

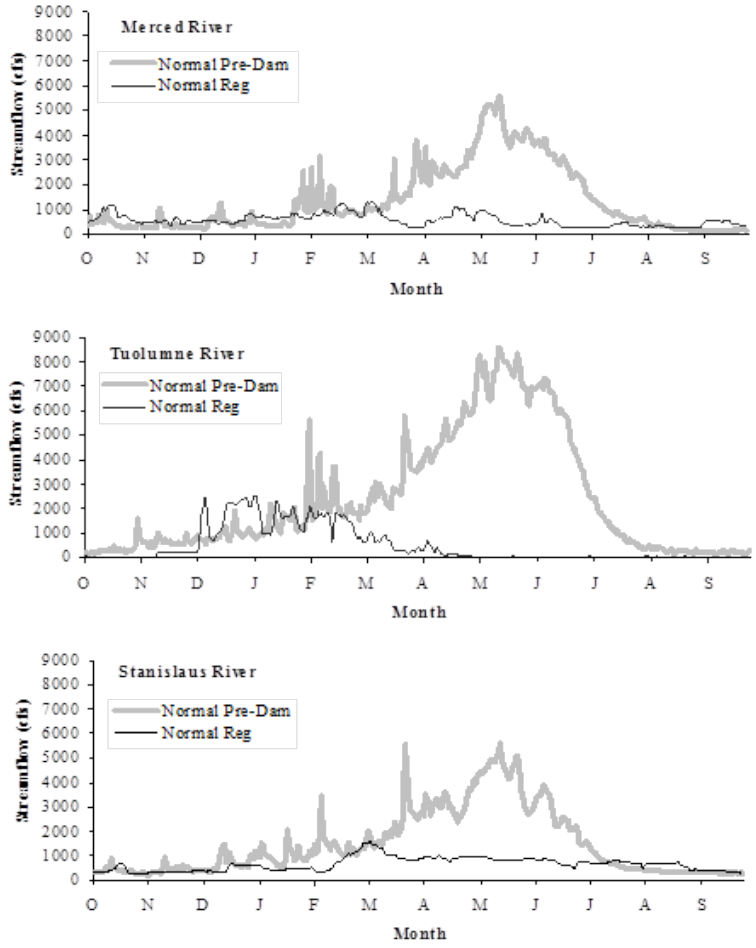


Ecological Functions of the Natural Flow Regime

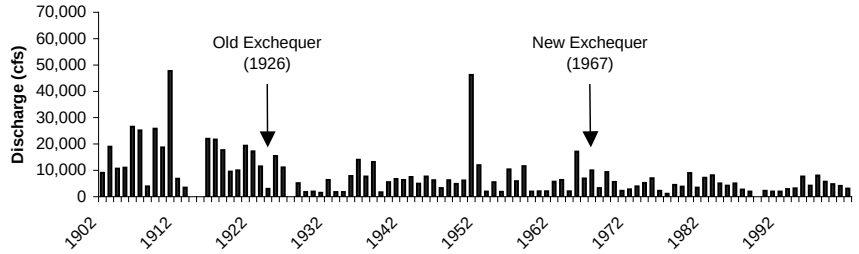


Source: San Joaquin River Background Report, 2002.

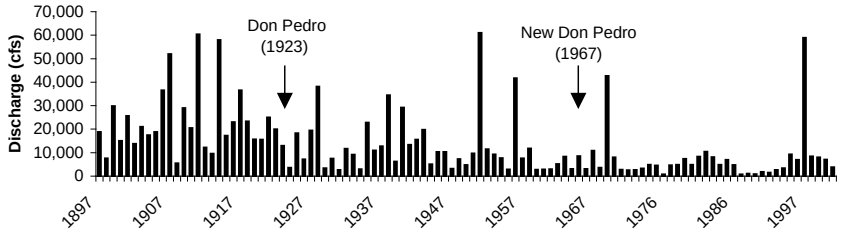
Changes in Representative Annual Hydrograph*



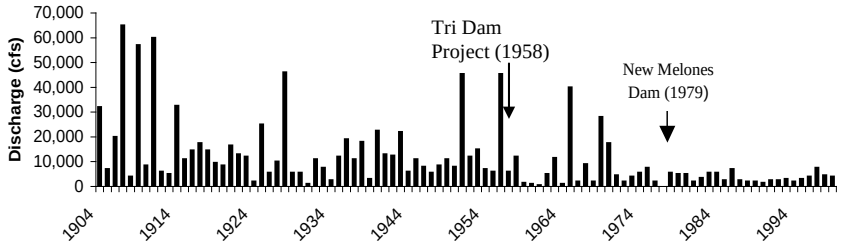
Changes in Annual Peak Flows (instantaneous annual maxima)



Merced River, annual instantaneous maximum flow at Exchequer (1902- 1964) and Merced Falls (1964-2001).



Tuolumne River peak annual flow at La Grange.

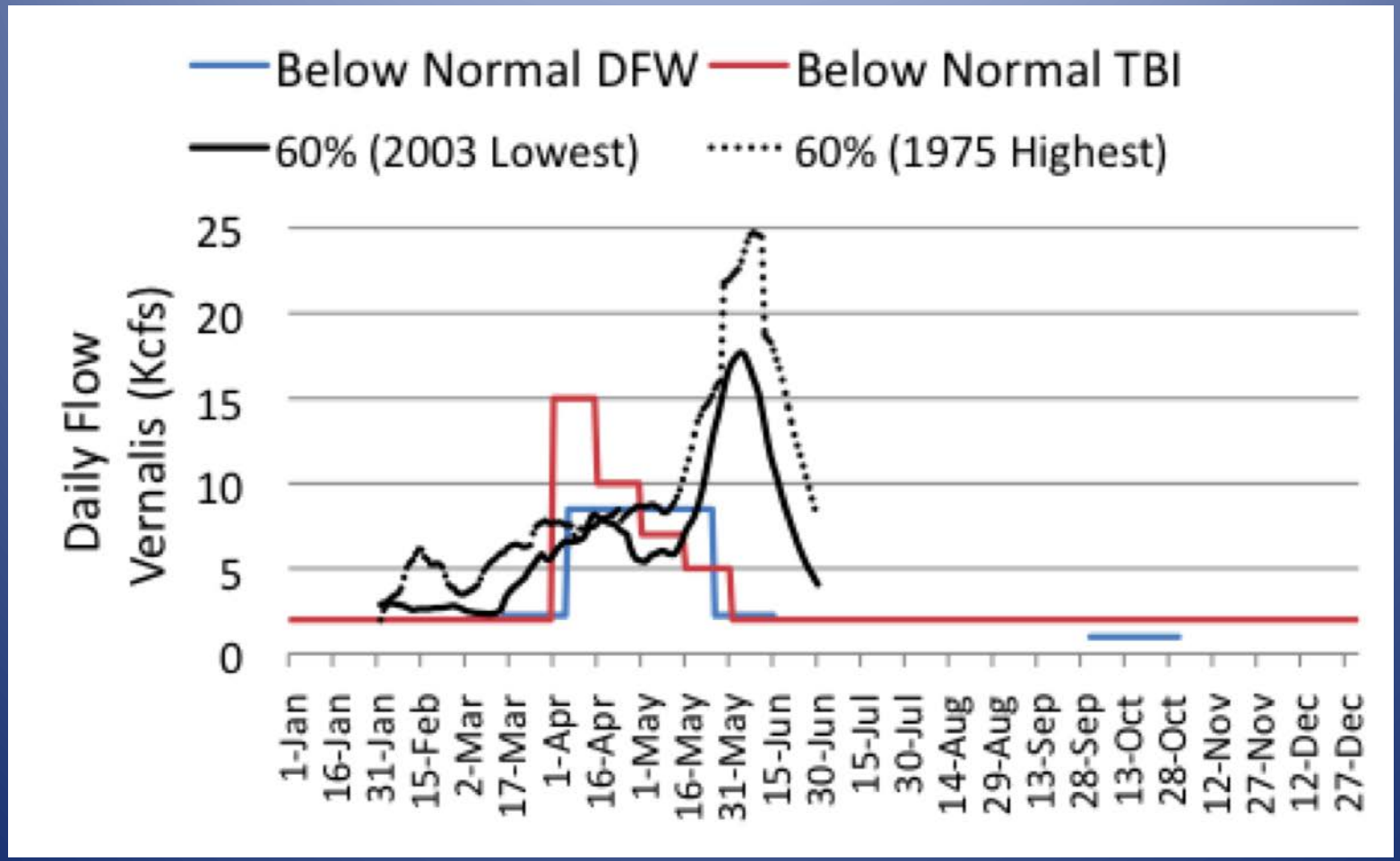


Peak Annual Flow, Stanislaus River at Knights Ferry

How do these changes affect spawning habitat, channel complexity, floodplain inundation, water temperature, water clarity, food supply, predation

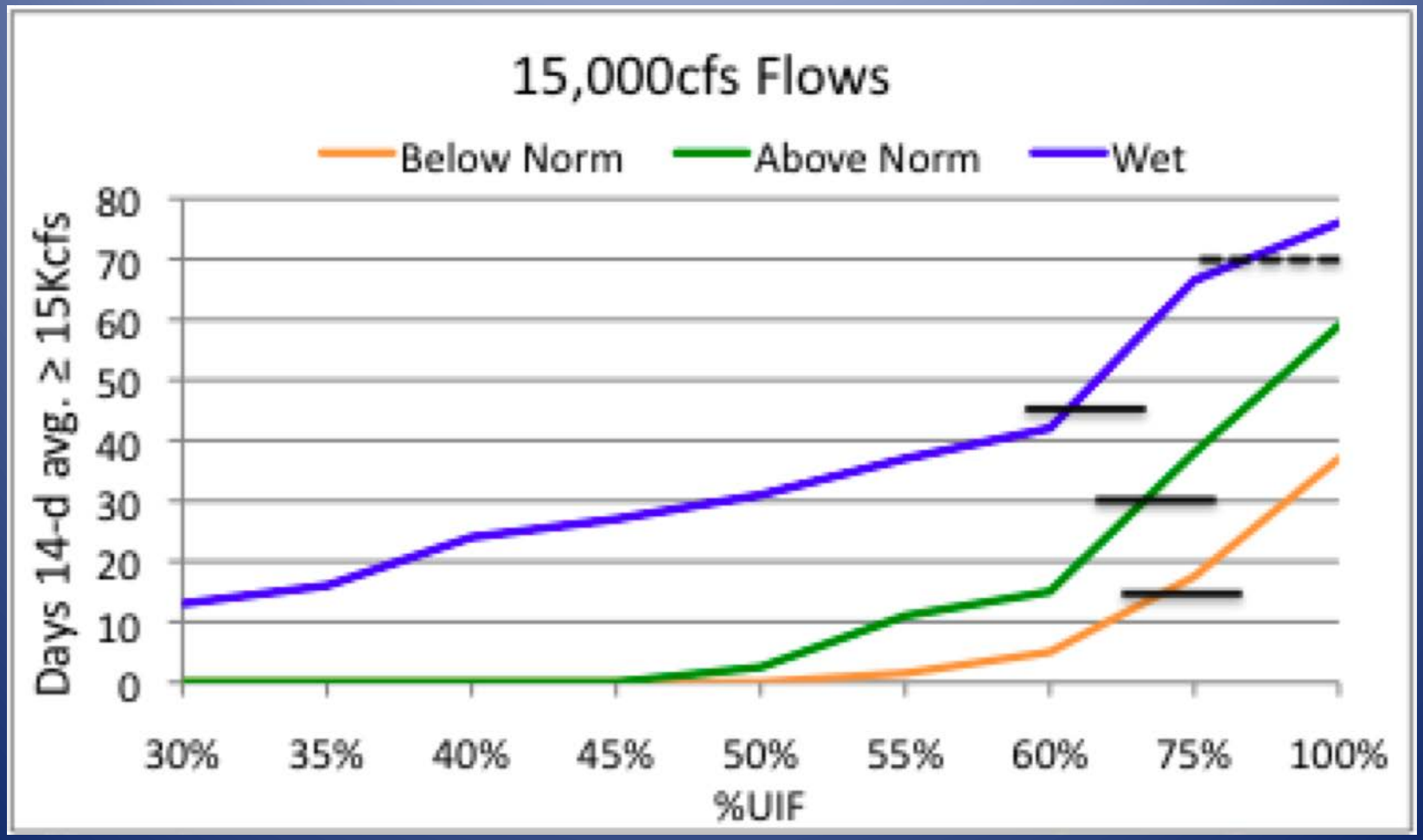
* Note that these hydrographs are from years that predate VAMP, BO, or Tuolumne minimal FERC flow requirements.

Shifting the timing of unimpaired flows may be desirable



14 day average and fraction of the UIF make it difficult to achieve the threshold for floodplain inundation.

- Need more then 35% UIF to reshape 14 day average to achieve floodplain inundation and other thresholds.



II. What are the economic impacts and benefits of increased flow releases?

- The SED does not accurately estimate the water supply and economic impacts.
- The SED does not consider the economic benefits of increased flows for recreation, fisheries, water quality, and the Delta.

Elements of the SED Likely Overstate Water Supply Impacts

- Assumes status quo reservoir levels, which assumes that status quo is optimal for balancing competing needs of fish and water.
- Does not utilize the reservoirs as an “asset” for balancing competing demands.
- Ignores the potential for conjunctive use of groundwater and surface water.

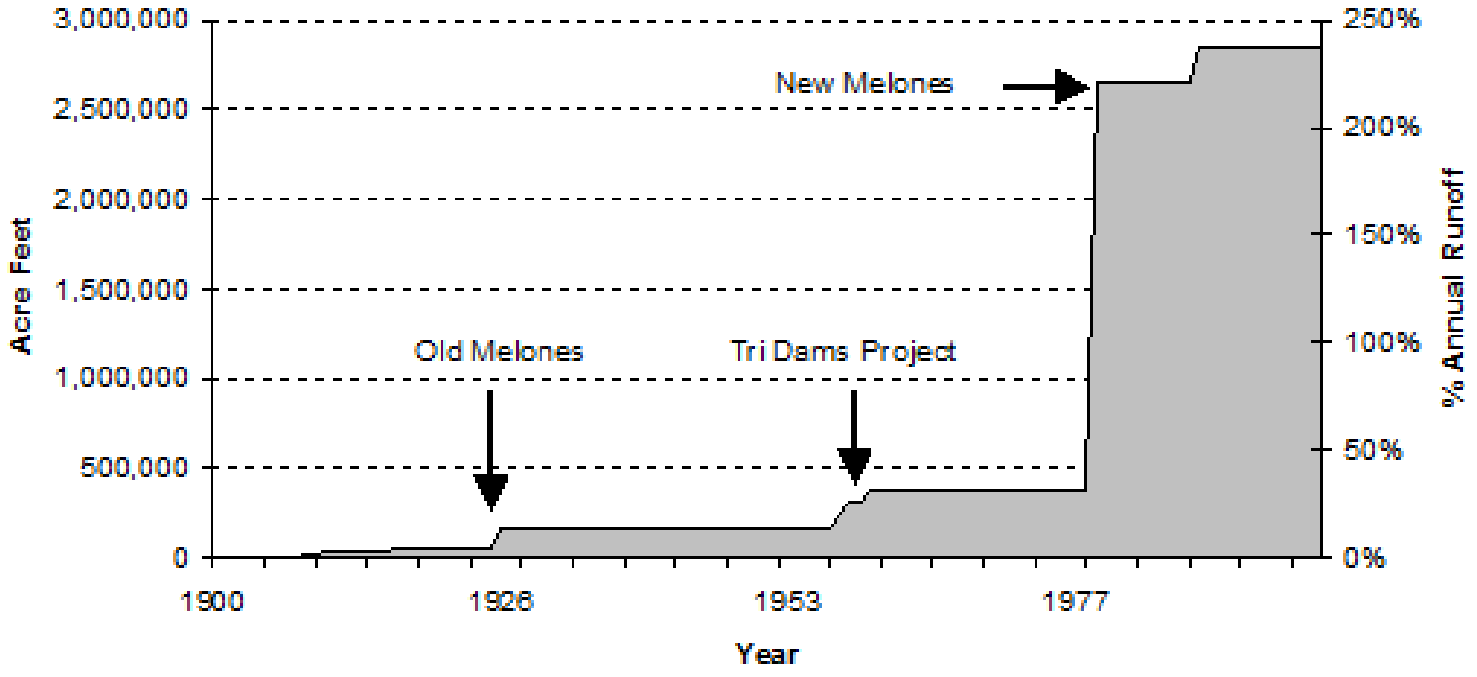
Sample Table Showing No Change in Reservoir Levels between Alternatives

Table 7-9a. Percent Change in End-of-September Elevations from Baseline for New Melones Reservoir

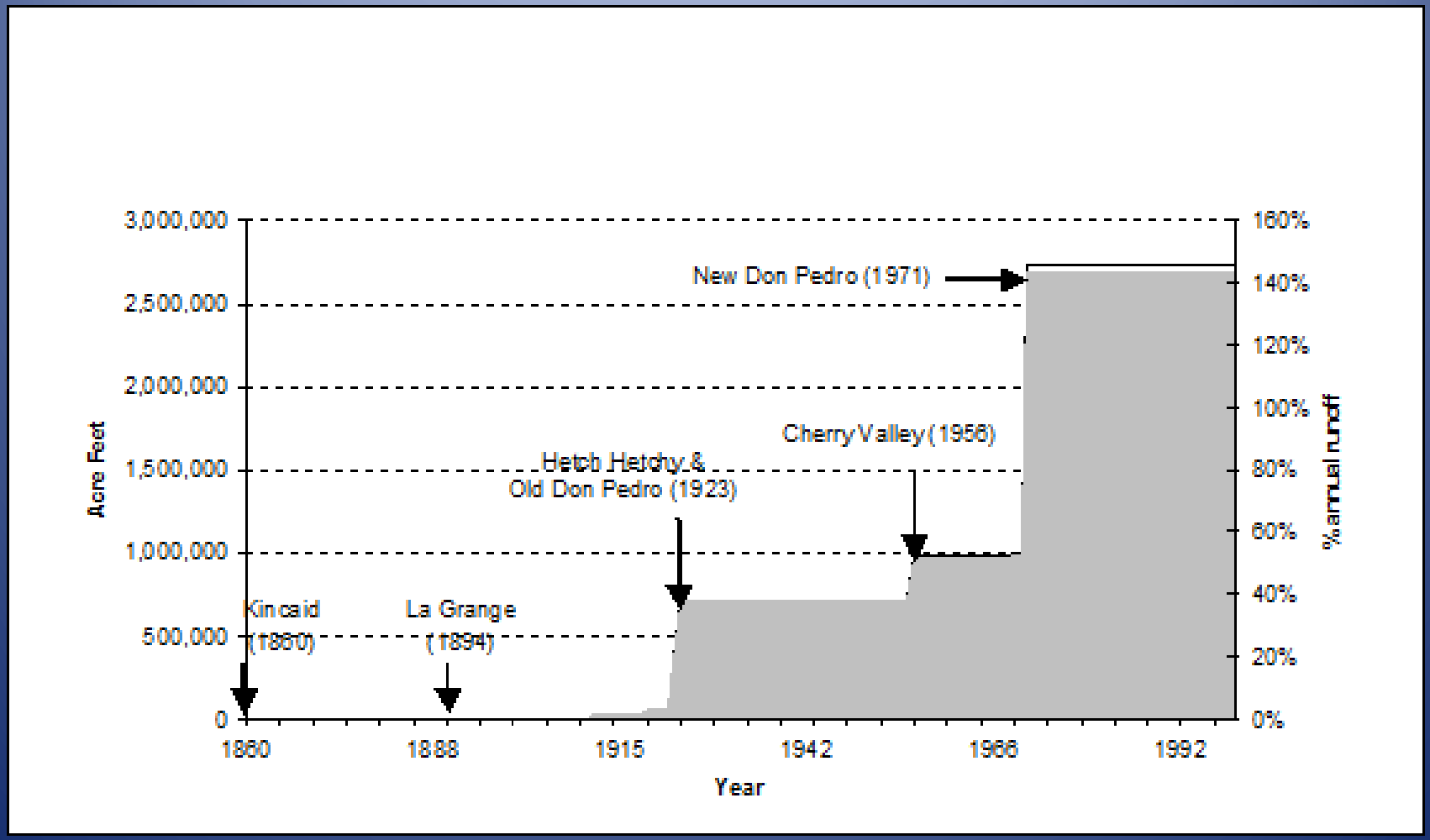
	LSJR Alternative 2	LSJR Alternative 3	LSJR Alternative 4
Minimum	0	1	2
10%	1	-2	-2
20%	1	-1	1
30%	2	0	0
40%	1	-1	0
50%	2	0	1
60%	2	1	1
70%	3	0	0
80%	3	1	1
90%	1	-1	0
Maximum	0	0	0

Note: Negative percentages indicate a decrease in storage levels relative to baseline conditions.

Reservoir Storage is an Asset that Should be Used to Balance Competing Objectives

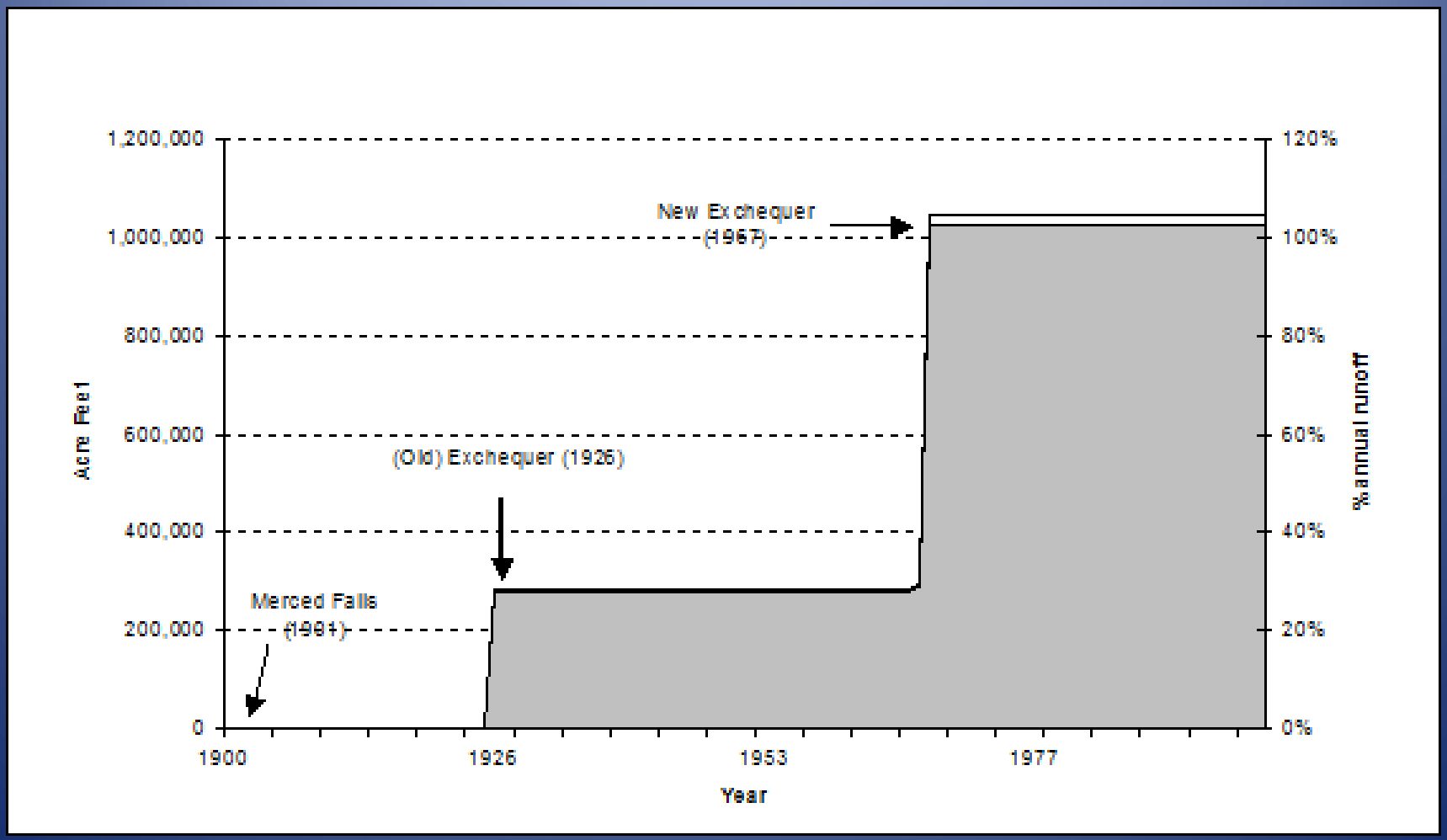


Tuolumne River Basin Dams Capacity



Ratio of storage to average yield is both an indicator of hydrologic alteration and a water management asset for balancing consumptive and instream flow demands

Merced River Dams Cumulative Storage Capacity



Ratio of storage to average yield is both an indicator of hydrologic alteration and a water management asset for balancing consumptive and instream flow demands

III. How can economic impacts be mitigated?

- SED fails to consider several approaches to mitigate impacts:
  - Groundwater banking.
  - Conservation.
  - Changing crop mix.

IV. How could non-flow measures reduce water costs of fish flows?

- First identify where and when water supply costs may be unacceptable (Dry years)?
- What are the ecological impact of reducing fish flows in these years types?
- How might a non-flow measure address this impact?
- How would you measure to know that the non-flow action does address impact?

Non-flow measures not a panacea

- Not clear how the SWRCB will require non-flow measures.
- Non-flow measures do not obviate need for flow.
- Non-flow measures take time, and the most important measures may take a decade or more.
  - Levee setbacks for large scale floodplain restoration may require tens of millions of dollars or more and numerous permits.
  - Earth moving for small scale floodplain restoration also expensive and requires permits from the Flood Board. Benefits of small scale actions may be important , but the are likely small.

Non-flow measure program must include:

- An adaptive management program aimed at advancing SMART objectives.
- Program of Implementation (POI) must include metrics to evaluate effectiveness. (SWRCB has never done this, in the past 50 years of planning efforts.)
- Any non-flow measures in POI must include meaningful commitments to mitigate non-flow stressors. (SED is woulda, coulda, shoulda, same as the past planning efforts.)
- SWRCB must revisit the WQ objectives (e.g., % UIF) on a triennial basis, not every 10-20 years to determine if non-flow measures are working.

Questions?