

SED Hydrologic Modeling and Analysis

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State Water Resources Control Board

Hearing on the Adequacy of the SED

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SAN JOAQUIN TRIBUTARIES AUTHORITY

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Substitute Environmental Document Major Modeling Flaws

- Unclear connection between modeling and proposed order
- Unreasonable operational assumptions
- Baseline errors
- Result comparisons between two different models

Unclear Connection between Modeling and Proposed Order

- Practical application: “unimpaired flow is required ... on a 14-day running average ...”, forecasting?
- X% requirement supplants any existing flow requirement during the February-June period. This assumption can lead to release requirements that are less than currently required.
- Downstream location for flow requirements could lead to zero flow occurring upstream.
- Requirements bounded by minimum and maximum
- Southern Delta salinity compliance objective of 1.0 dS/m year-round, all stations, with “implementation” for Reclamation of .7/1.0 at Vernalis.

Unreasonable Operational Assumptions

- WSE Model annual diversions based on a bad indicator of available water supply
 - End-of-January reservoir storage
 - No consideration of runoff
 - No update or adjustment of allocations
- Rules for annual diversions developed to maintain Baseline reservoir storage
- Annual diversion demand based on composite Baseline maximum diversion
- Downstream compliance points and requirements during non-regulated period (outside February-June)



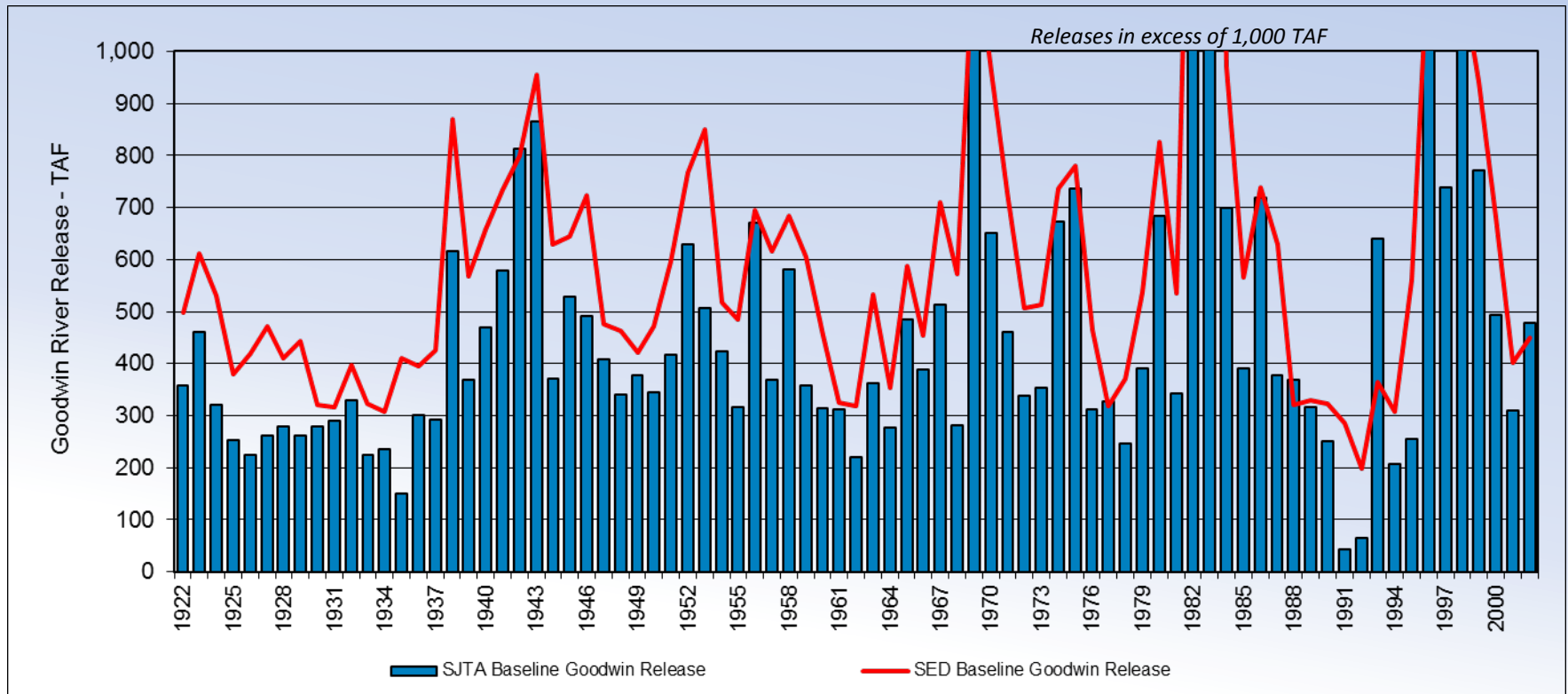
Baseline Errors

- DWR SWP 2009 Reliability Study – CalSim II
- Inclusion of San Joaquin River Agreement and VAMP
 - Falsely represents operations for Vernalis and the tributaries
- New Melones Project operations badly represented
 - June 2009 BO Vernalis flow requirement
 - CVP Contractors
 - OID/SSJID diversions
- “Offramps” used to make the study run
- Erratic compliance/non-compliance with current objectives
- Provides erroneous depiction of conditions/basis of comparison for alternatives



Result of Baseline Errors: Bad Depiction of Baseline Tributary Flows

Stanislaus River Example - Annual River Release from Goodwin



Result Comparisons Between Two Different Models

- SED Baseline represented by DWR 2009 Reliability Study CalSim II results.
- SED No Project and other Alternatives represented by SWRCB WSE model results.

Problem: Fundamental differences between modeling operational assumptions and protocols; resulting in non-comparable results

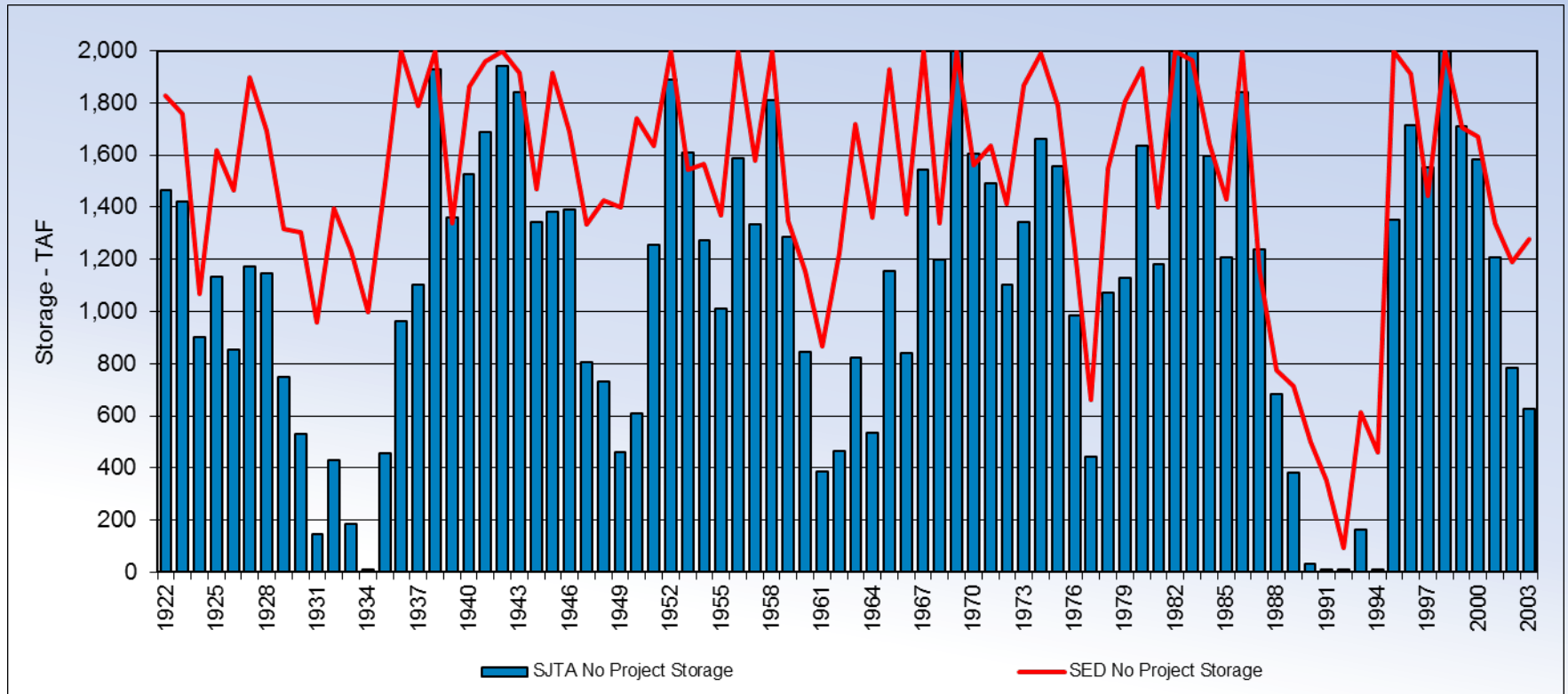
Solution: Run all studies with same model

WSE – Only Looks at One Method of Operation

- All alternatives based on WSE assumption that tributary reservoir operations will maintain Baseline storage
- No analysis of the proposed project using the reasonable expectation that reservoir storage will be exercised to provide river flows and maintain diversions
- SJTA met with State Water Board staff and provided our detailed comments to the SED modeling and assumptions

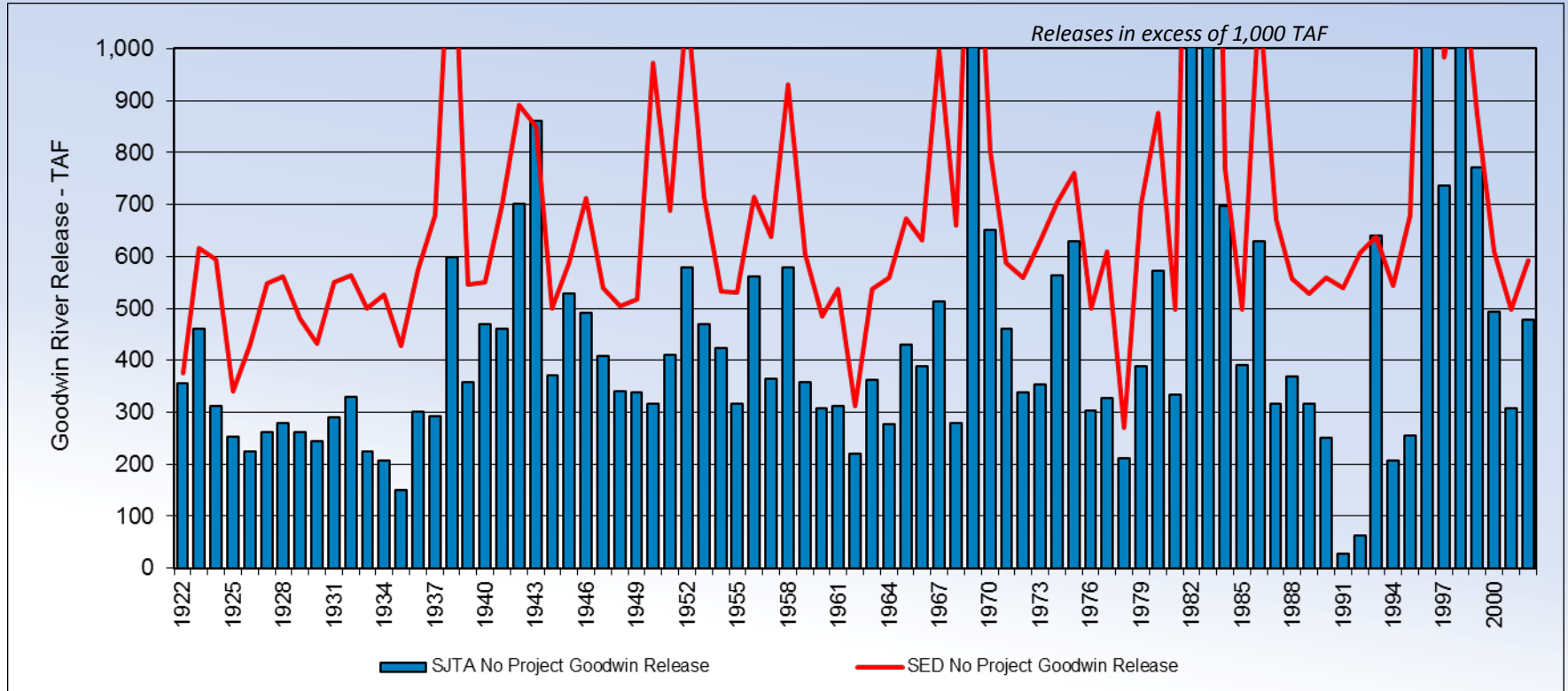
Result of Deficiencies in WSE Modeling: Bad Depiction of Operation of New Melones

Stanislaus River Example – New Melones Reservoir End of September Storage



Result of Deficiencies in WSE Modeling: Bad Depiction of Operation of New Melones

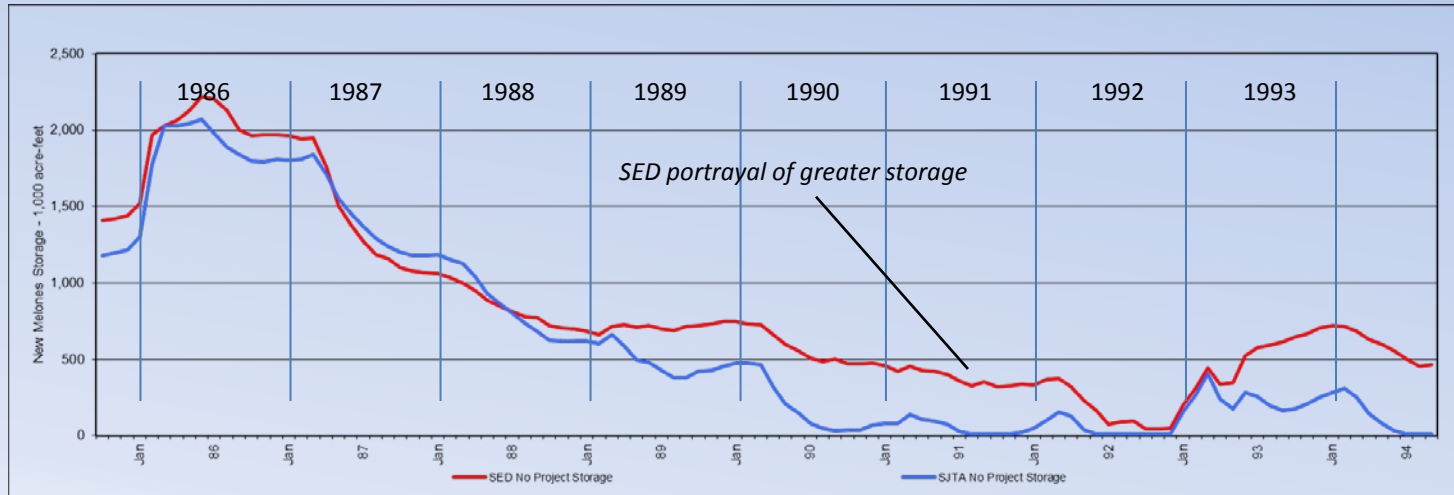
Stanislaus River Example - Annual River Release from Goodwin



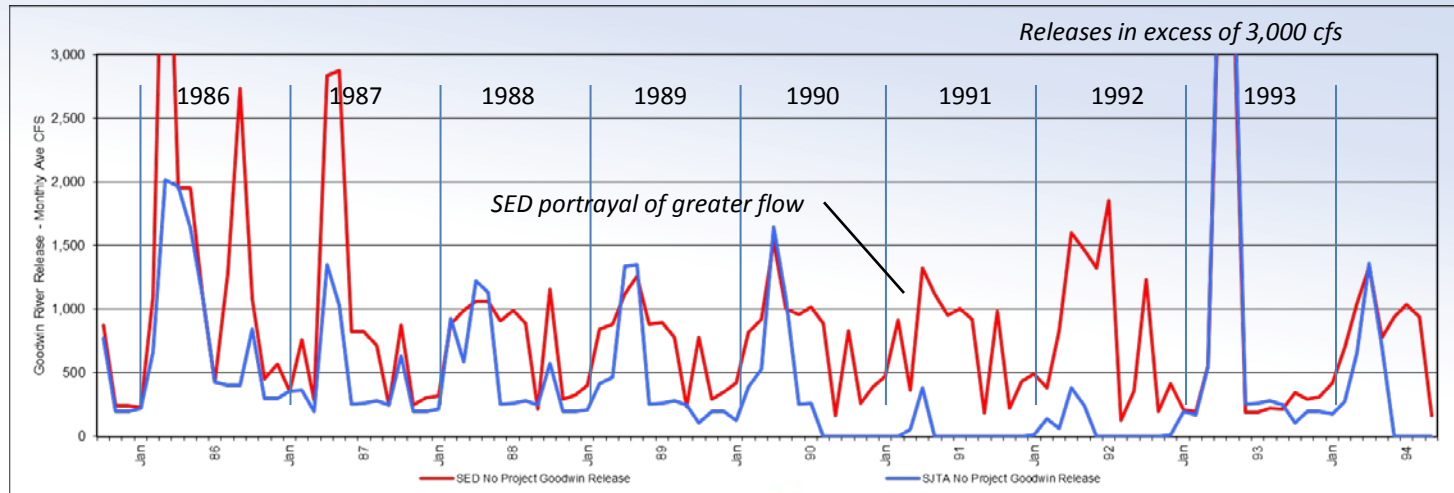
Bad Depiction of Operation of New Melones

Detail of 1986-1994 Operations

New Melones Reservoir Storage



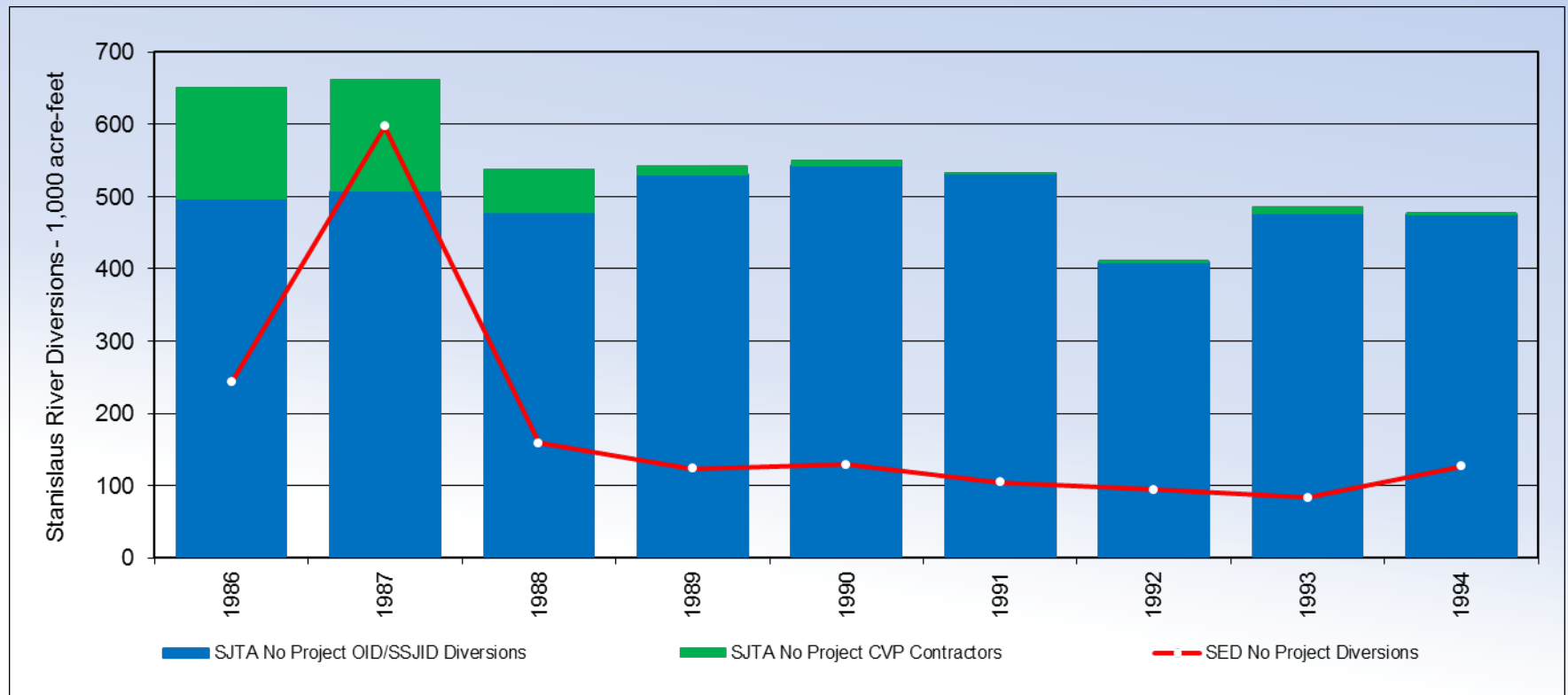
River Release from Goodwin



Bad Depiction of Operation of New Melones

Detail of 1986-1994 Operations

The SED portrays greater New Melones storage and Goodwin river releases than the SJTA portrayal. The additional water comes from the SED's bad portrayal of Stanislaus River diversions



Modeling is Flawed and Not Usable for Estimating Hydrologic Conditions

- Modeling for the SED is woefully non-representative of potential changes in operations that could occur due to alternative flow requirements.
- By not getting operations right (representative) you can't get the reservoir operation right or river flows right, and any subsequent analysis dependent upon the water operations will be ill-based.
- Baseline is the basis for all comparisons, and must be reformulated and established.
- All alternatives must be reformulated and reanalyzed.
- Sensible and realistic protocols of water supply operations must be incorporated.

