

**Department of
Conservation &
Development**

Water Agency

30 Muir Road
Martinez, CA 94553

Phone: (925) 674-7824

**Contra
Costa
County**



Catherine O. Kutsuris
Director

Public Hearing (3/20/13)
Bay-Delta Plan SED
Deadline: 3/29/13 by 12 noon

March 28, 2013

Jeanine Townsend
Clerk to the Board
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95814-0100

Re: Contra Costa Water Agency Comments on the Draft Substitute Environmental Document for the Bay-Delta Water Quality Control Plan

Dear Ms. Townsend:

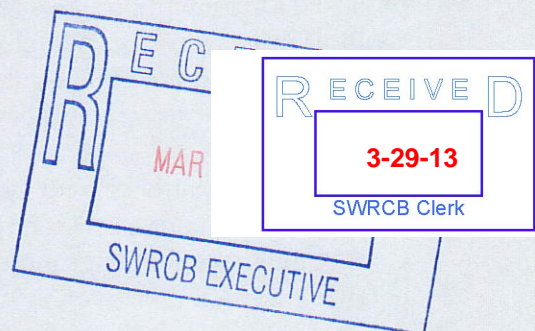
Contra Costa County appreciates this opportunity to review the Draft Substitute Environmental Document (SED) in support of potential changes to the water quality control plan for the Bay-Delta: San Joaquin flows and Southern Delta water quality. The Draft SED was released by the California State Water Resources Control Board (SWRCB) for public review on December 31, 2012.

The proposed changes to the Bay-Delta Water Quality Control Plan include:

1. A new narrative February through June Lower San Joaquin River (LSJR) flow objective and associated program of implementation; and
2. Revised numeric southern Delta salinity objectives and associated program of implementation.

Specifically, the SWRCB is proposing a minimum flow objective of 35% of unimpaired flow (February-June) and relaxation of the 30-day average southern Delta salinity standard, April-August from 700 $\mu\text{mhos/cm}$ to 1,000 $\mu\text{mhos/cm}$ (expressed as specific conductance (EC)).

The SWRCB is recommending the U.S. Bureau of Reclamation still remain responsible, under their water rights, for meeting a 700 $\mu\text{mhos/cm}$ objective at Vernalis during April-August (Appendix K, Draft Southern Delta Agricultural Water Quality Objectives and Program of Implementation, page 2). However, the SED states this water right responsibility may be



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modified after adoption of a TMDL¹ or other salinity management plan by the SWRCB or Central Valley Regional Water Quality Control Board. This might temporarily delay implementation of a 1,000 $\mu\text{mhos/cm}$ objective at Vernalis, but the water quality at the three agricultural stations will still be degraded above the current 700 $\mu\text{mhos/cm}$ EC limit.

Contra Costa County provided detailed scoping comments to the SWRCB on May 23, 2011. Many of the County's specific requests have been ignored in preparing the Draft SED. Contra Costa County's comments and requests regarding the Draft SED are summarized below. More detailed discussion is given in Attachment A.

San Joaquin River Flow Objectives

- The SED is inadequate because it fails to increase flows below Friant Dam to keep in good condition fish that exist or may be planted in the upper San Joaquin River and downstream to Vernalis (required by Fish and Game Code 5937).
- The SED is inadequate because it fails to analyze potential decreases in river flows during July-January, or provide measures to protect fish from these adverse redirected impacts.
- The SED is inadequate because it fails to fully analyze and disclose the adverse impacts of corresponding changes in Delta exports and Delta outflow on fish and wildlife and other beneficial uses.
- Requiring 35% on only three of four branches of the San Joaquin River means that flows at Vernalis will often be less than 35%.
- The SED is inadequate because it fails to fully analyze the adverse impacts of the proposed flow objectives on groundwater levels in the San Joaquin Valley, and increased seepage out of the river channels.
- The SED fails to analyze an alternative that protects public trust uses of water on all four branches of the San Joaquin River while allowing, in part, for water rights seniority.

San Joaquin River Salinities at Vernalis

- The Water Supply Effects model uses CALSIM EC data that are not consistent with historical data.

Southern Delta Salinities

- The SED is inadequate because it fails to comply with state and federal anti-degradation statutes, and fails to analyze and disclose the degradation of urban and environmental water quality.

¹ Total Maximum Daily Load

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- The SED fails to disclose significant water quality impacts as required under CEQA, specifically, violation of the currently existing salinity standard during April-August.
- The SED fails to analyze and disclose adverse impacts on urban drinking water quality.
- The SED is inadequate because it uses an inaccurate modeling approach to analyze changes to southern Delta agricultural water quality.

Contra Costa County requests that the SWRCB adopt the following flow objectives for the full extent of the San Joaquin River above Vernalis. The SWRCB should require:

- (a) 50% of unimpaired flow at Vernalis in February-March, 40% in April, and 35% in May and June.
- (b) February-June flow objectives for all four branches, including the upper San Joaquin River above the confluence with the Merced, so that natural production of viable native fish populations, including replanted native fish, can also be supported and maintained below Friant Dam.
- (c) Minimum flows of at least 20% of unimpaired flow during July-January to ensure impacts are not redirected to the July-January period.

Each month, February-June, has a different range of percentages of unimpaired flows under current conditions. Setting a 35% flow objective for February and March will not only not increase flows in most cases, it could also result in reductions in flow relative to existing conditions.

Contra Costa County recommends that the SWRCB investigate whether unimpaired flow at Vernalis could be defined as the sum of the "full natural flow" for the four main branches of the San Joaquin River to allow easier implementation of these objectives. The four river unimpaired flow represent most of the total unimpaired flow for the San Joaquin Valley and these data are generally available within a month or two on the California Department of Water Resources' California Data Exchange Center (CDEC) website.

The 2009 Delta Reform Act declared that the policy of the State of California is to achieve certain objectives that the Legislature declares are inherent in the coequal goals for management of the Delta. (Water Code Section 85020). One of those objectives is to improve water quality to protect human health and the environment consistent with achieving water quality objectives in the Delta (Section 85020(e)). Contra Costa County requests that the SWRCB not conflict with this important state policy of improving water quality by allowing further degradation of southern and central Delta water quality. At a minimum, the SED preferred alternative must maintain the existing D-1641 southern Delta salinity objectives.

Contra Costa County appreciates your serious consideration of these comments. The County finds that the Draft SED is inadequate and fails to fully and accurately disclose adverse impacts

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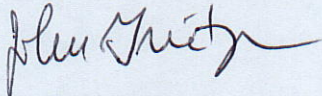
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on beneficial uses of Central Valley and Delta water. The County requests that a new SED be prepared and released again for public review and comment.

If you have any questions regarding this request, please contact me by phone at (925) 674-7824, or the County's water resources consultant, Dr. Richard Denton, at (510) 339-3618.

Sincerely yours,



John Greitzer

Contra Costa County Water Agency

cc: Steven Goetz, Deputy Director-Conservation, Transportation Planning & Redevelopment Programs
Ryan Hernandez, Contra Costa Water Agency
Richard A. Denton, Richard Denton and Associates

Detailed comments on the SWRCB's Draft Substitute Environmental Document

San Joaquin River Flow Objectives

- **The SED is inadequate because it fails to increase flows below Friant Dam to keep in good condition fish that exist or may be planted in the upper San Joaquin River and downstream to Vernalis.**

Contra Costa County previously requested the SWRCB also set instream flow requirements below Friant Dam. Flows in the upper San Joaquin River are the lowest of the four main branches of the San Joaquin River (lowest percentages of unimpaired flow), and in some areas the flow is effectively zero. Section 5937 of the California Fish and Game Code clearly states:

The owner of any dam shall allow sufficient water at all times to pass through a fishway, or in the absence of a fishway, allow sufficient water to pass over, around or through the dam, to keep in good condition any fish that may be planted or exist below the dam.

In August 2004, Federal Judge Karlton ruled that the operation of Friant Dam violates Section 5937. The SWRCB, with its responsibilities to protect the environment and the public trust, cannot shirk its duty to ensure that Section 5937 is enforced. While the amount of flow necessary to sustain fish populations can be debated, it is clear that the current lack of flow below Friant Dam is unacceptable and requires action by the SWRCB.

The Draft SED at the bottom of page 1-14 describes the settlement in the NRDC, et al., v. Rodgers, et al. lawsuit as resolving more than 18 years of litigation related to USBR's operation of Friant Dam. However, implementation of the settlement has been delayed. The adverse impacts of Friant Dam on San Joaquin salmon since the 1940s has not been resolved.

There is also language in the Draft SED (e.g., on page 3-1), that refers to "*the three eastside, salmon-bearing tributaries (the Stanislaus, Tuolumne, and Merced Rivers).*" This language could be interpreted to mean that the SWRCB believes the upper San Joaquin River below Friant does not need to be protected because it is not currently "*salmon-bearing.*" If flow is restored to the upper San Joaquin (as proposed by the San Joaquin River Restoration Program), salmon runs will be able to return above the confluence with the Merced River. SWRCB flow objectives are needed now to ensure salmon can reestablish in this reach of the river and to sustain those fish populations.

The SED narrative objective (Appendix K, page 1) states: "*Maintain flow conditions from the San Joaquin River Watershed to the Delta at Vernalis, together with other reasonably controllable measures in the San Joaquin River Watershed, sufficient to support and maintain*

the natural production of viable native San Joaquin River watershed fish populations migrating through the Delta.” To fully meet this narrative objective it is necessary to also implement flow objectives for the upper San Joaquin River below Friant.

The SWRCB’s proposal to give Friant “*a free ride*” is also inconsistent with the SWRCB’s duty to balance beneficial uses. Requiring water users on the Stanislaus, Tuolumne and Merced to reduce their diversion and storage of water, but not those diverting and storing water on the upper San Joaquin above the confluence with the Merced, unreasonably places the burden on only a portion of the water users contributing to the fisheries decline. It also creates a situation where imposing a 35% of unimpaired flow requirement on only three of the four main branches can result in flows at Vernalis that are less than 35% of total unimpaired flow.

Figure 2-4 of the Draft SED, reproduced below, shows the dramatic adverse impact Friant Dam has had on the upper San Joaquin River, in clear conflict with Fish and Game Code 5937 and the public trust.

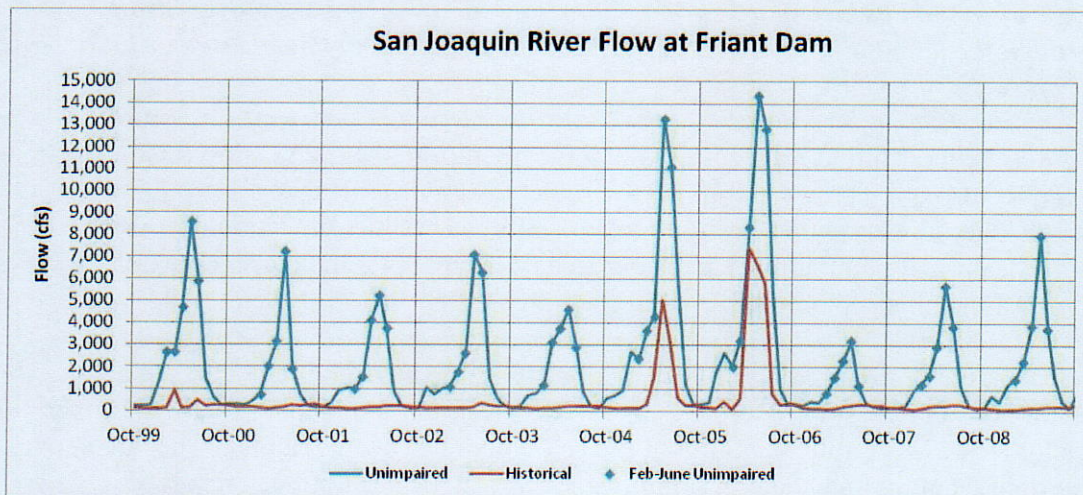


Figure 2-4. Monthly Unimpaired and Historical San Joaquin River Flows at Friant Dam for Water Years 2000–2009 (cfs = cubic feet per second)

The SED is inadequate because it fails to set increased instream flows on all major branches of the San Joaquin River. Contra Costa County requests that the SWRCB establish new flow objectives for the upper San Joaquin River as part of the Phase I process, although implementation of these objectives could be phased in over, say, 5 years to allow, but also encourage, implementation of the SJRRP.

The SWRCB must revise the SED to also include instream flow requirements on the San Joaquin River above the confluence of the Merced, and release a new draft SED for public review and comment.

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- **The SED is inadequate because it fails to analyze potential decreases in river flows during July-January, or provide measures to protect fish from these adverse redirected impacts.**

As stated in the County's May 2011 scoping comments: "Minimum flows are also needed outside the February-June period of greatest concern for fish and wildlife to ensure flow impacts are not redirected to the July-January period." The County recommended a minimum flow of 20% of unimpaired flow be required July-January, perhaps with a high flow cap. This would, in part, address the requirements of Fish and Game Code Section 5937. It would also ensure that July-January river flows do not decrease below existing (low) levels because of redirected impacts from the proposed February-June flow requirements.

The Draft SED is inadequate because it relies upon a simplified operations model (the Water Supply Effects (WSE) spreadsheet model) that appears to assume, *a priori*, that there will be no redirected impacts. The output from the WSE model shows July-January flows either do not change, or in a few cases, increase as a result of increasing February-June minimum flow requirements.

Assuming there are no changes to tributary flows during July-January as a result of February-June increases in flow is useful for disclosing the maximum potential adverse impacts to water supply and hydropower generation. However, it fails to disclose the potentially significant adverse impacts on fish due to reduced river flows in July, August and subsequent months.

The SED is inadequate because it fails to analyze potential decreases in river flows outside of the February-June period, or provide measures to protect fish from these redirected impacts. The SWRCB must perform a detailed analysis of the potential adverse impacts of the proposed increases in February-June flows on river flows and fish during July-January and provide protection against, or full mitigation for, any adverse environmental impacts, and release a new draft SED for public review and comment.

- **The SED is inadequate because it fails to fully analyze and disclose the adverse impacts of corresponding changes in Delta exports and Delta outflow on fish and wildlife and other beneficial uses.**

Because the SWRCB relied on the simple Water Supply Effects model, the SED does not analyze the potential water supply impacts of proposed alternatives on state-wide water operations. The potential water supply impacts on water users in the Sacramento River systems and Delta also need to be analyzed. For example, changes to San Joaquin inflows at Vernalis will affect south-of-Delta exports because of the San Joaquin inflow to export ratio and changes to Old and Middle River flows. These impacts cannot be quantified without using a Central Valley operations model such as California Department of Water Resources' CALSIM model.

The SED on page F.1-20 in Appendix F.1 states: “*The WSE model was needed for assessing the LSJR alternatives because CALSIM does not include the option of setting monthly downstream flow targets as a fraction of the unimpaired flows.*” This option can, and should, be built into the CALSIM model to enable the full effects of the proposed changes to be analyzed and disclosed.

The Draft SED in Appendix F.1 on page F.1-165 acknowledges that “*changes in SJR flow at Vernalis will also change flow in the Delta channels, and may change southern Delta exports and Delta outflow.*” However, the Draft SED only does a simple analysis of these changes in exports and outflow and states that “*further evaluation of these Delta outflow and export changes will be included in the State Water Board’s ongoing review of the 2006 Bay-Delta WQCP in Phases II, III and IV.*” This means the Draft SED is inadequate because it fails to fully analyze and disclose the impacts of these changes in Delta exports and Delta outflow on fish and wildlife and other beneficial uses, and the impacts of further increases in San Joaquin flows that may be necessary to meet revised Delta flow objectives (under Phase 2 of the SWRCB’s current review).

Contra Costa County requests that the SWRCB use the CALSIM model for the Central Valley and Delta, not just the San Joaquin River, to calculate the potential reductions in San Joaquin flows during July-January and disclose all adverse effects of these reductions in flow on San Joaquin and Delta water quality for drinking water, agricultural and ecosystem beneficial uses. The SED must be fully revised and reissued for public review and comment.

- **Requiring 35% on only three of four branches of the San Joaquin River means that flows at Vernalis will often be less than 35%.**

Because the preferred alternative does not require any minimum flow on the upper San Joaquin River below Friant, meeting 35% of unimpaired flow on the Stanislaus, Tuolumne and Merced will sometimes mean that the flow at Vernalis is less than 35%. The SWRCB’s August 2010 Delta Flow Criteria report determined that flows at Vernalis during February-June would need to be at least 60% of unimpaired flow to sustain fish populations in the San Joaquin River.

The following graph presents simulated monthly data from the SWRCB’s Water Supply Effects model. The simulated Vernalis flow for March, as a percentage of Vernalis unimpaired flow, is plotted as a function of Vernalis unimpaired flow. The WSE simulation with a 35% objective is compared with the WSE existing conditions data set for March.

In the driest (critically-dry) years, unimpaired flows are very small, so the flow ratio will typically be high. In the wettest years, there is typically flow well in excess of downstream San Joaquin River diversions, so the flow ratio is also higher than 35% or even 50%. The years with the lowest flow ratios (for March) will typically be the dry and below normal years.

This plot of March data suggests that the proposed 35% flow objective will only result in an improvement in flow conditions (and a water cost) 17% of the time. The simulated existing

conditions data are already 35% or better in 68 out of 82 years. The existing conditions data are already 50% or better more than half the time.

What is a concern and needs to be addressed is that the SWRCB's proposed flow objective could result in reductions in Vernalis flows in those years when the flow ratio has been in excess of 35% historically.

Vernalis Percentage of Unimpaired Flow

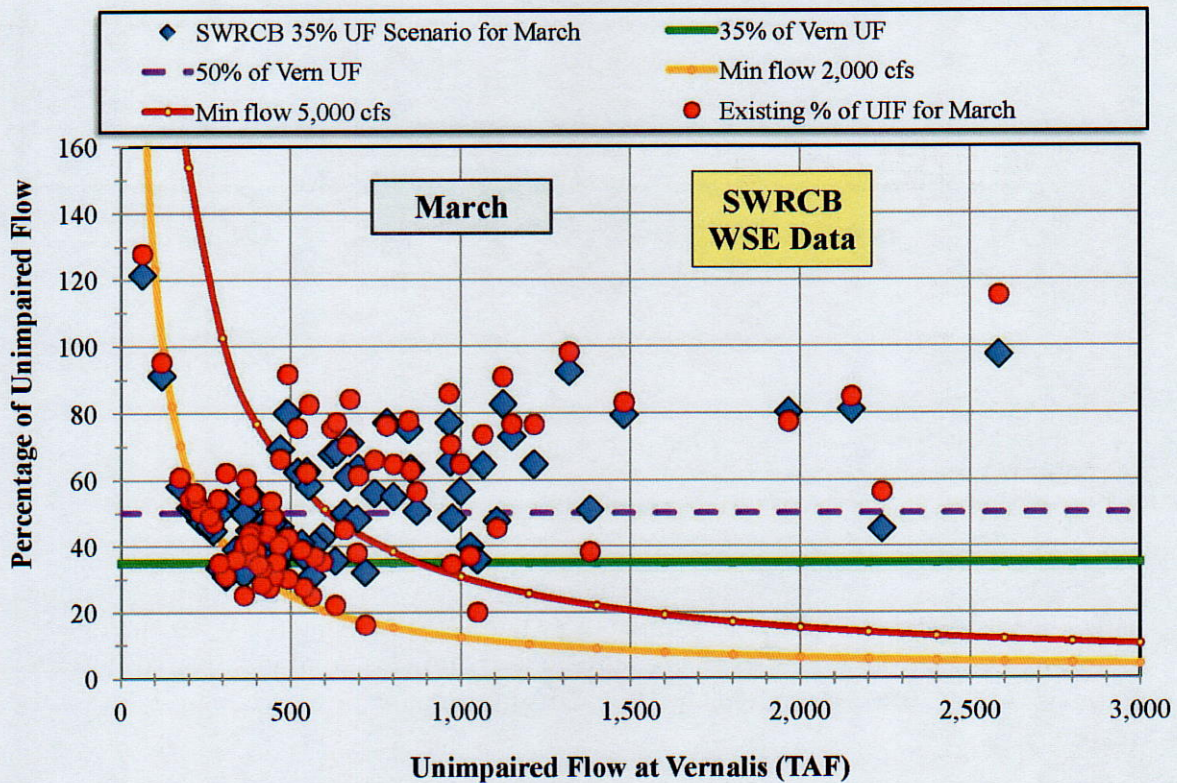


Figure 1: Comparison of March unimpaired flow ratios at Vernalis for existing conditions and with a 35% flow objective, as simulated by the SWRCB using the WSE model. In March, the objective is already met under existing conditions 83% of the time. Unfortunately, existing Vernalis flows are reduced in many years.

The next graph shows the corresponding WSE simulation data for the month of May. In this case, the majority of the time, existing flow ratios are below 35%. Additional flow releases on the Stanislaus, Tuolumne and Merced (but not the upper San Joaquin) generally result in only 30% of unimpaired flow at Vernalis, or less. Existing flows that are above the 35% flow objective are often reduce, especially in drier years when those higher current flows would be more beneficial to fish.

Vernalis Percentage of Unimpaired Flow

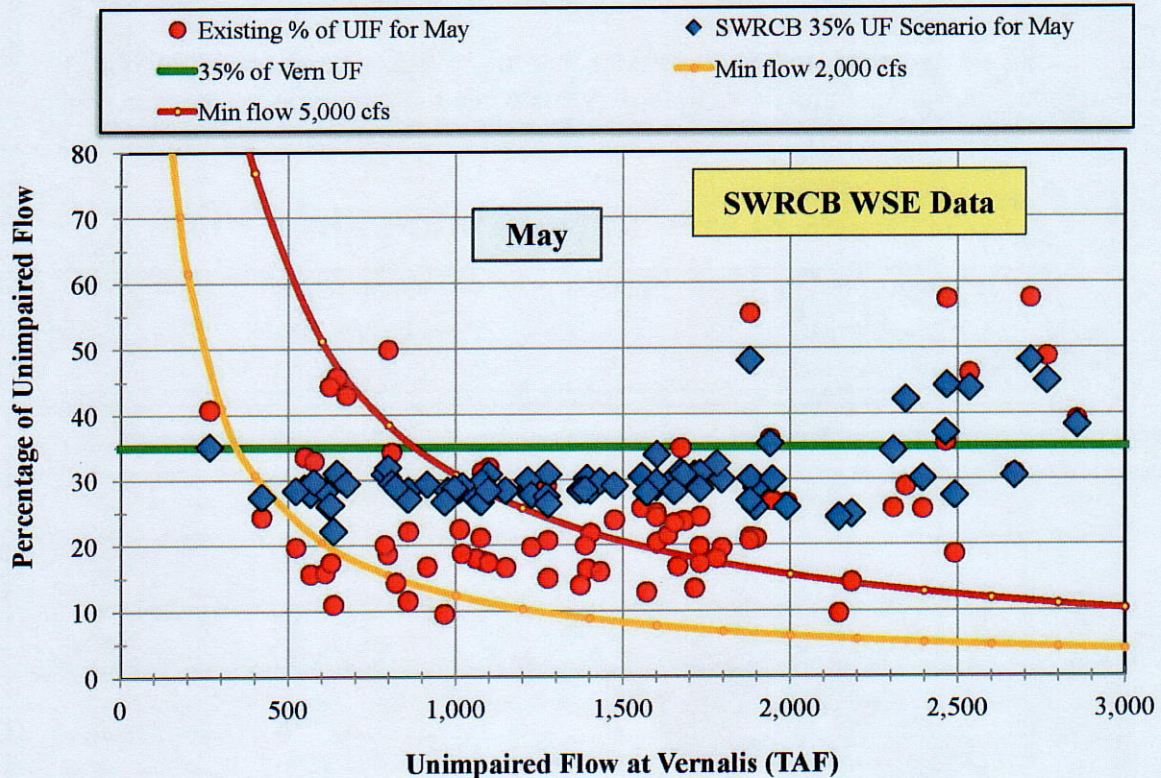


Figure 2: Comparison of May unimpaired flow ratios at Vernalis for existing conditions and with a 35% flow objective, as simulated by the SWRCB using the WSE model. Because releases from Friant are not required, the resulting ratio of unimpaired flow at Vernalis is only 30% or less. Even in May, existing Vernalis flows are reduced in some years.

Contra Costa County requests that the SED clearly disclose that the February-June flow at Vernalis will often be less than 35% and therefore much less protective of fish and wildlife than the figure of 60% established in the SWRCB's 2010 Delta Flow Criteria report.

The SED should also disclose that the proposed 35% flow objective will actually decrease flows from existing levels in many years, especially in drier years, to the detriment of key fish species.

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- **The SED is inadequate because it fails to fully analyze the adverse impacts of the proposed flow objectives on groundwater levels in the San Joaquin Valley, and increased seepage out of the river channels.**

Increasing minimum flow requirements in the tributaries, February-June, will reduce the available surface water supplies for farmers on the eastside of the San Joaquin Valley. One likely response to those reductions in irrigation water will be an increase in groundwater pumping and a corresponding drawdown of already overdrawn aquifers.

This can cause land settlement and change the amount of seepage into and out of the tributaries. Both of these effects can cause stream characteristics and change the fish habitat along the rivers.

The SED is inadequate because it fails to fully analyze probable changes in groundwater pumping and the resulting adverse impacts on groundwater levels in the San Joaquin Valley, and increased seepage out of the river channels. These impacts must be analyzed and disclosed and a revised SED released for public review and comment.

- **The SED fails to analyze an alternative that protects public trust uses of water on all four branches of the San Joaquin River while allowing, in part, for water rights seniority.**

As discussed on page 1-3 of the Draft SED, the SWRCB has authority to amend an existing water right by invoking its continuing authority to protect public trust uses of water. Contra Costa County in its May 2011 scoping letter requested the SWRCB consider and fully analyze an SED alternative for San Joaquin River flow objectives based on the following principles.

1. Each of the four major eastside tributaries must bypass at least 20% of the unimpaired inflow through their reservoirs. This is consistent with the SWRCB's continuing authority and duty to protect public trust uses of water and the need to preserve the habitat and ecosystem values of each river. This public trust requirement applies to each individual watershed, and should be independent of the water rights priorities on other tributaries.
2. Additional flow contributions to meet the higher Vernalis flow requirement (up to 50% of unimpaired flow) should be based on water right priority within the whole San Joaquin Valley watershed (or an agreement like Vernalis Adaptive Management Program between the owners-operators of the major reservoirs).
3. A narrative flow requirement could then be used to determine whether even more flow was necessary to restore and sustain fish populations.

Fish and Game Code Section 5937 requires that water be left in the river below dams to keep fish in good condition, whether currently existing or planted there. Requiring at least 20% of unimpaired flow in all branches of the San Joaquin, in all months, would be a good initial attempt to ensure fish are protected in all these rivers.

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High percentages of unimpaired flow are more difficult to meet during the April-July snowmelt period on the San Joaquin. That is why Contra Costa County recommended an alternative that required 50% of unimpaired flow in February and March, 40% in April and 30% in May and June.

The adaptive management approach for meeting the Lower San Joaquin River flow objectives discussed on page 3-4 of the Draft SED would allow for adaptive management of the timing of flows to maximize protection of fish and wildlife beneficial uses based on recommendations from the fisheries agencies provided that the total quantity of water provided over the February-June time period is not less than the required percent of unimpaired flow. This will sometimes result in higher percentages of unimpaired flow reaching Vernalis for part of February-June, but will not guarantee the 60% that has been determined to be necessary.

Contra Costa County again requests the SWRCB give serious consideration to the three principles listed above.

San Joaquin River Salinities at Vernalis

- **The Water Supply Effects model uses CALSIM EC data that are not consistent with historical data.**

The approach used to simulate water quality changes at Vernalis relies on simulated tributary EC data from DWR's CALSIM II model that are not consistent with historical data. For example, CALSIM output monthly Tuolumne River EC and the corresponding WSE model power law fit to the data set a minimum EC of 85 $\mu\text{mhos/cm}$. As shown in Figure 1 below, daily EC data from DWR's CDEC database suggest the lowest EC values (corresponding to high Tuolumne flows) is closer to 45 $\mu\text{mhos/cm}$. The WSE power law fit is also inconsistent with the daily EC trend for lower Tuolumne flows.

Tuolumne River EC and Flow Data

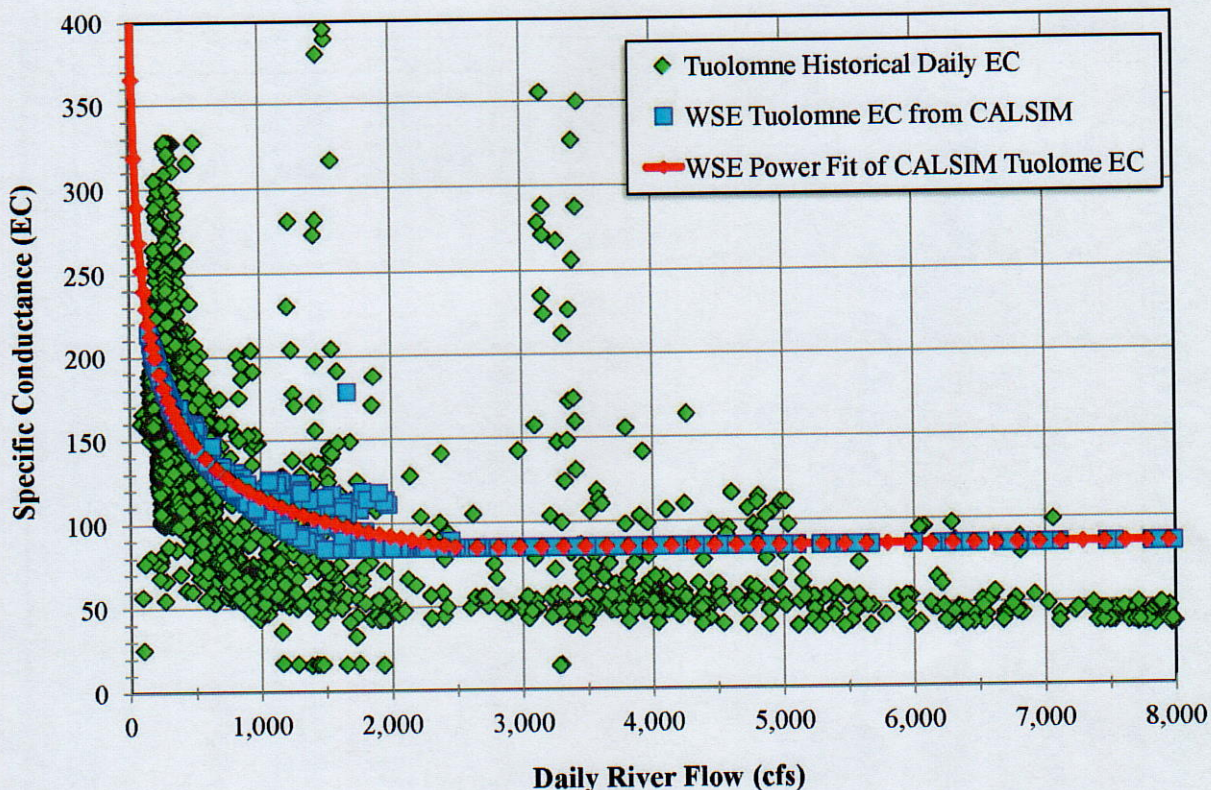


Figure 3: Comparison of measured daily Tuolumne flows with simulated monthly flows generated by DWR's CALSIM model showing considerable disagreement. Note that the flows are presented as flow rates (in cubic feet per second) rather than flow volumes (in acre-feet).

Similar discrepancies apply for the Stanislaus and Merced Rivers. If the tributary ECs are going to be used as boundary condition inputs to the WSE model calculations of Vernalis EC, the model equations should first be verified against historical EC data from the three tributaries.

Any empirical equation for estimating EC from flow should also take into account variations in salinity loadings by month or season. That will help reduce the large range of EC values at lower flows. This is consistent with very early equations used by the SWRCB that had two separate relationships between EC at Vernalis flow for the irrigation season and non-irrigation season. As shown in the following figure, the EC at Vernalis, for example, during January-February, is typically much higher than the EC during July-August, for the same San Joaquin flow at Vernalis. These equations might also be further refined by checking for any changes in these relationships over time, e.g., due to the Grassland Bypass Project which has reduced the quantity and timing of salt loads to the San Joaquin River.

Historical Vernalis EC and Flow Data

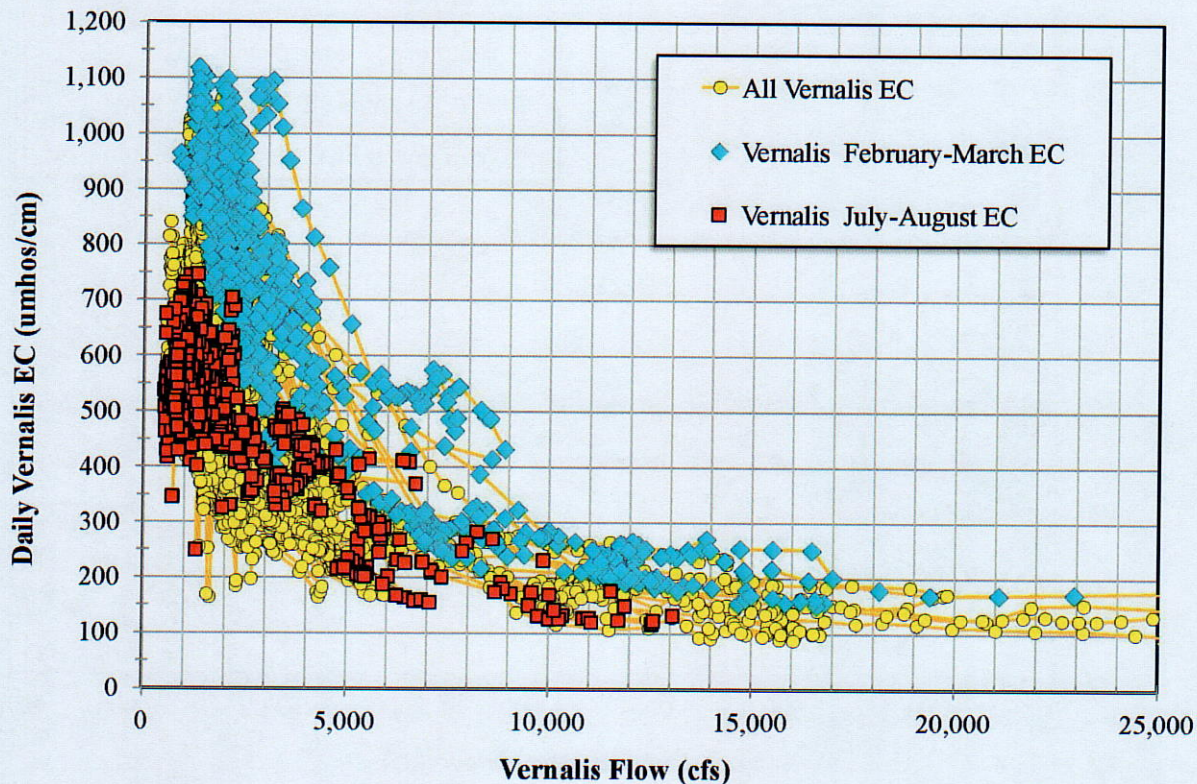


Figure 4: Plot of measured specific conductance (EC) in the San Joaquin at Vernalis as a function of measured streamflow at Vernalis. The data for February-March tend to have a high EC for a given flow whereas the EC data for July-August is lower.

If the SWRCB continues to use the WSE model for analyzing the effects of the proposed changes to the WQCP objectives, new relationships for simulating EC values for each of the three tributaries need to be developed based on historical EC data, and taking into account seasonal variations. Contra Costa County requests that the WSE modeling be updated using more accurate relationships, and a new draft SED be released for public review and comment.

Southern Delta Salinities

- **The SED is inadequate because it fails to comply with state and federal anti-degradation statutes, and fails to analyze and disclose the degradation of urban and environmental water quality.**

As stated in the County's May 2011 scoping comments, Delta water quality has already been significantly degraded because of the exports by junior water rights holders, i.e., the State Water

Project and Central Valley Project. Relaxing the south Delta agricultural water quality objectives from 700 $\mu\text{mhos/cm}$ to 1,000 $\mu\text{mhos/cm}$ will further degrade the Delta as a source of drinking water for over 23 million Californians and redirect impacts to in-Delta water users and the Delta ecosystem. The SWRCB's proposed change represents a 43% increase in specific conductance and a similarly significant adverse impact on salinity.

As discussed in Chapter 19 of the Draft SED, the Federal Antidegradation Policy was enacted to compel the states to enact policies to fully protect existing instream water uses (40 CFR 131.12). SWRCB Resolution 68-16 states that:

Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies.

Degrading southern Delta water quality will unreasonably affect present and future beneficial use of Delta water for municipal, agricultural and fish and wildlife beneficial uses, and is not consistent with maximum benefit to the people of California, in particular those with senior water rights and within the legal Delta (California Water Code Section 12220) .

The SED is inadequate because it fails to comply with state and federal anti-degradation statutes, and fails to analyze the impacts on urban water quality and fish and wildlife, both in the southern Delta and throughout the Bay-Delta system. The SWRCB must perform a detailed analysis of these potentially significant adverse impacts, fully mitigate these impacts, and release a new draft SED for public review and comment.

- **The SED fails to disclose significant water quality impacts as required under CEQA, specifically, violation of the currently existing salinity standard during April-August.**

The SED, at page 5-2, states that significant impacts would result if the LSJR or southern Delta water quality (SDWQ) alternatives would violate salinity or temperature water quality objectives, or substantially degrade water quality such that it does not protect agricultural beneficial uses or results in an increased concentration of 303(d) pollutants. However, CEQA Appendix G, under VIII. Hydrology and Water Quality, asks whether the project would violate any water quality standards or waste discharge requirements, and otherwise substantially degrade water quality.

The SWRCB's proposed project does result in violation of the currently existing salinity standard during April-August. Relaxing an existing salinity standard so that the standard is exceeded less often is not consistent with the intent of CEQA and must be considered a

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significant adverse impact. Failure to comply with existing standards and the lack of enforcement by the SWRCB is not legal or scientific justification for relaxing the currently existing water quality standards.

Similarly, the CEQA Guidelines do not limit degradation of water quality only to agricultural beneficial uses or 303(d) pollutants concentrations. Degradation of water quality that adversely impacts urban use and fish and wildlife protection must be disclosed and, if significant and unavoidable, be fully mitigated.

The real water quality impact is not, as the SED states on page 5-4, whether the project violates water quality objectives by increasing in the number of months with EC above the water quality objectives for salinity at Vernalis or southern Delta compliance stations (WQ-1). The actual impact to irrigation, municipal and industrial, and fish and wildlife protection beneficial uses will be due to increases in exceedences relative to the currently existing water quality objectives.

The proposed degradation of the existing agricultural salinity standards will result in significant adverse impacts with respect to both exceedences of the currently existing southern Delta water quality standard, and substantial degradation of water quality (a 43% increase in EC). The environmental review in the SED is therefore inadequate and misleading, and a new SED needs to be prepared and released for public review and comment.

- **The SED fails to analyze and disclose adverse impacts on urban drinking water quality.**

The SED fails to analyze the impacts of the proposed degradation of the southern delta water quality objectives on water quality at urban drinking water intakes in the south and central Delta is inadequate and fails to disclose the effects of the proposed project on the quality of drinking water for more than 23 million Californians.

The closest urban drinking water intake to the southern Delta agricultural stations is Contra Costa Water District's intake on Victoria Canal. As shown in Figure 5, the water quality in Victoria Canal (as represented by the daily EC data reported on DWR's CDEC database for Middle River at Union Point at the northeastern end of Victoria Canal) tends to be influenced by seawater intrusion during the later part of the year (typically during August-January), but during the rest of the year, the water quality is determined by agricultural drainage, including agricultural return flows from the San Joaquin River.

The influence of seawater intrusion at the northeastern end of Victoria Canal has been simulated in the figure below from historical Jersey Point EC data. Seawater intrusion will increase Jersey Point salinity followed by a delayed and attenuated response further into the interior Delta. The relationship for Victoria Canal can be derived by correlating Jersey Point EC (with an appropriate time lag) with Middle River at Union Point EC. The agreement with the measured

Middle River EC data is not exact but is good enough to indicate when seawater intrusion is having a major influence on Middle River at Union Point EC.

The effect of Vernalis EC on the water quality in Victoria Canal and at other urban intakes will be reduced when the south Delta temporary barriers are in place. These are typically put in April-June and removed October-November. However, not all the barriers have been installed every year, and the timing of the current temporary barrier program may change in the future.

Comparing Historical Middle River at Union Point and Vernalis EC (2009-2013)

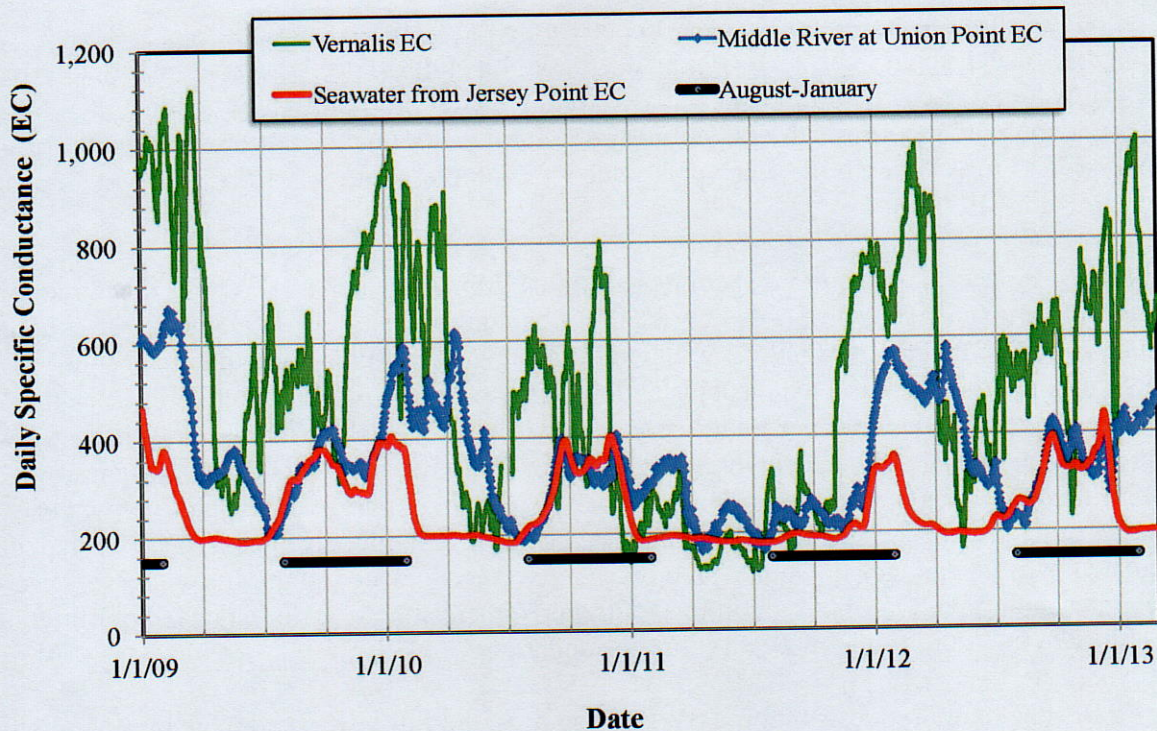


Figure 5: Comparison of water quality in Victoria Canal (represented by measured daily EC data from Middle River at Union Point) with measured daily EC data from the San Joaquin River at Vernalis. Also plotted are estimates of the influence of seawater intrusion (based on Jersey Point EC). Seawater typically makes the greatest contribution to Victoria Canal EC during August-January.

Contra Costa County requests that the SWRCB use the California Department of Water Resources' Delta Simulation Model (DSM2) model to simulate water quality changes throughout the central and south Delta. The analyses should also include scenarios when the temporary

Jeanine Townsend

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barriers are not in place and urban intakes will be at greatest risk of being influenced by degradation of the southern Delta salinity objectives.

The County also requests that DSM2 be modified to accurately estimate Delta island operations, in particular to simulate the dynamic effect of changes in Delta water quality on irrigation water in the Delta and on the subsequent quality of agricultural drainage discharged back into the Delta. The SED must be rewritten using this more detailed impact analysis and reissued for public review and comment.

- **The SED is inadequate because it uses an inaccurate modeling approach to analyze changes to southern Delta agricultural water quality.**

The modeling approach used in the SED to determine the increase in salinities at the three agricultural water quality compliance points is based on simple correlations of historical salinity data. However, the correlations, especially for Old River at the Tracy Road Bridge, are not accurate enough to determine the EC at the agricultural water quality stations that would result from a given EC at Vernalis, or vice versa. See for example, Figures 4.10 and 4.11 in Appendix C of the Draft SED.

The SWRCB needs to use a more accurate salt transport model such as DWR's DSM2 model to analyze the impacts of the proposed degradation of southern Delta water quality in the southern Delta. The current version of DSM2 will need to be upgraded to more accurately account for agricultural diversions onto Delta islands and discharges off the island. The SWRCB is also reviewing other Bay-Delta water quality objectives (Phase 2), such as increased Delta outflows and reducing reversals of tidally-averaged Old and Middle River flows. This could improve water quality at times in the interior Delta, which in turn, may improve the quality of water diverted onto, and discharged off Delta islands. The DSM2 model also needs to be upgraded to simulate potential changes in Delta island discharges if Delta water quality improves. These discharges, along with poor circulation in southern Delta channels, are a major factor affecting the ability to meet the southern Delta salinity standards.

Contra Costa County requests that the SWRCB analyze the full impacts to irrigation, municipal and industrial and fish and wildlife beneficial uses in the entire Delta using an upgraded version of DWR's DSM2 model and disclose these impacts in a revised Draft SED. The revised SED needs to provide full mitigation for all significant adverse water quality impacts, and a revised Draft SED needs to be released for public review and comment.