SENT VIA E-MAIL

February 2, 2012

Jeanine Townsend, Clerk of the Board
State Water Resources Control Board
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Re: South Delta Salinity Recommendations in Response to Peer Review Draft Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives

Dear Board Members:

O'Laughlin & Paris LLP has reviewed the Peer Review Draft Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives and prepared the attached comments for your consideration on behalf of the San Joaquin River Group Authority.

Thank you for your attention on this matter.

Very truly yours,
O'LAUGHLIN & PARIS LLP

KENNETH PETRUZZELLI

cc: San Joaquin River Group Authority
Attachment

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RECOMMENDATIONS OF THE SAN JOAQUIN RIVER GROUP AUTHORITY FOR SOUTHERN DELTA SALINITY

Designated beneficial uses and most sensitive uses: *The San Joaquin River Group Authority (SJRGA) supports the designation of agricultural uses as the most sensitive beneficial uses in the Southern Delta and this use, in particular irrigation uses, should be used for developing water quality objectives.*

Discussion: The State Water Board must establish an objective that provides "reasonable" protection. (Water Code §13241.) However, since in Bay-Delta planning the State Water Board is only prohibited from taking actions that are arbitrary, capricious, or entirely lacking in evidentiary support, the State Water Board has significant discretion with respect to deciding what is "reasonable." (City of Arcadia v. St. Water Resources Control Bd. (2006) 135 Cal.App.4th 1392, 1409). The conclusion that the agricultural beneficial use is the most sensitive is supported by the analysis conducted by State Water Board staff. To avoid confusion however, the proposed objectives should be designated "Southern Delta Salinity Objectives" as they are protective of all beneficial uses, not just agriculture. In addition, it should be specified that the Southern Delta Salinity Objectives are the only applicable salinity objectives for their respective water bodies and supersede other objectives for salinity, electrical conductivity, specific conductivity, total dissolved solids, or similar parameters that so as to avoid overlapping and/or redundant regulatory standards and to make it clear what the applicable regulatory standard is.

Use of Science in developing water quality criteria and objectives: *The SJRGA support the State Water Board's use of science developed in the Hoffman Report throughout the Southern Delta.*

Discussion: The State Water Board used the science in the Hoffman Report in developing the draft water quality objectives for salinity for protection of the agricultural beneficial use in the Southern Delta. These objectives and the designated waterways of the San Joaquin River from Vernalis to Brandt Bridge (BDT), Middle River from Old River to Victoria Canal (UNI), and Old River/Grant Line Canal from head of Old River to West Canal (OLD) are shown in a portion of Table 2 (Peer Review DTR, p A-11). These should be applied to the designated waterways for the irrigation season time period only.

Periods of protection need to be defined: *The SJRGA supports application of a water quality objective to the period of time when a beneficial use may be impacted. The SJRGA recommends the application of the Southern Delta salinity objective for protection of the agricultural beneficial use only be applied to the March – October period based on cropping patterns in the Southern Delta as shown in the Hoffman Report.*

Discussion: The primary beneficial use in the Southern Delta is irrigated agriculture. The most sensitive crop, beans, is irrigated from April through September, although they become more salt tolerant in September when temperatures cool. (Hoffman 2010, p. 68, 80; State Water Board 1995, p. 29.) In addition, other crops such as almonds and other tree and vine crops will continue to be irrigated during periods in October. None of the representative crops evaluated in the Hoffman Report are irrigated from late October through early March. (*see* Table 1.) To the degree irrigation occurs in late March and early October, it is for more salt tolerant crops (Id.) and during a cooler period and thus not as stressful to the crop. Finally, alfalfa has a growing season through winter, but normally goes dormant during periods of extended cold weather and is only irrigated from mid-March through mid-October. (Hoffman 2010, p. 68.) If alfalfa irrigations take place in the winter period (Nov – Feb), they are done during a cooler period and a period when leaching from rainfall is higher. Both factors likely mitigate any salinity impacts.

Table 1. Irrigation Seasons of Crops Modeled in the Hoffman Report.

Crop	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov-Feb
Beans[1]		Yes	Yes	Yes	Yes	Yes	Yes[2]		
Alfalfa	Yes[3]	Yes	Yes	Yes	Yes	Yes	Yes	Yes[4]	
Tree/vine (almonds)[5]		Yes	Yes	Yes	Yes	Yes			

Use of a water quality objective for operational purposes should be avoided: *The present Peer Review DTR supports the use of a water quality objective to provide operational criteria. The SJRGA is opposed to establishment of a water quality objective for other than protection of a designated beneficial use. The adoption of an objective for other than this purpose would be inconsistent with the Clean Water Act and the Porter Cologne Water Quality Control Act. The SJRGA is opposed to the adoption of a water*

[1] Beans are planted as early as April 1 and as late as mid-June. (Hoffman 2010, p. 68.) Beans planted April 1 are harvested by the end of July and beans planted in mid-June are harvested by the end of September. (Id.)
[2] Beans, in addition to other summer crops, are less salt-sensitive in September and October due to the cooler weather and shorter days than they are earlier in the summer. (State Water Board 1995, p. 29.)
[3] Occurs March 15th, at the earliest. (Hoffman 2010, p. 68.)
[4] The last irrigation usually occurs in the first week of October. (Hoffman 2010, p. 68.)
[5] Tree and vine crops such as almonds, apricots, and walnuts, although perennial, are not irrigated in the winter. (Hoffman 2010, p. 38.)

quality objective at Vernalis to provide increased flow or assimilative capacity for downstream discharges of salt.

Discussion: In Table 2 (Peer Review DTR, p A-11) designates objectives and the designated waterways to which they apply (San Joaquin River from Vernalis to Brandt Bridge (BDT), Middle River from Old River to Victoria Canal (UNI), and Old River/Grant Line Canal from head of Old River to West Canal (OLD)). An additional objective is establish in Table 2 (Peer Review DTR, p A-11) which designates an objective for Vernalis but no water body is designated for it to apply to. Because the objective at Vernalis applies to a point and not to a designated waterbody, it is by definition not a water quality objective. (Water Code §13050(h).) It protects no beneficial uses and applies to no spatial area. Throughout the Peer Review DTR it makes reference to the need to provide assimilative capacity for the Interior Southern Delta. The proposed objective at Vernalis is therefore acting as a tool in implementing the other three compliance locations, but if it is included solely for implementation purposes then it should not be an objective. To use it as an objective for providing assimilative capacity for downstream discharges is a violation of the Clean Water Act regulations and inconsistent with the Porter Cologne Water Quality Control Act.

The "Southern Delta Water Levels and Circulation" objective, also contained in Table 2 (Peer Review DTR, p A-11) should similarly be deleted. It appears intended to achieve two purposes - implementing the Southern Delta Salinity Objectives and insuring that South Delta water users have water of adequate supply and quality. Specifically, it appears aimed at making the Department of Water Resources (DWR) and the United States Bureau of Reclamation (Reclamation) mitigate for the impacts of their activities on Southern Delta water quality and water rights. It has long been acknowledged that the most practical solution for long-term protection of southern Delta agriculture from salinity would be construction of physical facilities to provide adequate circulation and substitute supplies. (U.S. v. St. Water Resources Control Bd. (1986) 182 Cal.App.3d 82, 121 fn12.) While the Southern Delta Water Levels and Circulation objective does not require construction of physical facilities, it does require maintaining adequate supply though maintaining adequate water levels and maintaining adequate circulation. Consequently, much like the "objective" at Vernalis, the Southern Delta Water Levels and Circulation objective is not aimed at independently regulating any water quality parameters, but on implementing other water quality objectives, specifically Southern Delta Salinity Objectives. The Southern Delta Water Levels and Circulation objective may therefore be an appropriate action to include in the program of implementation for the Southern Delta Salinity Objectives. It may also constitute an appropriate condition for the water right permits for DWR and Reclamation, especially since it appears to be aimed

at mitigating for the impacts of actions conducted by these two agencies. Regardless, since it is operational criteria for the Southern Delta Salinity Objectives it is not an appropriate water quality objective.

Operational criteria may be useful in implementing water quality objectives and, although the SJRGA may find specific operational criteria objectionable, it does not, as a general matter, oppose the use of such criteria. However, it is not an appropriate premise or purpose for a water quality objective.

Use of Regression Analysis for determining water quality objectives is flawed: *The present Peer Review DTR uses a regression analysis for water salinity levels between the three interior delta sites and Vernalis. The SJRGA does not support the present regression analysis and finds it flawed. The use of the regression analysis should be dropped until a better definition of the differences between the three interior sites can be explained.*

Discussion: The Peer Review DTR retains the regression analyses used in the first DTR to estimate the salinity degradation between Vernalis and the interior South Delta locations (Old River at Middle River/Union Island ("UNI"), Old River at Tracy Road Bridge ("OLD"), and Brandt Bridge ("BDT")). (Peer Review DTR, p. 4-7.) The regression analysis is used to develop a salinity relationship between the interior South Delta locations and Vernalis. The Peer Review DTR's analysis remains overly simplistic and inconsistent with knowledge of the South Delta.

In D-1641, the State Water Board stated that "Water quality in the southern Delta downstream of Vernalis is influenced by San Joaquin River inflow; tidal action; diversions of water by the [State Water Project (SWP)], [Central Valley Project (CVP)], and local water users; agricultural return flows; and channel capacity." (D-1641, p. 86.) Later, in developing the 2006 Bay-Delta Plan, the State Water Board stated:

> Elevated salinity (measured as EC) in the southern Delta is caused by a multitude of factors including: low flows; salts imported to the San Joaquin Basin in irrigation water; municipal discharges; subsurface accretions from groundwater; tidal actions; diversions of water by the SWP, CVP, and local water users; channel capacity; and local discharges of land-derived salts, primarily from agricultural drainage.

(2006 Bay-Delta Plan Appendix I, p. 64.)

In assessing interior South Delta water quality degradation, the Peer Review DTR evaluates NPDES (i.e. point source) discharges. (Peer Review DTR, p. 4-10.) However, it does not evaluate the impact of sub-

surface accretions and non-point source discharges, including those that are “background” and those that occur as a result of irrigation return flows and similar activities.

The degradation between Vernalis and OLD is the largest and therefore the focus of the Peer Review DTR (as with the first DTR). Degradation is so great that Susan Paulsen in her testimony to the State Water Board believed it was likely influenced by local sources. Dennis Westcot also testified during the panel discussions that the monitoring site is in a known area of high salinity and has caused repeated problems with the discharges from the City of Tracy, the Speckles Sugar Plant and from agricultural tile and surface water drainage in the area. The issue of whether local sources are a factor is further illustrated in the Hoffman Report where it is shown that boron levels in the OLD area being several times higher than those measured at Vernalis and Mossdale, illustrating that these came from either a significant concentration of the Vernalis flow or from additional local sources.(Hoffman Report, Figure 2-3, page 8) However, the regression equation is unchanged and there is no indication that this issue has been addressed by the Peer Review DTR.

The Peer Review DTR’s regression analysis also continues to ignore the effects of the CVP and SWP. In D-1641 the State Water Board explained the impacts of CVP and SWP export operations on southern Delta salinity, stating:

> Diversions in the Delta can cause hydrodynamic changes that affect water quality. During periods of high exports and peak irrigation, higher quality water is drawn into the southern Delta from the Delta cross-channel, the Mokelumne River, and Georgiana Slough. These waters mix with and improve the quality of San Joaquin flow. However, export pumping by the SWP and the CVP and in-Delta diversions in the southern Delta also cause null zones, areas with little or no circulation. These zones have little assimilative capacity for locally discharged salts. The lack of circulation prevents better quality water that is otherwise available from the main channels from freshening the water in these channels.

(D-1641, p. 87.)

Impacts of the CVP and SWP are therefore a critical component in assessing southern Delta salinity. Even if the current regression equations are valid, changes in CVP and SWP export operations could change the regression. As a result, if CVP and SWP export operations change in the future, any salinity objectives based on the regression analysis could become over or under-protective.

Need to allow for salt export from the San Joaquin River Basin: *The SJRGA recommends that the State Water Board adopt water quality objectives for salinity in the Southern Delta area that protect beneficial uses and also allow for salt export from the San Joaquin River Basin during non-use periods.*

Discussion: This approach fits the science provided by the Hoffman report as the report defined the irrigation season as being from March to October and his analysis of cropping periods shows that no irrigation or agricultural beneficial use takes place during the non-irrigation period that would be harmed by higher salinity levels. Setting a different salinity objective during the non-irrigation period is consistent with the Clean Water Act. This also allows for flexibility in water and salt management during wet and dry cycles. Such an approach also provides for salt management alternatives in the San Joaquin River Basin for salt export that have no or minimal impact on beneficial uses. This would also provide direction to the Lower San Joaquin River Committee of CV-SALTS which is developing water quality objectives for the upstream areas of the San Joaquin River Basin. This approach is consistent with the adopted Salt and Boron TMDL and with direction given to the Regional Board in the 1996 Delta Plan which calls for shifting salt export to periods of higher flow or periods of minimal or no agricultural beneficial use. The State Water Board needs to focus salt exports on periods of minimal or no agricultural beneficial use (i.e. non-irrigation periods) as shifting to the periods of future higher flows would mean shifting salt discharges to the spring periods when the Hoffman Report urged caution as there might be a need for an increased level of protection during the most critical period of pre-plant preparations, planting, germination and early seedling growth because of the lack of data available to the Hoffman Report and shifting salt exports to the higher flow periods also would shift this salt load to the periods of salmon out-migration.

Need to provide greater salinity protection during critical cropping periods. *The SJRGA supports incorporating additional flexibility and providing additional protection during some water year types and critical cropping periods such as pre-plant preparations, planting and germination periods and early sensitive growth periods for agricultural crops produced on Delta soils*.

Discussion: The Hoffman Report pointed to critical data gaps that could impact salinity decisions. Most of those were involved with the planting, seedling and early growth stages of the crop. This recommendation would support these findings of the data gaps in the science provided by the Hoffman report. This would provide an increased level of protection during the most critical period of pre-plant preparations, planting, germination and early seedling growth which was a period of unknown defined in the Hoffman Report. Present Delta water quality and management practices have shown that this

would be protective during this critical period. This would also incorporates flexibility for different water year types by allowing slightly poorer water quality during dry periods or periods when sensitive crops are not likely to be grown because of water supply shortages but provides for salt management in the Delta on the long-term by necessitating higher water quality during wetter cycles. This is also consistent with the Clean Water Act and allows for flexibility in water and salt management during wet and dry cycles.

Quantitative consideration of tributary flow and salinity at Vernalis should be eliminated unless a strong relationship between electrical conductivity (EC) and flow is established for each tributary: *The SJRGA opposes using a correlation of tributary flow and EC at Vernalis to assess the impact of different tributary flows unless and until an adequately strong correlation is developed for the Stanislaus, Merced, and Tuolumne River.*

Discussion: The Peer Review DTR uses CALSIM II modeling to develop a relationship between EC at Vernalis and flow for each tributary. (Peer Review DTR, p. 4-7.) The Peer Review DTR then uses the relationship to estimate EC at Vernalis at different percentages of unimpaired flow.[6] The R^2 coefficients of correlation for the Tuolumne and Merced River are both high and therefore indicate strong relationships. However, the R^2 coefficient for the Stanislaus River, at 0.18, is too low to indicate any relationship at all. As a result, when attempting to assess the impact of Stanislaus River flow on EC at Vernalis, EC at Vernalis would not change, irrespective of Stanislaus River flow. Stanislaus River flow could be high or it could be low but the EC at Vernalis would remain the same. The Stanislaus River also constitutes too large a portion of the watershed to simply ignore. Furthermore, some relationship must exist, however, because stored water released from New Melones has been an effective method of meeting the salinity objective at Vernalis for over 15 years. The DTR's analysis is therefore flawed. Consequently, modeling the relationship between EC and flow for the tributaries with EC at Vernalis provides neither accurate nor useful information. The SJRGA therefore recommends eliminating the use of the regression analysis until an adequate coefficient for the Stanislaus River is developed.

[6] The EC resulting from different percentages of unimpaired flow is unclear, because the Peer Review DTR is inconsistent in describing the percentage of unimpaired flow assessed. According to the legend for Figure 4.6, 20 and 60 percent of unimpaired flow is compared to CALSIM II results. (Peer Review DTR, p. 4-7.) However, according to the text Figure 4.6 compares 40 and 60 percent of unimpaired flow to CALSIM II results.

RECOMMENDED ALTERNATIVES FOR EVALUATION

During the evaluation of alternative salinity objectives for the preparation of the Substitute Environmental Document (SED), the San Joaquin River Group Authority requests that the State Water Board conduct a full analysis for the following alternatives:

FOR THE AGRICULTURAL WATER USE SEASON (MARCH 15th – October 31st)

ALTERNATIVE # 1

During the agricultural water use season, remove the Vernalis salinity objective; retain the interior delta salinity objectives and compliance points as they are listed for salinity objectives in the Draft Technical Report.

Reasons:

- Vernalis salinity objective has no waterway for compliance. The remaining three waterway compliance points cover all the Delta waterways;
- Vernalis salinity objective is being established to provide assimilative capacity. Dilution or provision of flows for assimilative capacity is not allowed under the Clean Water Act and is inconsistent with the Porter Cologne Water Quality Control Act;
- Vernalis salinity objective would necessitate establishment of salinity water quality objectives upstream by the CV-SALTS effort which would be set, not for beneficial use protection, but for providing dilution water, which not allowed by the Clean Water Act and is inconsistent with the Porter Cologne Water Quality Control Act;
- Utilizes the science provided by the Hoffman Report;
- Removes the criticism of the Draft Technical Report which was not answered by the peer review that the regression analysis is flawed when using the Tracy-Old River site (OLD) in the regression analysis;
- Using Vernalis (VNS) as an operational guideline allows time to better understand the relationship between Vernalis salinity levels and those found throughout the delta, including seasonal changes in the relationship;
- Previously combining water quality objectives with assumed operations or methods of implementation has proved problematic from a regulatory perspective. The present salinity objectives in the Interior South Delta were adopted with the intention of encouraging

settlement between the South Delta Water Agency, Department of Water Resources, and U.S. Bureau of Reclamation or encouraging other measures by those entities to address salinity on the South Delta. When no settlement was reached and no alternative measures were in place, the objective was infeasible to implement; and

- Changes in discharges and/or operations could change the water quality degradation rate between Vernalis and OLD, making an objective at Vernalis either insufficient to implement the other salinity objectives or overly restrictive. Amending an objective at Vernalis that is serving as operational criteria is much more difficult than amending operational criteria in the program implementation and/or in applicable water right orders.

ALTERNATIVE # 2

During the agricultural water use season, set the same salinity objectives at all four sites (Vernalis (VNS), SJR at Brandt Bridge (BDT), Old River at Middle River (UNI) and Old River at Tracy Road Bridge (OLD)) by making the Vernalis salinity objective consistent with the other three compliance points.

Reasons:

- This approach fits the science provided by the Hoffman Report;
- Uses a consistent salinity objective throughout the Delta making compliance measurement easier;
- Continues the present measurement points;
- Consistent with the Clean Water Act; and
- Where degradation is noted, the regulations say that a TMDL must be prepared and load allocations set to meet the objective. A salt and boron TMDL is already prepared for Vernalis but it did not consider any salt loading below Vernalis. If objectives are not met then a TMDL is required and is a more appropriate method of implementing objectives.

ALTERNATIVE # 3

During the agricultural water use season, eliminate the interior Delta compliance points and only set a salinity objective of 1. 0 mmhos/cm at Vernalis based on the science for protection of the agricultural beneficial use.

Reasons:

- This approach fits the science provided by the Hoffman Report;
- Uses a consistent salinity objective throughout the Delta making compliance measurement easier;
- Consistent with the Clean Water Act; and
- Once the objective at Vernalis is met, degradation downstream must be addressed through a TMDL which places needed load allocations on South Delta dischargers, and USBR and DWR for water project operations or other factors controlling salt loading to the Delta waterways.

FOR THE AGRICULTURAL WATER USE SEASON (MARCH 15th – June 31st)

ALTERNATIVE # 4

For each of the alternatives listed above, modify the salinity objective for the April – June period of the agricultural water use season to be 1. 0 mmhos/cm maximum with a ten-year running average of 0.7 mmhos/cm at the four compliance points (Vernalis (VNS), SJR at Brandt Bridge (BDT), Old River at Middle River (UNI) and Old River at Tracy Road Bridge (OLD)).

Reasons:

- This approach fits the science provided by the Hoffman Report;
- Provides an increased level of protection during the most critical period of pre-plant preparations, planting, germination and early seedling growth which was a period of unknown defined in the Hoffman Report. Present Delta water quality and management practices have shown that this would be protective during this critical period;
- Incorporates flexibility for different water year types by allowing slightly poorer water quality during dry periods or periods when sensitive crops are not likely to be grown because of water supply shortages, but provides for salt management in the Delta on the long-term by necessitating higher water quality during wetter cycles;
- Uses a consistent salinity objective throughout the Delta making compliance measurement easier;
- Consistent with the Clean Water Act; and
- Allows for flexibility in water and salt management during wet and dry cycles.

FOR THE NON-AGRICULTURAL WATER USE SEASON (November 1st - MARCH 14th)

ALTERNATIVE # 5

For each of the alternatives listed above, modify the salinity objective at Vernalis (VNS) for the non-irrigation season (November – March) to be a 1.4 mmhos/cm maximum with a ten-year running average of 1.2 mmhos/cm. During this same time period, eliminate all salinity objectives at the three remaining compliance points (SJR at Brandt Bridge (BDT), Old River at Middle River (UNI) and Old River at Tracy Road Bridge (OLD)) in the interior Delta or set a 1.4 mmhos/cm maximum.

Reasons:

- This approach fits the science provided by the Hoffman report and the State Water Board analysis of cropping periods which shows no irrigation or agricultural beneficial use taking place during that period;
- Consistent with the Clean Water Act;
- Allows for flexibility in water and salt management during wet and dry cycles;
- Provides for salt management alternatives in the San Joaquin River Basin for salt export that have no or minimal impact on beneficial uses;
- Provides direction to the Lower San Joaquin River Committee of CV-SALTS which is developing water quality objectives for the upstream areas of the San Joaquin River Basin.
- Consistent with the adopted Salt and Boron TMDL and with direction given to the Regional Board in the 1996 Delta Plan which calls for shifting salt export to periods of higher flow or periods of minimal or no agricultural beneficial use;
- The State Water Board needs to focus salt exports on periods of minimal or no agricultural beneficial use (non-irrigation periods) as shifting to the periods of future higher flows would mean shifting salt discharges to the spring periods when the Hoffman Report urged caution as there might be a need for an increased level of protection during the most critical period of pre-plant preparations, planting, germination and early seedling growth because of the lack of data available to the Hoffman Report; and
- Shifting salt exports to the higher flow periods also would shift this salt load to the periods of salmon out-migration.
- The Hoffman Report does not identify any crops irrigated with surface water between late October and early March. There are no other existing or actual beneficial uses in any of the

water bodies associated with the Southern Delta Salinity Objectives during this time period. The Hoffman Report developed scientifically-based criteria and the SJRGA does not recommended establishing subjectively-based water quality objectives.