

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY  
REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

RESPONSES TO WRITTEN PUBLIC COMMENTS ON THE  
24 MAY 2004 DRAFT

OF THE

AMENDMENTS

TO

THE WATER QUALITY CONTROL PLAN FOR THE SACRAMENTO  
RIVER AND SAN JOAQUIN RIVER BASINS

FOR

THE CONTROL PROGRAM FOR FACTORS CONTRIBUTING TO THE  
DISSOLVED OXYGEN IMPAIRMENT IN THE STOCKTON DEEP  
WATER SHIP CHANNEL



*7 July 2004*

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## Introduction

The following provides staff's response to written comments regarding the staff report titled, *Amendments to the Water Quality Control Plan for the Sacramento River And San Joaquin River Basins for the Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel, Draft Final Staff Report, 24 May 2004* (Draft Final Staff Report).

Five comment letters, as listed in the following table, were received by 24 June 2004 in response to the solicitation. Nine other comment letters that were received by 14 May were responded to in *Comments and Responses for April 2004*, Appendix C of the Draft Final Staff Report.

Comment No.	Name	Affiliation	Date Received
1	Mark J. Madison, Director of Municipal Utilities	City of Stockton	3 June 2004
2	G. Fred Lee and Anne Jones-Lee	G. Fred Lee and Associates	23 June 2004
3	Jennifer L. Spaletta, Attorney-at-Law	Herum Crabtree Brown on behalf of Stockton East Water District	3 June 2004
4	Bill Jennings	DeltaKeeper	24 June 2004
5	Michael Mahoney, Chief, Construction-Operations Division	U.S. Army Corps of Engineers	24 June 2004
6	Steve Chedester, Executive Director	San Joaquin River Exchange Contractors Water Authority	24 June 2004
7	Lowell F. Ploss, Project Administrator	San Joaquin River Group	24 June 2004

Comments received after 24 June 2004 will be considered and responded to in the 8/9 July hearing to consider adoption of a Basin Plan Amendment on the Control of Factors Contributing to the Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel. As of 7 July, no additional written comments had been received.

**Comment Letter # 1: Mark J. Madison, Director of Municipal Utilities,  
City of Stockton**

June 3, 2004

Re: City of Stockton Review Comments and Questions on the May 24 2004 Draft Final Staff Report and Basin Plan Amendments for the DWSC DO TMDL

**Comment # 1.1**

The City recognizes that many of the comments sent on May 14, 2004 about the Draft Staff Report have been incorporated into the Draft Final Report.

Response:

Comment noted.

**Comment # 1.2**

It is our understanding that written responses to the questions raised in this memo will be incorporated in the Administrative Record. For our records City staff respectfully request copies of the responses.

Response:

Written comments and written response to comments will all become part of the administrative record for the Basin Plan Amendment. Also, verbal testimony and any discussions that take place at the Regional Board adoption hearing(s) will also be part of the administrative record. The City of Stockton is on the distribution list for all document releases associated with this TMDL.

**Comment # 1.3**

The main diagram used to describe and evaluate the loading that contributes to the observed DO depletion in the Stockton DWSC is shown in the executive summary (1.1) and in the Wasteload and Load Allocation section (4.5). The City believes that too much important information and concepts have been combined into this single diagram. The TMDL would be more clearly described by referring to three separate TMDL loading “buckets”. The recommended diagram with three TMDL loading buckets is illustrated in Figure 1 and described in the following paragraphs.

The first TMDL loading bucket represents the “historical” loading conditions that might have existed years ago prior to the dredging of the DWSC, and preceding substantial diversions of SJR flows upstream of Vernalis or at the head of Old River (caused by the CVP and SWP export pumping). While it is important to realize that loads, flows, and geometry changes each contribute to the observed depletion of DO levels in the DWSC and at times to concentrations below the established DO objectives. However, we are unable to accurately estimate how large this “historical” loading bucket might have been.

The second TMDL loading bucket is the “existing” DWSC loading bucket. This bucket represents the current loading conditions that will be managed with the DO TMDL in order to meet DO objectives in the DWSC. This is the focus of the TMDL load identification, allocation, and reduction efforts. This bucket represents the actual DWSC loadings that can be measured and managed. The loading capacity (LC) identified in equation (4-1) should refer to the existing DWSC loading conditions, and not the historical loading conditions. All of the existing LC can be properly allocated including a moderate margin of safety (MOS), between Stockton’s RWCF loading and upstream river loads.

Response:

Although the concept of “existing” and “historical” DWSC loading buckets is understandable, for reasons given in Section 4.5.1 (bottom of page 39), we are unable to meaningfully select and define a historical baseline (as acknowledged in the comment).

The definition of LC in the Staff Report does not distinguish between that portion of the theoretical loading capacity, which may have been consumed by some set of historical conditions and that portion that is consumed from later, post-baseline activities. Instead, all of the loading capacity (less the margin of safety) is apportioned to the three contributing factors as defined in Equations 4-5 and 4-6 of the Staff Report. This appears to be fundamentally equivalent (with the exception of the margin of safety) to combining the “existing” and “historical” buckets described in the comments. Even if we were able to calculate a baseline historical condition, the relative percentage contribution to the additional oxygen demand would be determined in the same way as done in Section 4.5 of the Staff Report. Likewise the responsibility for reducing the excess net oxygen demand would be the same, as baseline conditions would not be assigned any such responsibility.

**Comment # 1.4**

The third TMDL loading bucket is the “excess” DWSC loading bucket. This bucket represents excess loading that causes the observed DO depletion to drop below the established DO objective. The magnitude of this excess DO depletion load is generally much smaller than the total DO depletion observed. Only this excess loading bucket must be controlled by the TMDL load reduction measures. The responsibility for these load reductions should be fully assigned and proportioned to the parties responsible for the three contributing factors (i.e., loads, reduced flows, deepened DWSC).

Response:

The report appears to be in fundamental agreement with the comment. The third TMDL loading bucket described corresponds with the concept of excess net oxygen demand (ENOD) as defined in Equation 4-7 of the staff report. The responsibility for these loading reductions (plus the margin of safety) is divided equally between the three main contributing factors.

**Comment # 1.5**

We suggest that you show these three buckets illustration on the same page in order to clarify historic and existing loading conditions.

Response:

See response to Comment # 1.3 and Comment # 1.4.

**Comment # 1.6**

The historical conditions bucket is larger than the existing conditions bucket and much larger than the excess loading bucket that must be eliminated with the TMDL.

Response:

Difficulties in selecting baseline historical conditions and the associated lack of historical data do not support conclusions regarding the relative magnitude of historical oxygen demand in the DWSC compared to current conditions.

**Comment # 1.7**

The difference between salt loads and BOD loads needs clarification. BOD loads are generally measured to decay or oxidize at a maximum rate of about 10% per day. Figure 2 is suggested as a helpful addition to the staff report or presentation materials. If 1000 pounds of salt is poured into the DWSC, the salt load can be immediately detected as increased TDS concentrations and by increased EC values. However, if 1000 pounds of BOD (i.e., corn syrup) were to be poured into the DWSC, the BOD loading would only slowly deplete the DO concentration in the DWSC. During the first day, approximately 100 pounds of DO would be missing, and the second day another 100 pounds of DO would be missing. Some of the BOD load will pass through the DWSC and move downstream of the lowest DO concentration (DO sag) and not contribute to the DO depletion in the DWSC.

Response:

Distinguishing the difference between a conservative pollutant (i.e. salt) and a pollutant that degrades as a function of time and numerous other variables (i.e. biological oxygen demand) is important and has been addressed adequately in numerous places in the staff report. Section 4.3.1 (middle of page 27) and Section 4.5.2 (end of page 41) contain discussion of the uncertainties in our current understanding of these degradation dynamics in the DWSC and the need to study and understand them further before detailed wasteload allocations can be developed for the RWCF. Modification to the staff report is not necessary to clarify this point.

**Comment # 1.8**

The TMDL must be formulated using the existing DWSC with existing flows and existing loads. This is the TMDL bucket: the loading capacity, oxygen demand load exerted, and excess load can be calculated from real field measurements.

The attached Table 1 provides an example of the calculations of the monthly average river loads and RWCF loads, as well as the DO depletions observed in the DWSC during 2001.

Response:

See response to Comment # 1.3 and Comment # 1.4.

**Comment # 1.9**

The Staff report (page 47) describes the difficulty of translating the allowable DO depletion (NOD) into an ultimate BOD load allocation, because only a portion of the BOD load will be exerted within the DWSC. The data from 2001 suggests that the ultimate BOD loading will likely be at least twice as large as the allowable DO depletion because less than half of the loads were actually oxidized or decayed within the DWSC. This fraction depends on the oxidation rate and the travel time to the lowest DO concentration within the DWSC. The loads can also be higher because some of the loads will be compensated for by natural re-aeration within the DWSC. An initial estimate of 3,000 lb/day is suggested in Table 1.

The excess loading (ENOD) is usually less than 10,000 lb/day and as a monthly average was less than about 5,000 lb/day in the DWSC during 2001. Aeration or oxygenation should be able to compensate for some of the excess loading.

**Response:**

The wasteload allocations are simply stated as oxygen demand exerted in the DWSC (pounds of oxygen demand per day). Until a linkage between the discharge of specific constituents and oxygen demand in the DWSC can be quantified under varying environmental conditions (i.e. flow, temperature, season, etc.), specific wasteload allocations, in terms of effluent or load limits for specific constituents cannot be quantified. The uncertainties associated with oxidation rates and travel times, and their effect on how oxygen demand is exerted in the DWSC are addressed already in the Staff Report and in the response to Comment # 1.7. It should also be noted that aeration in the DWSC is not an acceptable means for controlling the impact of discharges of oxygen demanding substances from the RWCF.

**Comment # 1.10**

The staff report does mention that the DWSC loading conditions and corresponding load allocations will change with time, but the expected procedures for measuring and adaptively managing these loading conditions is not described in the Basin Plan Amendment language. The fact that the TMDL oxygen demand loads vary each day with flows and river loading and RWCF discharge conditions should be introduced at the beginning. This is a dynamic TMDL allocation process that will require frequent monitoring and an adaptive management approach.

The SJR salt TMDL has been written with a basic monthly allocation scheme, with an additional “real-time allocation” procedure. Something similar should be described for the DO TMDL. Some responsibility for monitoring of DO and loading conditions (i.e., RWCF and river concentrations) should be assigned.

**Response:**

Although much of the data identified in this comment will likely be needed for performing the required source and linkage studies, it will not be needed for the calculation and management of wasteload and load allocations during this initial phase of the TMDL. It is agreed, however, that eventually a dynamic and adaptive management approach will need to be developed, and the frequency and turn around time for measurements will need to be improved accordingly. Until there is a better, more quantified understanding of linkages between the various contributing

factors and associated control measures, the development of such an dynamic and adaptive approach cannot be detailed at this time.

**Comment # 1.11**

Does staff agree that the three different loading buckets helps to clarify these three aspects of the overall TMDL identification, allocation, and reduction measures?

Response:

There are numerous similarities between the bucket approach suggested in the comments and the approach taken in the Staff Report. There are also significant differences. See response to Comment # 1.3 and Comment # 1.4 for a detailed response.

**Comment # 1.12**

Does the calculation of the allowable loading into the DWSC (LC) properly belong at the top of the second bucket, representing existing DWSC conditions?

Response:

The response to Comment # 1.3 provides a response to this question.

**Comment # 1.13**

Can the full LC of the existing DWSC be assigned to loads from the river or discharges, with a small MOS reserved for measurement uncertainty?

Response:

The phased TMDL approach first allows time (among other things) for the State Board and agencies responsible for reduced DWSC flow and DWSC geometry to reduce the impact of those facilities and activities on the dissolved oxygen impairment. By 2011, the remaining excess net oxygen demand in the DWSC will be addressed by the control of sources of oxygen demanding substances alone through the implementation of the proposed conditional prohibitions of discharge.

**Comment # 1.14**

Should the allocation equations (4-3) to (4-6) be changed if the LC applies to the existing loading conditions?

Response:

No. The definition of load capacity (LC) does not distinguish between historical and existing loading capacity.

**Comment # 1.15**

If the LC applies to the existing DWSC conditions, isn't a 40% MOS an overly conservative margin of safety? [This would be equivalent to allowing the summer DO to decline only from 8 mg/l to 6.2 mg/l rather than to the established objective of 5 mg/l].



Response:

The 40% margin of safety was determined to be appropriate given the level of uncertainty regarding a number of technical issues. Once further studies have been performed, the margin of safety can be modified when the Regional Board reconsiders the control program by December 2009.

**Comment # 1.16**

Should responsibility for eliminating the entire excess oxygen depletion (ENOD) be assigned to contributing parties?

Response:

See the response to Comment # 1.4 for a detailed answer to this question.

**Comment # 1.17**

Should responsibility for removing the ENOD be proportional to the contributions from the factors or from the identified loading?

Response:

See the response to Comment # 1.4 for a detailed answer to this question.

**Comment # 1.18**

Is the MOS for the ENOD in equation (4-8) different from the MOS in equation (4-2)? [These MOS factors appear to be additive, and only one is needed].

Response:

The magnitude of the MOS is the same in both equations. As applied in Equations 4-5 and 4-6, the MOS is a reserve, which reduces the amount of oxygen demand loading capacity (LC) that is apportioned to (i.e. can be consumed by) the three contributing factors. In Equation 4-8, therefore, excess net oxygen demand must be reduced by an additional amount, equal in magnitude to the MOS, to provide the desired LC reserve.

**Comment # 1.19**

Will daily measurements of flows, concentrations, and corresponding loads and DO depletions be required? Who will be responsible for these measurements and reporting to the RWQCB?

Response:

At this point the proposed Basin Plan Amendment does not include a requirement for such measurements. Depending on the scope of the study plans submitted by February 2005, specific monitoring requirements may be specified in Section 13267 letters to various agencies. It should be noted that many of these measurements are already being taken by existing monitoring programs or pending research studies.

**Comment # 1.20**

Would DO credits that may be achieved with flow changes, load reductions, and aeration facilities be calculated and tracked with some established web-based modeling and reporting system?

Response:

Such an approach may be possible. At this time the proposed control program is not specific about how credits for source controls or other measures will be calculated and accounted for. More information is needed on the linkages between contributing factors and potential control measures before such credits can be calculated. The required studies in the proposed control program should provide much of that information and a method for calculating credits can be incorporated in the TMDL when the Regional Board reconsiders the allocations in 2009.

## **Comment Letter # 2: G. Fred Lee, and Anne Jones-Lee, G. Fred Lee and Associates**

June 23, 2004

Updated Recommended Approach for Controlling the Low-DO Problem in the SJR DWSC.

### **Comment # 2.1**

The Gowdy and Grober three-legged stool approach fails to properly incorporate the current state of knowledge of the causes of the low-DO problem in the DWSC and approaches that need to be evaluated to develop the most technically valid, cost-effective approach for solving this problem. Basically, this approach delays initiating action that it is now known will need to be undertaken to control the low-DO problem in the DWSC.

Lee and Jones-Lee (2003) discussed the range of alternatives that are available for solving the low-DO problem in the DWSC. This discussion was updated by Lee (2003) in the fall of 2003 to include the new information that had been developed over the previous summer. A critical review of the various alternative approaches for solving the low-DO problem shows that there are only a few that have potential for significantly controlling it.

Presented below is a recommended focused plan of action that should be implemented immediately to develop the information needed to develop a TMDL for controlling low-DO in the DWSC by December 2008. This plan of action immediately initiates the major studies/activities that need to be conducted so that a final TMDL can be formulated by December 2008. In general, the recommended approach presented herein is compatible with the Gowdy and Grober (2004b) proposed Basin Plan Amendment. However, it eliminates the four-year delay in initiating action that will occur if the Gowdy and Grober (2004b) study approach is followed.

### Response:

The phased approach in the proposed Basin Plan Amendment includes requirements for specific actions in accordance with Regional Board authority over the various contributing factors. Responses to individual elements of the approach suggested by the commenter are provided below.

### **Comment # 2.2**

Lee and Jones-Lee (2003) have shown in the Synthesis Report and in the supplemental reports developed over the past year (Lee and Jones-Lee, 2004a) that the key issue in controlling the low-DO problem in the DWSC is the need to increase flows of the SJR through the DWSC.

### Response:

Regional Board staff agrees that reduced flow through the DWSC is an important contributing factor to the dissolved oxygen impairment and restoring these flows is one of numerous potential ways to address the associated impacts. The commenter, however, also points out later that the DWSC geometry is “100 percent of the problem” (see Comment # 2.7) and that “the other important component of controlling the low-DO problem is control of oxygen demand loads to

the DWSC” (see Comment # 2.9). Together, all of these comments actually support the position of Regional Board staff, that all three of these factors are important contributors to the impairment. Reducing all of their impacts will be required to comprehensively and equitably solve this impairment. The apportioning of loading capacity and responsibility for reducing excess oxygen demand proposed in the Basin Plan Amendment is based on a combination of scientific observations and considerations of equitability.

**Comment # 2.3**

These issues have been further discussed in the Lee and Jones-Lee (2004b) comments on the CBDA draft Delta Improvements Package. From the information available, it appears that substantial increases in SJR DWSC flow can be achieved without significantly adversely impacting the interests of various stakeholders in the San Joaquin River, South Delta or Central Delta.

Response:

Review of, and response to comments provided to other agencies on other projects will not be provided in this document. To address the impact of reduced flow through the DWSC the Regional Board is recommending that the State Water Resources Control Board address impacts of reduced DWSC as part of administering water rights permits in the watershed and/or that the water resources agencies responsible for reduced DWSC flow evaluate and address these impacts. To the extent that it is considered as an alternative for reducing the effect of reduced flow through the DWSC, the potential adverse impacts of increasing SJR DWSC flow will need to be evaluated by the agencies that either require or otherwise propose such action.

**Comment # 2.4**

The recommended approach for developing the management program to control dissolved oxygen concentrations in the San Joaquin River Deep Water Ship Channel so that they do not fall below the water quality objective focuses on first, the stakeholders and the regulatory agencies working together to establish the minimum flow of the SJR through the DWSC that can be assured during all but critically dry years. The target value of 1,500 cfs has been established based on the observation that SJR DWSC flows above this amount rarely are associated with DO concentrations below the WQO. This minimum flow is to occur throughout the year, since, as demonstrated in the Lee and Jones-Lee (2003) Synthesis Report and in the followup discussions presented in the Supplement to the Synthesis Report (Lee and Jones-Lee, 2004a), low flows of the SJR through the DWSC can result in severe DO problems in the DWSC at any time of the year. As discussed in the Synthesis Report and the Supplement, there are a variety of potential approaches for achieving the desired minimum flow. There is need for the stakeholders in the low-DO problem to aggressively mount a coordinated effort to establish a significantly increased minimum SJR DWSC flow.

Response:

See response to Comment # 2.3 above.

**Comment # 2.5**

As discussed previously by Lee and Jones-Lee (2003), in establishing the increased SJR flow through the DWSC, there will be need to evaluate potential secondary impacts of the altered flow

regime. A specific project should be started immediately to define the potential impacts of increased flow on fisheries, Central Delta water quality and other issues that would evolve out of increasing SJR DWSC flow, since increased flow would mean that there could be decreased or altered flows at some locations, which could have a variety of fisheries and/or water quality impacts. These impacts need to be defined and evaluated. Since these issues will likely take several years to be fully resolved, the investigation of these issues should be started immediately so that the information is available by December 2008.

Response:

Evaluating redirected effects of any proposed alteration to the flow regime is very important, but will be the responsibility of the agencies that either require or otherwise propose such action. Also, see response to Comment # 2.3.

**Comment # 2.6**

The amount of aeration that will be needed will be dependent on the flow of the SJR through the DWSC. If it should be found that it is not possible to establish a minimum SJR DWSC flow (such as 1,500 cfs) throughout the year, then the evaluation of the cost and use of aeration to control the low-DO problem in the DWSC should be based on various potential flow levels, such as a minimum flow of 50, 500, 1,000, and 1,500 cfs through the DWSC. Based on these flows, the potential for controlling DO WQO violations in the DWSC through aeration should be evaluated. The current aeration studies that are being conducted through CBDA contractors are far too limited in scope to provide the necessary information to properly evaluate the use of aeration at various SJR DWSC flow levels and oxygen demand loads. There is need to immediately expand this effort to cover the full range of issues that have to be evaluated in connection with providing aeration of the DWSC in order to solve the low-DO problem.

Response:

The Regional Board is not proposing to require, nor are we otherwise involved in the design and construction of aerators in the DWSC. The above comments should be provided to the agencies responsible for those efforts. The comments provided, however, will be considered as part of any future Regional Board staff review of the proposed aeration project.

**Comment # 2.7**

As part of developing the three-legged stool approach, Gowdy and Grober (2004b) assigned 20 percent of the responsibility for the low-DO problem to the existence of the SJR DWSC (channel geometry). One of the problems with this approach is the assumption that the channel geometry represents only 20 percent of the problem, when in fact it represents 100 percent of the problem, since there would be few, if any, low-DO problems in the channel if the Deep Water Ship Channel had not been constructed and were not maintained by dredging.

Response:

Regional Board staff agrees that the presence of the DWSC geometry is an important contributing factor to the DO impairment. The commenter, however, also points out that “the key issue in controlling the low-DO problem in the DWSC is the need to increase flows of the SJR through the DWSC” (see Comment # 1.7) and that “the other important component of

controlling the low-DO problem is control of oxygen demand loads to the DWSC” (see Comment # 2.9). Together, all of these comments actually support the position of Regional Board staff, that all three of these factors are important contributors to the impairment and that reducing all of their impacts will be required to comprehensively and equitably solve this impairment. The apportioning of loading capacity and responsibility for reducing excess oxygen demand proposed in the Basin Plan Amendment is based on a combination of scientific observations and considerations of equitability.

**Comment # 2.8**

An important aspect of managing the low-DO problem in the DWSC is the potential for obtaining funding from the US Congress to mitigate for the establishment and maintenance of the Deep Water Ship Channel to the Port of Stockton. While some efforts have been made to gain Congressional approval for funds that would enable the Corps of Engineers to perform the necessary mitigation measures, it is felt that an increased stakeholder effort specifically directed toward gaining Congressional support for this funding should be made. To the extent that funds can be obtained from Congress, the costs of controlling the low-DO problem through aeration, oxygen demand source control, etc., that will have to be distributed among stakeholders can be reduced.. It is recommended that the efforts to gain funding from the US Congress for the Deep Water Ship Channel mitigation be for 100 percent of the impact – not just 20 percent.

Response:

The Regional Board cannot solicit, nor can we require that anyone solicit funding from the US Congress for enabling action by the US Army Corps of Engineers.

**Comment # 2.9**

The other important component of controlling the low-DO problem is control of oxygen demand loads to the DWSC.

Response:

Regional Board staff agrees that the control of oxygen demand loads to the DWSC is an important component of controlling the low-DO problem. See also responses to Comment # 1.7 and Comment # 2.7.

**Comment # 2.10**

Gowdy and Grober’s (2004b) proposed three-legged stool approach, where 20 percent of the responsibility is assigned to the control of oxygen demand loads, in which the city of Stockton’s domestic wastewater ammonia discharge is assigned 30 percent of this 20 percent, is not technically valid and is contrary to an appropriate approach to take in addressing this issue.

Response:

Regional Board staff believes that the wasteload allocations are based on a valid technical interpretation of data published in the May 2002 peer-reviewed draft of the Synthesis Report. Scientific peer-review performed on the March 2004 Peer-Review Draft Staff Report found that the data adequately supported this wasteload allocation.

**Comment # 2.11**

As was clearly demonstrated in the Lee and Jones-Lee (2003) Synthesis Report, the responsibility of the city of Stockton's domestic wastewater ammonia discharges, versus the upstream algae as a source of oxygen demand is a function of flow of the SJR through the DWSC. Under low SJR DWSC flow conditions, the city of Stockton's wastewater ammonia discharges have represented as much as 90 percent of the oxygen demand load to the DWSC; however, under other conditions, when the wastewater effluent concentrations of ammonia are low and the SJR DWSC flow is high, the city of Stockton's contribution of oxygen demand has been less than about 20 percent.

Response:

Regional Board staff believes the data needed to develop a defensible allocation, which is a function of flow, does not yet exist. The data available suggests that the relative loading of ultimate biological oxygen demand (BOD<sub>u</sub>) from the City of Stockton can increase as SJR flows decrease (and visa verse). This data, however, does not address how much of this BOD<sub>u</sub> load is actually converted to oxygen demand in the DWSC relative to that amount converted from other sources of oxygen demanding substances. It appears that the mechanisms that control the conversion of oxygen demanding substances to oxygen demand in the DWSC are also a function of flow and a number of other environmental variables. Until more data and a better comprehensive understanding of the net effect of all these mechanisms (i.e. validated DWSC water quality model) is available, a flow based allocation of oxygen demand in the DWSC for the RWCF is not yet justified.

**Comment # 2.12**

For now, since the CVRWQCB has established a 2 mg/L monthly average allowable ammonia discharge by the City, based on ammonia's toxicity to aquatic life and low SJR DWSC flow, it is recommended that, if this value is achieved by the City, this value be accepted as the city of Stockton's fulfilling its responsibility for contributing to the solution of the low-DO problem in the DWSC.

Response:

The commenter provides no technical justification for why a 2 mg/l monthly average ammonia discharge would satisfy the RWCF responsibility for contributing to the impairment. Direct control of the discharge must be applied until the wasteload allocation is met. The RWCF wasteload allocation is based on scientific data regarding the relative contribution from different sources and considerations of equitability. At this time, without more specific data on the linkage between the discharge of oxygen demanding substances from the RWCF and oxygen demand in the DWSC, the wasteload allocation is simply presented in terms of pounds of oxygen demand per day exerted in the DWSC. Until further linkage studies are completed, more detailed wasteload allocations and effluent limits for specific RWCF discharge constituents cannot be justified. See also response to Comment # 2.13.

**Comment # 2.13**

The evaluation of aeration needs should then be conducted, where it is assumed that the City will achieve 2 mg/L monthly average ammonia in its wastewater effluent. If assurances cannot be given by the City that it can and will achieve this level of ammonia control year-round, then the

aeration needs should include Stockton ammonia discharge limits ranging up to 20 mg/L. Further, aeration needs for Stockton ammonia discharges of 5, 10 and 15 mg/L ammonia nitrogen should be evaluated at the range of SJR DWSC flows that were suggested above for evaluation (50, 500, 1,000 and 1,500 cfs).

Response:

It is against numerous state and federal regulations and policies to allow for the treatment of pollutant discharges within the receiving waterbody itself. As such, aeration of the DWSC as a means of treating the discharge of ammonia from the City of Stockton RWCF is not an acceptable option. See also response to Comment # 2.6.

**Comment # 2.14**

The HydroQual modeling that is being conducted should immediately change its focus to developing a tuned model to the data for the SJR to relate discharges from Mud and Salt Sloughs to oxygen demand loads in the SJR at Mossdale, based on the 2000 dataset. This model then should be used without tuning to determine how well it matches the 2001 dataset. The results from this effort should be a new tuned model that considers both datasets, and it should then be determined how well this new tuned model predicts the 2002 and 2003 datasets. Based on this information, it will be possible to define the additional SJR DWSC watershed studies that should be done to improve the ability to relate oxygen demand loads from Mud and Salt Sloughs to the oxygen demand loads at Mossdale.

Response:

The Basin Plan Amendment does not address the specific technical manner in which studies must be performed. These comments will be considered by Regional Board staff as part of reviewing the plans submitted by February 2005, and the progress and final output from the modeling studies thereafter. These comments should also be addressed to the agencies responsible for these studies.

**Comment # 2.15**

As indicated in previous reports, based on our having worked on nutrient control issues for over 40 years in a wide variety of situations, it is questionable whether a nutrient control program can be developed in the Mud and Salt Slough watersheds that would be effective in significantly impacting the oxygen demand loads to the DWSC.

Response:

As of this time the potential effectiveness of such measures is uncertain. The studies being required in the Basin Plan Amendment from those responsible for loads of oxygen demanding substances and their precursors will provide data and analysis that will be useful in determining the effectiveness of potential nutrient control programs. As part of reviewing the study plans submitted in February 2005, further study topics may be identified. The comments provided will be considered at that time.

**Comment # 2.16**

There is an urgent need for information on the cost to control various amounts of oxygen demand that originates in the Mud and Salt Slough watersheds.



Response:

Studies regarding the costs to control various amounts of oxygen demand from any source in the watershed will need to be performed at the discretion of the entities responsible for those discharges and potentially subject to compliance with future wasteload or load allocations. The Regional Board will not require such studies.

**Comment # 2.17**

Since these same watersheds must control their total salt discharges as part of the salt TMDL that is being developed, it is essential that the evaluation of the ability to control oxygen demand from the Mud and Salt Slough watersheds be conducted in light of the potential range of approaches that will be used by the stakeholders in these watersheds to control salts. However, as discussed by Lee and Jones-Lee (2004b) and Lee et al. (2004), the current salt TMDL 700 µmhos/cm EC objective for the SJR at Vernalis will have to be lowered in order to protect South Delta agricultural interests, associated with tailwater discharges to South Delta channels causing violations of the EC objective. The evaluation of the changes in oxygen demand load from Mud and Salt Slough watersheds should consider the more restrictive EC objective that will have to be adopted in the SJR at Vernalis, since this will ultimately become the controlling factor in both salt and oxygen demand load discharges. The HydroQual modeling that is done must be directed toward developing the information that will be used to relate oxygen demand loads from Mud and Salt Sloughs to the SJR as influenced by salt control.

Response:

The interactive effects on the dissolved oxygen impairment from potential control measures for other constituents (and vice versa) are important, but must be evaluated by those responsible for implementing those measures. To the extent Regional Board staff will review or approve the implementation of such control measures, these interactive effects will be considered. The studies required in the phased dissolved oxygen TMDL will begin to provide information that will be useful in evaluating the impact of potential control measures, for salt and other constituents, on the dissolved oxygen impairment. Comments regarding the EC objectives will not be provided as part of these dissolved oxygen TMDL responses.

**Comment # 2.18**

With respect to evaluating the potential for controlling the oxygen demand loads to the DWSC that are derived from algae that are produced in the SJR DWSC watershed, there is need to reprogram the funding that CBDA has made available for the upstream monitoring studies so that the funds are being used to provide the kinds of information needed to evaluate the technical and economic feasibility of controlling algal-related oxygen demand loads from the Mud and Salt Slough watersheds. The current upstream monitoring studies will not provide the information needed. In fact, a considerable part of the funding will provide little in the way of useful information in helping to formulate a program for control of the low-DO problem in the DWSC.

Lee and Jones-Lee (2003) have provided detailed guidance on the kinds of studies that need to be done in the headwaters of the Mud and Salt Slough watersheds to determine the cost of controlling the seed algae that ultimately lead to the high concentrations of algae discharged

from Mud and Salt Sloughs, which in turn lead to the high algal concentrations and associated oxygen demand that reaches Mossdale. The Lee and Jones-Lee (2003) recommended studies should be initiated in the immediate future.

Response:

The Basin Plan Amendment does not address the specific technical manner in which studies must be performed. These comments will be considered by Regional Board staff as part of reviewing the plans submitted by February 2005, and their subsequent progress and final output. These comments should also be addressed to the agencies responsible for these studies.

**Comment # 2.19**

The studies proposed by Litton in the upstream monitoring proposal of the SJR between Mossdale and the DWSC should be conducted to help refine the understanding of the oxygen demand sources and transformations in this reach of the SJR. The currently supported isotope analysis work in the upstream monitoring studies should not be funded, since it will not provide useful information needed for control of the low-DO problem.

Response:

See response to Comment # 2.18.

**Comment # 2.20**

The Gowdy and Grober (2004a,b) draft Basin Plan Amendment requires that the stakeholders for each of the “legs” of the “stool” develop, conduct and report on studies that develop information that could be used to manage their percent responsibility for the low-DO problem in the DWSC. This is not an appropriate approach to follow. There is need for strong oversight of all studies conducted during the Phase 1 TMDL, which are designed to develop information that can be used to finalize the TMDL. It will be important to appoint an advisory panel that will actively work with each of the investigators during the next several years of studies to ensure that appropriate study plans are developed and everything is progressing as it should during the course of the studies, to recommend changes in the program based on new information that is developed, and to critically review draft and final reports to ensure that they reliably present information derived from the studies. This advisory panel should be composed of experts who understand the issues and are thoroughly familiar with the low-DO problem. The members of this panel should be funded for the time and effort that they devote to this activity.

Response:

As part of executing the upstream and modeling studies it has funded, the California Bay-Delta Authority (CBDA) has organized a technical work group to provide this type of technical oversight and interaction. The CBDA and Regional Board staff are also planning ways to bring regular independent scientific peer-review into the process of executing all studies related to the dissolved oxygen TMDL. The details of such technical study management are not addressed in detail in this Basin Plan Amendment, but rather will be developed as part of execution of the proposed phased TMDL.

**Comment # 2.21**

If an aggressive program is initiated to develop the information discussed in this recommended approach, it will be possible in several years to formulate a technically valid, cost-effective and politically implementable SJR DWSC low-DO control program.

Response:

Regional Board staff believes the proposed Basin Plan Amendment provides such a program.

## **Comment Letter # 3: Herum Crabtree Brown on behalf of Stockton East Water District**

June 3, 2004

RE: Public Review Draft Report for the Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel

### **Comment # 3.1**

Staff and members of the Board seemed eager to use increased flow in the DWSC as a relatively fast and inexpensive method to improve the DO problem. SEWD supports this concept to the extent it involves re-circulation of flows utilizing the State and Federal Delta pumping facilities in combination with the operation of the South Delta barriers. However, SEWD adamantly opposes the use of flow from upstream reservoirs that have little to no impact on the DO problem. The current proposed language is too vague to preclude this result.

We believe that the amendment of water right permits on the upstream tributaries to assist in resolving this problem should be done as a last resort. Any conditions added to those permits should be limited to resolving only the proportion of the problem associated with the water right permit at issue. Further, these amendments must occur simultaneously to all water right permits that impact the DO problem, rather than on a piece-meal basis.

### Response:

The phased TMDL Basin Plan Amendment provides an opportunity for the State Board and other water resources and DWSC agencies to implement our recommendations to reduce the impact of their respective facilities and activities on the dissolved oxygen impairment in the DWSC. By December 2009, the Regional Board will reconsider the wasteload and load allocations and by 2011 a prohibition of discharge will become effective that will address the problem entirely by the control of discharges of oxygen demanding substances.

The way in which existing or future impacts of reduced flow through the DWSC will be reduced or mitigated by these agencies is for them to determine as part of their associated planning and environmental documentation process. How feasibility, effectiveness, and equitability are considered in making these decisions is the responsibility of those responsible agencies.

### **Comment # 3.2**

In 1994, the Central Valley Region adopted a Basin Plan for the Sacramento River and San Joaquin River Basins. This Basin Plan emphasizes that flow should be used as a last resort to achieve water quality objectives, and specifically states:

. . . objectives are to be achieved primarily through the adoption of waste discharge requirements (including permits) and cleanup and abatement orders. [AR/10/2364/20]

In order to comply with the Regional Board's own governing documents, the Regional Board must implement remedies to the impact of the existence and maintenance of the DWSP and limit oxygen demand loads into the River before flow requirements can be imposed upon water right holders. If implemented as such a third priority, the current suggested language quoted above should be amended. We suggest the following:

Using a simultaneous process, the State Board should amend ALL water right permits for existing activities that reduce flow through the DWSC, during time periods when flow is required to prevent dissolved oxygen impairment, to require that the associated impacts of each permit on oxygen demand loading capacity be evaluated and proportionately mitigated so that the mitigation allocated to ALL permit holders equates to the amount apportioned to flow impacts in the Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the DWSC.

Response:

The cited Basin Plan language does not necessarily support the suggested interpretation (that flow should be used as a last resort to achieve water quality objectives). Regardless of such interpretations, the phased TMDL approach first allows time (among other things) for the State Board and agencies responsible for reduced DWSC flow and DWSC geometry to reduce the impact of those facilities and activities on the dissolved oxygen impairment. By 2011, the remaining excess net oxygen demand in the DWSC will be addressed entirely by the control of sources of oxygen demanding substances through the implementation of the proposed conditional prohibitions of discharge and/or other measures deemed necessary after the Regional Board reconsiders the allocations by December 2009. This ultimately implements the dissolved oxygen objectives by controlling discharges of oxygen demanding substances and their precursors in accordance with our regulatory obligations and authorities.

As part of making recommendations to the State Board and agencies responsible for reduced DWSC flow and DWSC geometry, the proposed Basin Plan Amendment will not include suggestions on how they should achieve those recommendations. They are responsible for developing the means to achieve these recommendations (if they chose) according to their own needs and requirements.

## **Comment Letter # 4: Michael Mahoney, Chief Construction-Operations Division, US Army Corps of Engineers**

June 23, 2004

### **Comment # 4.1**

To the extent that the proposed TMDL purports to regulate the activities of the United States Army Corps of Engineers (USACE) relating to the maintenance of the Deep Water Shipping Channel (DWSC) at times and places other than those specifically related to DWSC channel maintenance activities (maintenance dredging), the proposed rule is arbitrary and capricious and is without rational basis.

#### Response:

Regional Board staff does not agree that the TMDL is arbitrary and capricious and is without rational basis. The purpose of the proposed TMDL is to allocate loading capacity/ responsibility to sources of pollutants (oxygen demanding substances) in compliance with Clean Water Act section 303(d). In doing so, this TMDL had to account for non-load related factors that have an impact on the loading capacity of the waterbody. One contributing factor to this reduced loading capacity is the configuration of the DWSC and, therefore, contributes to the violations of state water quality standards. The above considerations are based on the DWSC geometry that existed after dredging activities are completed, not on the dredging activities themselves. Impacts from and regulation of dredging activities themselves are a separate topic and not addressed here.

### **Comment # 4.2**

To the extent that the proposed TMDL purports to regulate dissolved oxygen depletion resulting from the DWSC's configuration, rather than from the specific activities associated with USACE channel maintenance activities, e.g., the actual dredging operations themselves, such regulation is unconstitutionally overbroad and unduly burdensome.

#### Response:

Regional Board staff does not agree that the TMDL is unconstitutionally overbroad and unduly burdensome. See response to Comment # 4.1 and Comment # 4.3.

### **Comment # 4.3**

To the extent that the proposed TMDL purports to regulate dissolved oxygen depletion resulting from the DWSC's configuration, rather than from the specific activities associated with USACE channel maintenance, application of such rule to USACE Channel maintenance activities exceeds the waiver of sovereign immunity found in Section 404(t) of the Clean Water Act.

On its terms, the waiver of sovereign immunity is limited to "the discharge of dredged or fill material". It is well established by the United States Supreme Court that waivers of sovereign immunity are to be construed strictly. In this case, the waiver of sovereign immunity is limited to the discharge of dredged or fill materials. It is outside the scope of a waiver of sovereign immunity to consider the long-term ongoing effect of the shape of the Channel and to impose any form of requirements related thereto.

Response:

Regional Board staff agrees that Clean Water Act section 404(t) is a waiver of sovereign immunity that applies to the regulation of the discharge of dredged or fill materials and that the Supreme Court has generally construed such waivers strictly. The TMDL, however, does not purport to regulate the discharge of dredged or fill materials. The proposed TMDL does apportion loading capacity / responsibility for reducing excess net oxygen demand in the DWSC geometry as described in response to Comment # 4.1 and elsewhere in the Draft Final Staff Report. The Clean Water Act requires a TMDL to allocate waste loads regardless of whether the entity responsible for such load is a federal government agency. The proposed TMDL is a phased TMDL. The TMDL would require the Corps, subject to a California Water Code Section 13267 letter, to perform a study describing and quantifying the impacts from the configuration of the ship channel on dissolved oxygen impairment.

Furthermore, Clean Water Act Section 401 authorizes the Regional Board to impose requirements with respect to activities subject to Section 401 certification to comply with state water quality standards, not just requirements related to discharges. See e.g., *PUD No. 1 of Jefferson County and City of Tacoma v. Washington Department of Ecology*, 114 S.Ct. 1900 (1994).

**Comment # 4.4**

The Clean Water Act established TMDLs to determine what loads had to be reduced in order to recover the assimilative capacity of a water body. In light of that purpose, the Board should focus on eliminating loads. In this regard, the Draft is not clear if the allocation for the Stockton Regional Water Control Facility is reached after its ten-fold reduction in oxygen absorbing ammonia discharges or not, but presumably it is after this reduction because otherwise the multiple tens of thousands of pounds per day of oxygen demand it creates is not fairly reflected by its fractional allocation of one of the three major factors contributing to the DO impairment.

Response:

Clarifying language will be added in a late revision that clarifies the waste load allocation for the Stockton Regional Water Control Facility. Its waste load allocation is its permit condition effective 12 July 2004 or 30 percent of the loading capacity / responsibility apportioned to loads of oxygen demanding substances, whichever is more stringent. With regard to excess net oxygen demand, credit will be given for control measures implemented after 12 July 2004.

**Comment # 4.5**

Past efforts at modeling the DWSC are based on the premise that it is 500 feet wide at the beginning and 1000 feet wide at Turner Cut. The DWSC only consists of the depression dug into the center bottom of the 500 to 1000 foot wide channel, which was made that wide by forces other than the USACE. The influence of the USACE activities on the DWSC geometry is just a percentage of the depth and breadth caused by others.

Response:

Comment noted. This is the type of information that the USACE will be required to identify and analyze (pursuant to California Water Code Section 13267 requirement to provide information,

as identified in the proposed control program) to determine the impact that the Stockton Deep Water Ship Channel has on re-aeration and other mechanisms that affect dissolved oxygen concentrations in the water column.

**Comment # 4.6**

The requirement the Board seeks to impose on the USACE is not identifiable with the maintenance activities of the USACE nor is there any congressionally authorized project that would fund the USACE to perform a study to evaluate the DO impairment caused by maintenance dredging. All past projects on the DWSC were done in compliance with existing law and received regulatory approval.

Response:

The requirement for studies to be performed by the USACE in the Basin Plan Amendment is based on Regional Board authority under CWC Section 13267. The Regional Board may require technical or monitoring reports under Section 13267 from an entity that is “suspected of having discharged” waste. This authority is applicable, not based on the USACE maintenance activities, but rather on suspecting that the DWSC geometry (that exists after dredging) is responsible for the discharge of oxygen demand within it. Oxygen demanding substances that enter the DWSC are transformed and then discharged as oxygen demand (that would not otherwise be exerted in its absence). The existing science, including studies performed by the USACE clearly identify such an impact and provide adequate justification for further study of the suspected discharge under Section 13267. Ability or inability to obtain congressional funding for the needed studies is not a consideration in determining whether to require the studies. Likewise, the fact that the initial dredging work may have been done in compliance with existing law and regulatory approval at that time, is not a consideration in determining whether to require the studies.

**Comment # 4.7**

The Draft does not apportion loads on a scientific basis according to the peer review comments of Dr. Hermanowicz nor even correctly according the peer review comments of Dr. Stacey. The Board should produce a scientific allocation of the load not a social and political one as characterized by Dr. Hermanowicz.

Response:

One of the questions raised for peer reviewers was if the apportioning of loading capacity equally between the load-related and two non- load related contributing factors was adequately based on valid and reasonable interpretations of available published studies and general scientific principals. In Item #4 of his comments Dr. Hermanowicz stated that:

*“Such allocation, or another split, may be justified in social or political terms if all three factors are recognized as controllable within the meaning of the CVRWQCB Controllable Factors Policy. This assessment was recognized in the Staff Report (p. 2 and 9) where the primary TMDL allocation is based on “equitability”.*

and that:



*The allocation TMDL equally to three contributing factors may be justified on “equitability” or other social, political or economic basis. Scientific method cannot be applied to arrive at such precise quantitative division (emphasis added).*

**Comment # 4.8**

The parameters used in the Chen & Tsai computer model on which the Board bases its conclusion that the channel geometry of the DWSC is an independent cause of low DO levels are not disclosed; therefore, it is not possible for the USACE to comment on the validity of that conclusion.

Response:

The detailed equations and other parameters upon which the Chen & Tsai computer model were based are presented in the Chen, C.W., Tsai, W. 2001 referenced cited in the Draft Final Staff Report. The report is available at the Regional Board offices for inspection or from the California Bay-Delta Authority (the successor organization to the one that funded the study). The report can also be found online at [www.sjrtmdl.org](http://www.sjrtmdl.org).

**Comment # 4.9**

The Draft states that currently a multi-dimensional computer model is being constructed of the DWSC. This effort proceeds without any knowledge on the part of the USACE of what parameters are being incorporated into the model and is objected to on that basis.

Response:

Comment noted. Staff encourages the USACE to participate in the various California Bay Delta Authority and public processes where said models are being constructed and discussed. Please contact the California Bay-Delta Authority (the study funding agency) for more details

**Comment # 4.10**

The influence of the Stakeholders’ report, as recognized by the Draft, is seen in the Draft’s schedule and the fact that its adaptive features apply only to “oxygen demanding substances.” The result is that the effects of upstream loads, presumably the responsibility of the stakeholders, will be determined last, only after all other allocations have been determined and perhaps after the DO concern has been alleviated. This is not equitable and the Board should place all parties on the same time schedule and provided that all factors are to be the subject of adaptive management.

Response:

The interpretation of the timelines presented in the comment is incorrect. The requirements to perform source and linkage studies (by those responsible for sources of oxygen demanding substances and their precursors) and the recommendations to agencies responsible for the non-load related factors all proceed in parallel leading up to reconsideration of allocations by the Regional Board by December 2009.

## **Comment Letter # 5: Bill Jennings, DeltaKeeper**

June 24, 2004

Re: Amendments To The Water Quality Control Plan For The Control Program For Factors Contributing To The Dissolved Oxygen Impairment In The Stockton Deep Water Ship Channel

### **Comment # 5.1**

Staff is appropriately assigning responsibility for solving the problem to those entities responsible for creating the problem, i.e., Channel modification, loading and flow diversion. Unfortunately, the Regional Board can only recommend that other agencies take the lead in addressing flow reduction and Channel modification. The best guarantee that restoration efforts will be equitably distributed between all responsible parties is the certainty that a discharge prohibition will be enforced if the other factors are not adequately addressed. Otherwise, dischargers are not likely to make affirmative efforts to ensure that all responsible parties contribute their fair share to the solution. For the same reasons, the interim cap on mass loading from new sources is crucial.

#### Response:

Comment noted.

### **Comment # 5.2**

Little has been accomplished in furthering our understanding of the technical issues since Dr. Chris Foe's Strawman Report and Dr. G. Fred Lee's Synthesis Report described the overall dynamics of oxygen depletion more than two years ago.

Algal loads from Salt and Mud Sloughs are substantial and multiply as they're transported downstream. Eastside tributaries contribute significant, additional low algal flow. However, concentration remains the same. A pound of algal loading from Mud and Salt Sloughs translates into approximately 6 to 7 pounds of algal BOD at Mossdale.

Additional fine-tuning is desirable but enough is already understood about the over-all mechanisms of oxygen depletion and identification of responsible parties to begin to meaningfully address the issue. Four more years of study before actual load reductions are developed is unreasonable and unnecessary.

#### Response:

Although there is a general understanding of the mechanisms that control the transformation of oxygen demanding substances discharged upstream of the DWSC, more specifics are needed on rate constants, sources and sinks, and the impact of various environmental variables. There is also the need to overlay simultaneous analysis of all these different mechanisms in a validated model of the watershed upstream of the DWSC. This will provide the ability to see how the net effect of all mechanisms changes as a function of the shared variables. Until a better comprehensive understanding of these mechanisms is obtained defensible wasteload and load allocations are not possible.

Based on previous experience with sampling programs of this magnitude, and the variable environmental conditions in the SJR watershed, four years for the performance of studies is justified.

**Comment # 5.3**

In fact, the focus on additional studies is somewhat puzzling. There is a large existing database of ambient monitoring that was collected in 2000 and 2001, plus the Dahregen data collected on upstream sources in 2002 and 2003, that has never even been adequately analyzed. The analysis of existing data should be a first priority. This data could then be used to plan future studies; if it is determined they are necessary. Drs. Lee and Foe have stated that the upstream studies recently funded by CalFed will not likely provide the data necessary to develop upstream loading allocation or be sufficient to identify the potential for effective source control.

Response:

One component of the pending studies, and of the source and linkage studies that will be required, will be the analysis of existing data. It is agreed that study of the existing data will be a high priority. Contrary to the comments provided, a peer-review panel of experts was convened by the California Bay-Delta Authority, and found the scientific approach proposed in the upstream studies to be sound.

**Comment # 5.4**

Since it is commonly agreed that some loading reductions will be necessary, prudence would suggest that initial requirements to reduce mass loads be included in permits as they're renewed. Especially, considering there is already a 40% margin of safety incorporated in the Plan. Further more specific mass load reductions can then be incorporated during subsequent permit renewals, as the process is fine-tuned. There is no need to wait four plus years until we perfectly understand the issue before requiring initial load reductions. We may never "perfectly" understand the issue. Delaying loading reductions until all studies are completed will only encourage dischargers to delay completion of the studies. Low-hanging fruit should be collected up front and five years is more than enough time to complete the first phase of the TMDL.

Response:

Even if they were to be implemented in a phased manner as suggested, the first phase of mass load reductions (wasteload and load allocations) implemented in a TMDL or permits would need to have a technically sound basis. Phased requirements require the same level of justification as comprehensive requirements would. Regional Board staff does not believe the current level of knowledge can support such allocations, phased or otherwise. Ultimately, however, the Basin Plan Amendment does include a conditional prohibition of discharge to address the problem entirely through the control of loads of oxygen demanding substances and their precursors.

It is acknowledged that we will never perfectly understand the way in which a 4 million acre watershed generates and transforms oxygen-demanding substances.

**Comment # 5.5**

The Plan proposes that “stakeholders” develop, conduct and report on source, linkage and implementation studies by December 2008. Study plans are due by February 2005. Following completion of the studies, the Regional Board will consider specific waste load and load allocations by December 2009. Compliance will be required by December 2011. These exceptionally long timelines invite delay. Submitted study plans may be inadequate or information sufficient to determine load allocation may not be provided in a timely fashion.

Response:

Regional Board staff will consider these comments in approving the schedule of deliverables for the study plans submitted in February 2005 and their subsequent execution. If progress at anytime is inadequate, the Regional Board can issue CWC Section 13267 letters requiring their performance. This provides more than adequate control and incentive to perform the studies.

**Comment # 5.6**

DeltaKeeper recommends that the Regional Board require annual progress reports for public review and schedule an annual hearing to assess whether adequate progress is being achieved. The Regional Board should require staff to explicitly state the consequences for failing to meet deadlines. Further, we encourage the Regional Board to direct staff to immediately begin issuing necessary 13267 letters rather than waiting until responsible parties fail to submit workplans or studies. These 13267 letters would explicitly set forth the necessary contents, QA/QC, timelines and overall structure of required studies. Prompt issuance of 13267 letters alone would significantly accelerate the process.

Response:

Although the Basin Plan Amendment proposes to allow until February 2005 for the submission of study plans, this does not preclude the possibility of issuance of Section 13267 letters prior to that date if determined appropriate. Detailed QA/QC, timelines, etc. need to be considered and developed by Regional Board staff subsequent to the process of developing the Basin Plan Amendment.

**Comment # 5.7**

The history of studies related to the Dissolved Oxygen TMDL strongly suggests that the proposed study plans are likely to be poorly designed and that the implementation will be technically deficient. DeltaKeeper believes it crucial that an expert technical review panel be established to provide guidance and review of workplans and study implementation. Otherwise, staff may find they lack sufficient information to establish allocations.

Response:

The expert technical review panel concept proposed in the comment will be considered by Regional Board staff as part of the process of reviewing and overseeing the required studies. Specific issues such as this will not be addressed in the Basin Plan Amendment.

**Comment # 5.8**

The Basin Plan Amendment states that the prohibitions identified under “Control Action Considerations of the Central Valley Regional Water Board” do not apply if the discharge is regulated by a waiver of waste discharge requirements, or individual or general waste discharge requirements or NPDES permits which implement the Plan. DeltaKeeper is concerned that the ambiguity of this statement will inevitably lead to misimpression and controversy. We urge that language be added to clarify that any issued waiver or permit must be consistent with the following policies and actions, as applicable:

- a. Ensure compliance with the dissolved oxygen objectives in the Stockton Deep Water Channel;
- b. Not lead to any unmitigated redirected dissolved oxygen impacts;
- c. Ensure that non-point source discharges be controlled so that discharges are at the lowest level technically and economically achievable;
- d. Contain sufficient monitoring provisions to evaluate mass loading and compliance with any allocations.

Response:

The prohibition of discharge will not apply if the discharge is regulated by a waiver of waste discharge requirements, or individual or general waste discharge requirements or NPDES permits, which implement the Control Program or which include a finding that the discharge will have no significant negative impact on the dissolved oxygen impairment. The regulatory processes to obtain such waivers or permits already include numerous requirements that are at least, if not more protective, than those proposed in the comment. No further clarification is warranted in the Basin Plan Amendment for this TMDL.

**Comment # 5.9**

The Basin Plan Amendment states that “[t]he waste load allocation of oxygen demanding substances and their pre-cursors for all NPDES-permitted discharges, except for the City of Stockton Regional Wastewater Control Facility, are initially set at the corresponding effluent limitations applicable on 12 July 2004.”

At times, Stockton contributes upwards of 90% of the oxygen impairment in the Deep Water Channel. Stockton is presently litigating their recently renewed NPDES permit. Should the ammonia limit protecting against ammonia toxicity in the order adopted by the Regional Board and upheld by the State Board be overturned, there may be no requirement for the City to reduce their excessive discharges of oxygen demanding substances.

DeltaKeeper believes that a waste load allocation specifically addressing the discharge of oxygen demanding constituents from the Stockton Regional Wastewater Control Facility be included in the Plan.

Response:

The intent of the proposed Basin Plan language was not to provide a loophole that relieved the City of Stockton RWCF of its wasteload allocation in the event the ammonia limits in their current NPDES permit (CVRWQCB Order No. 5-02-083) are somehow overturned. To clarify the intent a late revision to the Basin Plan Amendment language has been proposed. It identifies the more stringent of either the existing RWCF NPDES permit limits or the wasteload allocation in the TMDL (30% of loading capacity /responsibility apportioned to sources of oxygen demanding substances) as being applicable.

Specific effluent limitations for oxygen demanding substances in the RWCF effluent are not possible until a quantitative linkage with oxygen demand in the DWSC has been studied and established.

**Comment # 5.10**

The Port of Stockton recently approved an EIR for expansion of the West Complex. This expansion anticipates a major increase in industrial activities at the Port. A mitigation measure in the EIR explicitly prohibits increased mass loading. However, no mitigation monitoring program was required.

Regional Board staff declined to incorporate the mitigation measure prohibiting increased loads into the proposed renewed municipal stormwater permit for the Port. The Plan should be amended to clarify that the mass-loading cap of oxygen demanding constituents applies to the new Port expansion. It should also require necessary compliance monitoring.

Response:

The Basin Plan Amendment includes a conditional prohibition of any increase in the discharge of oxygen demanding substances and their precursors into waters tributary to the DWSC after 12 July 2004. This would apply to new stormwater discharges from the Port of Stockton West Complex. The Basin Plan Amendment will not, however, provide specifics on how this conditional prohibition will then need to be implemented through the municipal separate storm sewer system (MS4) permit process. This response will not address issues specific to the Port of Stockton West Complex MS4 permit.

## **Comment Letter # 6: Steve Chedester, Executive Director, San Joaquin River Exchange Contractors Water Authority**

June 24, 2004

RE: Draft Final Staff Report, Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel (24 May 2004)

### **Comment # 6.1**

...the staff report and proposed Basin Plan Amendments have been revised to place the ultimate responsibility for curing the dissolved oxygen (DO) impairment caused by the Stockton Deep Water Ship Channel (DWSC) on dischargers, including those from the upper watershed, upstream of Stockton.

#### Response:

The comment is generally correct. The phased TMDL approach first allows time for the State Board and agencies responsible for reduced DWSC flow and DWSC geometry to reduce the impact of those facilities and activities on the dissolved oxygen impairment. By 2011, the remaining excess net oxygen demand in the DWSC will be addressed entirely by the control of sources of oxygen demanding substances through the implementation of the proposed conditional prohibitions of discharge and/or other measures deemed necessary after the Regional Board reconsiders the allocations by December 2009. This ultimately implements the dissolved oxygen objectives by controlling discharges of oxygen demanding substances and their precursors in accordance with our regulatory obligations and authorities.

### **Comment # 6.2**

Placing the ultimate responsibility on parties that are not the proximate cause of the problem is counter to law, constitutes a taking of property in violation of the United States and California Constitutions, and is a violation of the most basic argument that there must be evidence of a causal link before assessing responsibility. The excavation of the DWSC is the supervening cause of the DO impairment in the DWSC. Therefore those responsible for building the DWSC should be held solely responsible for solving the problem.

#### Response:

Even though three contributing factors have been identified for this impairment, ultimately Regional Board jurisdiction lies with the control of sources of oxygen demanding substances. Recognizing the importance of the other two “non-load” factors, however, the Basin Plan Amendment proposes a phased approach that allows time for those responsible for the non-load related factors to reduce their impact on the dissolved oxygen impairment before the Regional Board will implement allocations entirely to loads of oxygen demanding substances.

The comment is correct that this Basin Plan Amendment will place ‘ultimate responsibility on parties that are not the proximate cause of the problem.’ A cause need not be proximate (or immediately precede and produce an effect) to be considered one of the primary factors. Though details need to be better understood, it is already clearly understood that loads of algae from upstream contribute to the cause of the impairment. This is discussed in the staff report throughout Section 4 and is supported by the cited references. The staff report also describes the basis for the equal apportioning of loading capacity and responsibility for excess net oxygen demand to the three main contributing factors: loads, DWSC geometry, and reduced DWSC flow.

**Comment # 6.3**

The lower San Joaquin River has contained naturally occurring algae for hundreds of years.

Response:

This comment is likely to be correct, however, little or no data exists on historical algae concentrations in the San Joaquin River. Regardless, the discharge of nutrients and other algae precursors from agricultural and other discharges contribute to the growth of algae, and loads of algae to the DWSC have been identified as a contributing factor to the impairment. The presence of algae for hundreds of years is not relevant to the fact that current algae levels are contributing to the dissolved oxygen impairment. There are many naturally occurring water quality constituents that are benign at background levels but can cause adverse environmental effects when increased in concentration through direct or indirect anthropogenic inputs. Selenium, for example is a naturally occurring element that has been present in some concentration in soils and water of the San Joaquin River. Human development (irrigation and agriculture), however, have increased mobilization of selenium leading to adverse environmental effects that have been addressed in the Basin Plan by a control program for subsurface agricultural drainage. One of the purposes of the upstream studies, as described in the staff report, is to determine the sources and linkages of upstream algal loads on the DO impairment.

**Comment # 6.4**

Significant agricultural production has been in existence in the San Joaquin River watershed since the 1800’s and the discharges from these farming activities have consistently contained nutrients sufficient to sustain algae growth in the River and adjoining sloughs.

Response:

Regional Board staff is not aware of historical data (prior to around the 1950’s) on nutrient concentrations in discharges from agricultural activities or in the receiving water. Such data (along with the source and linkage studies required in the proposed control program) could be useful in further refining the wasteload and load allocations when the Regional Board reconsiders these allocations by December 2009.

**Comment # 6.5**

Algae are a natural and necessary part of the food chain in the lower San Joaquin River. The ecosystem would be harmed by eliminating nutrients and algae in the River.



Response:

The Regional Board is not proposing to eliminate nutrients and algae in the River. The level and manner in which the impact of algae loads (on the dissolved oxygen in the DWSC) should be controlled has yet to be determined. Considering the redirected effects of any proposed control measures are important and must be evaluated by those responsible for their implementation.

**Comment # 6.6**

There is not a low DO problem in the San Joaquin River upstream of the DWSC.

Response:

Staff agrees, but based on this observation, however, it is still unknown what the extent of any impairment would be in the vicinity of the DWSC if the DWSC were not present. Furthermore, it is not clear that upstream sources of oxygen demanding substances and their precursors haven't negatively impacted water quality (reduced assimilative capacity) upstream of the DWSC, to the point that the DWSC pushes conditions below the objective. The upstream studies will provide the information needed to better evaluate the circumstances.

**Comment # 6.7**

Experts do not understand the dynamics of upper watershed loading on the DO problem in the DWSC. Algae originating from nearly 100 miles upstream may not actually contribute to the DO problem in the DWSC.

Response:

The staff report refers to empirical data and analyses that show a strong correlation between algae loads and the existence of the dissolved oxygen impairment. This provides adequate justifications for the requirement that those potentially responsible for sources of oxygen demanding substances and their precursors perform the proposed upstream source and linkage studies. Based on results of these studies and other information, allocations and other elements of the DO control program, as well as the conditional prohibition, will be reconsidered upon completion of the upstream studies.

**Comment # 6.8**

The unnatural depth of the DWSC kills algae in the River and turns oxygen producing live algae into oxygen demanding decaying algae.

Response:

The comment is oversimplified, but is roughly correct. It was for these reasons, however, that loads of algae to the DWSC were found by Regional Board staff to be partially responsible for the dissolved oxygen impairment, and their impact warrants control.

**Comment # 6.9**

The San Joaquin River channel was approximately 10 feet deep in the Delta prior to the establishment of the DWSC. The first excavation of the DWSC to a depth of 26 feet was completed in 1933. In the late 1960's the Corp of Engineers began a project to deepen the DWSC but it was halted due to environmental concerns. In 1982 the Corp of Engineers resumed deepening the DWSC to 37 feet after promising to mitigate for inevitable DO problems caused

by the depth of the channel. In 1987 the Corp of Engineers finished the excavation of the DWSC to 37 feet. (Port of Stockton Web Site) These artificial improvements are the ultimate cause of the DO problem and resulting water quality impacts.

Response:

Comment noted. As described in the staff report, DWSC channel geometry is one of three contributing factors to the DO impairment.

**Comment # 6.10**

The United States Army Corp of Engineers (USACOE) excavation of the DWSC and their continued maintenance dredging of the DWSC is the proximate cause of the DO problems in the DWSC. Algae loads have existed in the San Joaquin River for hundreds of years. These algae loads are an essential component of the San Joaquin River and estuary ecosystem. By building the DWSC in the middle of the San Joaquin River the USACOE caused the DO problem. This act was subsequent to algae's existence in the River, upstream farming operations and many upstream diversions. The USACOE further exacerbated this problem by deepening the channel to 37 feet in the late 1980's. Their continual maintenance dredging of the channel prevents the natural process of sediment deposition for remedying the DO problem by slowly filling in the channel. The USACOE conduct constitutes a supervening cause that makes it the legal proximate cause of the DO problem in the DWSC. Both legal theory and equitable principles dictate that the USACOE should be held solely responsible for solving the problem that they created.

Fortunately, the cost of installing and maintaining adequate aeration facilities is reasonable and well within the USACOE's ability to pay. Construction costs for the facilities are available through bond funding and the operations and maintenance cost are estimated to be approximately \$200,000 - \$400,000 per year. Aeration projects are underway that will determine the proper size, method and cost of the aeration based solution.

Response:

Other than their ability to pay, the comment provides inadequate legal theories or equitability principals to support the suggestion that the USACOE is solely responsible for solving the problem. Also, see responses to Comment # 6.2, Comment # 6.3, and Comment # 6.5. The comment suggests that the earlier timing of the commencement of loading versus dredging of the channel establishes a right to pollute. There is no such right established by the precedence of the loading. Also, the Regional Board is not proposing to require, nor are we otherwise involved in the design and construction of aerators in the DWSC.

**Comment # 6.11**

An Amendment to the Water Quality Control Board Plan purporting to allocate responsibility for a pollution condition in the form of TMDL's must have an evidentiary base. This record is devoid of an evidentiary base. In order to be valid and enforceable, the record under which a plan is adopted must: (1) enunciate it's reasoning, logical and causal links in a factual form; and, (2) include sufficient evidentiary support to show the causal relationship between the acts or omissions of a party and its responsibility or burden to meet the requirements placed upon it. Strumsky v San Diego County Employees Retirement Association 1974 II C.3d 28, 29. This rule

equally applies to orders of Regional Water Quality Control Boards. Southern Cal Edison v SWRCB II6 C.A.3d 751, 759 (1981). This record cannot be tortured to rationally support the conclusion that the responsibility for low dissolved oxygen levels in the DWSC should be borne by upstream landowners and water users.

Response:

The staff report (Section 4.3.1 pg. 27 and 28) and other parts of the administrative record (i.e. Foe et.al. and Lee and Jones-Lee, 2003) present evidence in the form of peer-reviewed data and analysis demonstrating that the decay of algae from upstream sources is a major contributor to the dissolved oxygen impairment. The Steering Committee Implementation Plan also identifies algae as a source of oxygen demand in the DWSC (Ploss, et. al. beginning on pg. 3, Appendix A of staff report). The reasoning, logical and causal links are clear and presented with sufficient evidentiary support to show the causal relationships. Also, see response to Comment # 6.2 above.

**Comment # 6.12**

The Regional Board and its staff understand that the dredging of the ship channel has turned algal flows, which are a benefit to Delta ecosystem, into a detriment which strips water of its oxygen. If there is any doubt about this fact after reviewing the Staff Report, we would offer to make it abundantly clear through cross examination of the staff or other experts. Please consider this offer of proof. Given either current or historical algal flows in the San Joaquin River, without the Ship Channel functioning as a “sink” stripping oxygen out of the water, there would be no DO problem in the River. Further, although flow characteristics and timing of flows through the San Joaquin River may have changed over the years, the evidence is that “but for” the ship channel, dissolved oxygen impairments would not occur. Additionally, as an offer of proof, we can extract from documents and examination of Regional Board staff the fact that dissolved oxygen impacts are not found above or below the DWSC and that the depth and configuration of the ship channel, which was designed for its shipping advantages and relative low cost of construction, causes the oxygen depletion.

Response:

See responses to Comment # 6.2, Comment # 6.5 and Comment # 6.6.

**Comment # 6.13**

We can also show that the Army Corps of Engineers (USACOE) prepared studies pursuant to NEPA in regard to its dredging work in 1980's. The Environmental Impact Statement titled, San Francisco Bay to Stockton (John F. Baldwin and Stockton Ship Channels) Interim General Design Memorandum and Final Environmental Impact Statement. (September 1980) stated that post dredging monitoring would document the dredging caused DO impacts in the DWSC and appropriate remedial actions would be implemented. The Environmental Assessment and Finding of No Significant Impact (FONSI) San Francisco Bay to Stockton Ship Channel: Dissolved Oxygen Mitigation Implementation (May 1990) reaffirmed that commitment. The findings and assurances were provided by the Corps to the EPA pursuant to NEPA.

Response:

Regional Board staff has inspected the referenced documents as part of developing the proposed Basin Plan Amendments and finds their characterization in the above comment to be generally correct.

**Comment # 6.14**

The Regional Board should consider the decision of the United States Supreme Court in EPA v Calif (1976) 426 U.S. 200, 48 LE2d 578, 96 S.Ct 2022 which held that Federal Projects were not subject to NPDES discharge permit authority of the State of California simply because the State regulatory program had been approved by EPA, but instead EPA was required to directly issue NPDES permits for Federal Projects and no project could move forward without an EPA permit. The Regional Board should ask the United States Army Corps of Engineers for their valid, current and enforceable NPDES Permit. If the permit issued by EPA does not include the mitigation measures that the USACOE committed to in the 1980 NEPA process, the Permit will not be in accordance with law. A 60 day notice can be given by the Regional Board of the intention to sue to enforce compliance with the NPDES permit conditions. The USACOE is subject to the same fines and penalties and payments of attorney's fees that a citizen would be subject to if it attempted to avoid its responsibility under a NPDES Permit. It is time to recognize that the federal government is a citizen who has been allowed to skate on its obligations for too long.

Response:

Neither the Regional Board nor USEPA has the authority to issue an NPDES permit to the USCOE since there is no discharge to regulate. The control program, however, does include recommendations to the USACOE to reduce the effects of the DWSC and requirements that they evaluate the impacts of the DWSC on the dissolved oxygen impairment. The USACOE will need to evaluate and fully mitigate impacts of any project that requires a CWA Section 401 Water Quality Certification, such as maintenance dredging. In addition, the Basin Plan amendment includes a requirement for the USACOE to evaluate the impact of the DWSC on the dissolved oxygen impairment. Based on the results of this and other studies, the Regional Board may consider additional regulatory actions.

**Comment # 6.15**

The Staff Report refers to numerous technical and scientific documents but does not address the fundamental policy question raised by the DWSC DO situation. The staff's preliminary determination that the responsibility for solving the DO problem should be shared equally by three contributing factors is not supported by any policy analysis. The only rationale for this determination is a brief statement referring to "equitable and other considerations." (Page 2 May Staff Report) There is no indication of what, if any, policy consideration were made. In a matter as complicated as DO in the DWSC it is essential for the Board to address the fundamental policy consideration behind the ultimate decision. A mere reference to "equitable and other considerations" does not provide the Board with a record to make an informed policy decision.

Response:

The expression "equitable and other considerations" is used in the three and one half page Executive Summary of the staff report. Explanation for the equal three-way apportioning of

responsibility is provided in the three-page section 4.5.1 titled ‘Apportioning Loading Capacity to Three Main Contributing Factors.’ Equitability is also one of the evaluation criteria used to evaluate implementation options and alternatives (sections 5.2 through 5.4.3 on pages 55 through 69 of staff report). No alternate apportioning of responsibility proposals have been offered by this or other commenters during the public process with the exception of apportioning schemes that place no responsibility on a single factor. Commenters have consistently recommended placing no responsibility on factors for which they are responsible. The Regional Board, when considering adoption of this Basin Plan Amendment, will make the “fundamental policy consideration behind the ultimate decision.” Also see response to comment 6.19.

**Comment # 6.16**

The allocation of responsibility is not a scientific determination and must be considered with full policy analysis. Dr. Slawomir W. Hermanowicz made this observation in his May 2004 peer review comments on the Dissolved Oxygen TMDL Basin Plan Amendment Staff Report. In Item #4 of his comments, Dr Hermanowicz stated, “...there is no scientific basis for the equal allocation of TMDL. Such allocation, or another split may be justified in social or political terms if all three factors are recognized as controllable within the meaning of the CVRWQCB Controllable Factors Policy.” The CVRWQCB Controllable Factors Policy requires control of factors that can reasonably be controlled. The DO problem in the DWSC cannot be controlled by eliminating upper watershed discharges. Prohibiting these discharges will not eliminate algae growth in the River. Additionally, algae is a necessary part of the ecosystem and is a benefit to aquatic life. It would not be reasonable to require parties to control a discharge that will not solve the water quality impairment and that may result in adverse impacts in the ecosystem. Given that there is no scientific justification for these splits and there is no policy analysis on the issue the Regional Board’s adoption of this division of responsibility would be arbitrary and capricious.

Response:

In Item #4 of his comments Dr. Hermanowicz stated that:

*“Such allocation, or another split, may be justified in social or political terms if all three factors are recognized as controllable within the meaning of the CVRWQCB Controllable Factors Policy. This assessment was recognized in the Staff Report (p. 2 and 9) where the primary TMDL allocation is based on “equitability”.*

and that:

*The allocation TMDL equally to three contributing factors may be justified on “equitability” or other social, political or economic basis. Scientific method cannot be applied to arrive at such precise quantitative division (emphasis added).*

No basis is provided in the comment for the assertion that “The DO problem in the DWSC cannot be controlled by eliminating upper watershed discharges.” Data obtained from the upstream studies will help to determine what dissolved oxygen concentrations can reasonably be obtained through control of oxygen demanding substances and their precursors. Redirected

impacts will also need to be analyzed as part of any implemented control. See also responses to Comment # 6.5 and Comment # 6.15.

**Comment # 6.17**

An example of how a court views an agency decision when the policy has no logical scientific underpinnings is Southern California Edison vs SWRCB 116 Cal App 3d 751 (1981). This case demonstrates that some scientific evidence is required and that it is necessary to place the legal responsibility on the party causing the problem for a Regional or State Board order to be upheld. Southern California Edison had developed an ocean intake for a nuclear power plant which discharged back to the ocean. The Regional Board attempted to apply “gross” discharge standards requiring this large, economically able party to conveniently bear the costs of removing constituents that it did not add to the ocean water rather than “net” requirements in which only constituents it added needed to be removed. The Court rejected the application requiring that some scientific and factual basis be presented that it was “necessary” to apply the cleanup responsibility in this manner. Mere convenience and ease was not considered sufficient by the Court.

Response:

Numerous studies referenced in the staff report provide adequate scientific evidence that loads of algae are a causative factor (see section 4.3.1 ‘Oxygen Demanding Substances’ of the staff report). See also response to Comment # 6.2, Comment # 6.11, and Comment # 6.15.

**Comment # 6.18**

The initial policy choice to divide responsibility equally among (1) loads (2) DWSC Geometry, and (3) reduced flow must be more thoroughly analyzed. Policy consideration such as the impact of removing nutrient and algae loads from the San Joaquin River must be considered. The North Bay is currently stressed by insufficient energy (i.e. nutrients and algae) coming from the Delta. Other segments of the Delta are also nutrient starved. Before the Regional Board adopts a Basin Plan Amendment that will further reduce these nutrients coming from the upper watershed they must understand the consequences of these actions. Given that algae is a natural and essential part of the food chain it would not be “equitable” to require upper watershed interests to help fix the DO problem simply because their discharges may benefit algae growth in the River. Fundamental fairness, equity, and prudent resource management dictates that upper watershed loading not be held responsible for solving the DO problem in the DWSC.

Response:

See responses to Comment # 6.5 and Comment # 6.15.

**Comment # 6.19**

Notwithstanding the fact that upper watershed loading should not be held responsible for solving any of the DO problem in the DWSC, the degree of responsibility allocated to upper watershed loads is not supported by any policy considerations. After inappropriately allocating responsibility equally to three contributing factors, staff makes an additional error in allocating the loading responsibility between point and non-point sources. Staff makes the unsupported determination that TMDL loads should be allocated based upon historic contribution. They use historic data to estimate the loading from the City of Stockton’s Regional Wastewater Control

Facility (RWCF) and the loading from the upper watershed. They then allocate the allowable load to these sources (less a 10% reserve) based upon this historic loading. At no time does the staff attempt to justify this policy determination. Why should historic loading dictate appropriate TMDL allocations?

Response:

Cal. Code Regs., tit. 14, § 15126.6 states: “An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation.” It further states: “There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason.” Basing the distribution of relative responsibility on the relative physical contribution to the problem is an approach that Regional Board staff considers reasonable, and that no other basis for allocating responsibility was reasonable, fair, or otherwise worthy of consideration.

Furthermore, since the inception of the Dissolved Oxygen TMDL Steering Committee in 1999, there have been extensive opportunities for the public, including the commenter, to provide an alternative formula for apportioning loading capacity or responsibility. To date recommendations have only been received from the various potentially responsible entities, which suggest that 100% of the blame should be placed on other parties. The Steering Committee recommendation itself acknowledges that all three of the contributing factors are responsible in some degree for the problem, although it stops short of suggesting a specific apportioning formula.

Technical basis for the allocation of loading capacity to the Stockton RWCF is provided in section 4.5.2 of the staff report. Also, as indicated in this section, the allocation between point and non-point sources may be modified in a later revision to this TMDL based on findings of future studies regarding the relative impact of these sources on oxygen demand. See also response to Comment # 6.15.

**Comment # 6.20**

Regional Board staff did not make this error in the draft salinity TMDL. In the salinity process, staff considered various methods of allocating the available loading capacity among different sub-basins. They considered historic loads, cropping patterns and total acreage as the basis to divide TMDL loads. Ultimately, they rejected historic loading as the method to allocate load. In the DO TMDL Staff Report, this issue is not addressed. Staff simply allocates TMDL loads without any analysis of the merits of the method of allocating the loads. This allocation decision was based upon neither sound science nor prudent policy.

Response:

It is not possible to base the relative apportioning of loading capacity to waste load allocations for point sources and load allocations to non-point sources entirely on science (see response to Comment # 6.16). Here, as in the draft salinity TMDL, consideration of non-technical criteria and best professional judgment were used to make the relative apportioning. Staff is obligated to evaluate a reasonable range of alternatives with regard to the entire program of implementation. A reasonable range of alternatives were considered in the staff report. The load allocations are

made as a gross allotment to all non point sources, with no allocations to specific sources. No alternate allocations with regard to point and non-point sources have been offered by this or other commenters during the public process. See also response to Comment # 6.19.

**Comment # 6.21**

In looking at this aspect of a TMDL, it is imperative that one understands the policy implications of different allocation percentages. These relationships are not intuitive. If the allocation is for the ability to legally discharge net oxygen demand (NOD), then the larger the allocation percentage the greater the amounts that can be discharged. If the allocation is for excess net oxygen demand (ENOD), then the larger the allocation percentage the more reduction in NOD discharge is required. Staff refers to both NOD and ENOD in the Staff Report. Staff must make it clear what they are allocating and what policy considerations were used to make the allocations in order to appropriately assess responsibility on various parties.

Response:

The staff report clearly defines the concepts of loading capacity and excess net oxygen demand and their apportioning to the three main contributing factors in Sections 4.4 and 4.5 of the Draft Final Staff Report. These sections provide adequate description and analysis of apportioning approach in the Basin Plan Amendment. The comment correctly points out that the larger the allocation, the larger the amount that can be discharged. It is also correct that the larger the allocation of ENOD, the greater the required reduction in impacts on NOD in the DWSC.

The different alternatives for development of the Basin Plan Amendment were evaluated in Section 5. Aside from the policy considerations behind the apportioning of loading capacity and excess net oxygen demand as described in Comment # 6.15, no other policy considerations appear to be required. See also response to Comment # 6.19.

**Comment # 6.22**

The Staff Report and proposed Basin Plan Amendments make the same allocations to each loading source for both NOD and ENOD. (staff report Pages 40-42) This initial allocation is appropriate only if NOD loads are allocated based upon historic discharge. However the policy reasoning for allocating based on historic discharges is faulty and should be examined prior to adopting this Basin Plan Amendment.(see previous section) Notwithstanding the policy problems with an historic discharge NOD allocation, adopting equal NOD and ENOD allocation for each loading source only makes logical sense for the initial allocation. Once a party implements measures to reduce their NOD impacts and therefore eliminates ENOD, the ENOD allocation should go down while the NOD allocation would remain the same. If the ENOD allocation remains fixed in a Basin Plan Amendment, then a party mitigating for their NOD discharge could never escape their obligation to reduce ENOD until they have mitigated for all the ENOD from all sources.

Response:

As discussed in the response to Comment # 6.19 basing the allocation of loading capacity and responsibility for excess net oxygen demand on historical conditions is justified. Language, however, will be added, in a late revision, to the proposed Basin Plan language consistent with



the staff report, to clarify that credit will be given, with regard to responsibility for ENOD, for control measures implemented after 12 July 2004.

**Comment # 6.23**

Under the proposed Basin Plan Amendment language, a party would continue to be held responsible for ENOD even if they are under their NOD allocation.

Response:

Once a party's responsibility for meeting its wasteload or load allocation has been met, regardless of whether there remains excess net oxygen demand in the DWSC, their obligations will have been satisfied. Language will be added, in a late revision, to the proposed Basin Plan language consistent with the staff report, to clarify that credit will be given, with regard to responsibility for ENOD, for control measures implemented after 12 July 2004.

**Comment # 6.24**

Addressing oxygen deficits in a TMDL format creates significant problems. TMDL's were designed to create a regulatory framework to control discharges of a constituent into a waterbody that is causing an exceedance of a water quality objective. Dissolved oxygen impairments are caused by the removal of oxygen from the water. The fact that a constituent is being removed from the water turns the notion of a TMDL on its head. This TMDL is not designed to control a specific constituent that has a specific water quality objective that is being violated. It is unclear if this TMDL is consistent with EPA guidelines because of the fact that it does not address a specific constituent that is causing a violation of a specific water quality objective.

Response:

The TMDL is consistent with CWA and USEPA guidance for developing TMDLs. TMDLs must allocate loading capacity to sources of pollution. Pollution is defined in CFR Section 130.2(c) as 'the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water.' TMDLs may be 'expressed in terms of either mass per time, toxicity, or other appropriate measure' (CFR Section 130.2(i)). Contrary to the commenter's assertion, this TMDL is directed to a specific water quality objective as described in section 4.1 of the staff report. Also as described in the staff report, the dissolved oxygen TMDL and allocations are expressed in terms of net oxygen demand and excess net oxygen demand so that multiple sources of oxygen demanding substances and their precursors can be related using a common measure-- their impact on oxygen concentrations in the Deep Water Ship Channel. Furthermore, irrespective of Clean Water Act section 303(d), nothing in California Water Code section 13242 limits the requirement to establish a program of implementation of water quality objectives in the manner suggested by the commenter. Section 13242 requires the program include "[a] description of the nature of actions which are necessary to achieve the objectives, including recommendations for appropriate action by any entity, public or private." (Wat. C. section 13242(a).)

**Comment # 6.25**

The nature of the Stockton DWSC DO problem further complicates the use of a TMDL because the ultimate cause of the problem is the excavation of the channel itself. The act of building the DWSC has nothing to do with loads. In fact most experts agree that this problem cannot be

solved by controlling discharges into the River. Given the nature of the problem and its primary cause, a TMDL is not the best tool to solve this problem. In order to resolve this dilemma the staff has created the concept of excess net oxygen demand (ENOD). They have then allocated this ENOD to responsible parties. At the same time they allocate a load based concept of net oxygen demand (NOD). The existence of these two overlapping allocations creates significant confusion in the TMDL. The concept of ENOD is important in order to quantify and track the progress non-load related parties make toward solving the DO problem caused by the DWSC. It is very difficult to determine how the two concepts of NOD and ENOD can be incorporated into the same TMDL without creating confusion. However these problems can be avoided by making the logical initial policy determination that the parties responsible for excavating the DWSC are solely responsible for solving the entire DO problem in the DWSC.

Response:

Regional Board staff does not agree with the assertion that the ultimate cause of the problem is the excavation of the DWSC (see response to Comment # 6.2, Comment # 6.6, and Comment # 6.11). Regardless, in addressing a water quality impairment that is 303(d) listed, the Regional Board is not precluded from considering the effects of contributing factors other than discharges of pollutants.

The staff report clearly defines the concepts of loading capacity and excess net oxygen demand and their apportioning to the three main contributing factors in Sections 4.4 and 4.5 of the Draft Final Staff Report. These sections, including the late revisions discussed in the response to Comment # 6.21 and Comment # 6.22, provide adequate description and analysis of loading capacity, ENOD, and the apportioning approach in the Basin Plan Amendment.

**Comment # 6.26**

A 40% margin of safety (MOS) is used in this TMDL. 20% is based upon uncertainty in the accuracy of the flow measurement device immediately upstream of the DWSC. Another 20% is based upon the fact that there is a significant amount of technical uncertainty regarding the sources of oxygen demanding substances and their linkages to the DO impairment in the DWSC. Neither of these issues demand such a large margin of safety.

Dr. Slawomir W. Heranowicz raised this issue in section 3 of his peer review comments. He stated that the 20% MOS seems to overestimate flow inaccuracies at higher flows and that the MOS should be expressed as a fixed value related to the stated inaccuracies of the velocity measurements. This overestimation of the MOS places unnecessary and unjustifiable burdens on the parties attempting to comply with this TMDL.

The 20% MOS based upon uncertainties regarding the sources of oxygen demanding substances is also unjustified. There is significant uncertainty regarding the impacts that upper watershed loads may have on the DO in the DWSC. It is unclear if these loads actually deplete DO in the DWSC. This uncertainty does not justify a greater MOS that further limits upstream discharges. If the staff's assumption is wrong and these loads do not impact DO in the DWSC then the base loading without any MOS would be totally unnecessary and therefore overly conservative. The staff's assumption that these load may contribute to the problem is an implicit MOS and no further explicit MOS is needed to account for this uncertainty.

Response:

As stated in our response to the comments of Dr. Slawomir W. Heranowicz, although the 20% estimate was based on applying a fixed estimate of accuracy to low flow rates, the resulting overestimate of error at higher flows is offset by the fact that no estimate of accuracy has been developed for the UVM station, which is the primary source for net flow data in the DWSC. As discussed in *Issues in Developing the San Joaquin River Deep Water Ship Channel DO TMDL* (Lee and Jones-Lee, 2000, pg. 26), the estimates of accuracy upon which the margin of safety were based came from a similar instrument that is installed on Three Mile Slough in the western Delta. Further studies of the accuracy of the Stockton UVM will be performed as part of the studies of the phased implementation plan.

The 20% margin of safety attributed to best professional judgment is needed to account for the uncertainty about the specific mechanisms by which causative factors are linked to the impairment. Many of the causative factors have been identified based on empirical observations. A better quantified understanding of the linkage mechanisms is needed.

A revised margin of safety will be scientifically validated based on the findings of the studies to be conducted as part of the program of implementation.

**Comment # 6.27**

In addition to these explicit and implicit MOS the TMDL allocates 10% of the load component to unknown sources. This “reserve allocation” serves as an additional MOS for the load component of the TMDL. Multiple MOS, even if individually justified, become unjustifiable when their cumulative effects are considered. The DO DWSC TMDL uses multiple MOS and the cumulative impacts of the multiple MOS are never analyzed. Regional Board should analyze the cumulative impacts of these multiple MOS before they adopt them in a Basin Plan Amendment.

Response:

The 10% reserve addresses the impact from unknown sources and the MOS addresses uncertainty and issues related to flow measurement. There is no overlap between what is covered by the 10% reserve and the MOS. It is not possible, as suggested by the commenter, to analyze the impact from unknown sources. The MOS associated with uncertainty and issues related to flow measurement will be re-evaluated after the completion of the required source and linkage studies.

**Comment # 6.28**

Specifically the Regional Board should:.... [e]nforce the commitments made in the September 1980 EIS for the 35’ excavation of the DWSC.

Response:

It is not within the jurisdiction of the Regional Board to enforce federal NEPA requirements.

**Comment # 6.29**

Specifically the Regional Board should:.... [p]rohibit further maintenance dredging of the DWSC until all DO impacts in the DWSC are mitigated by the US Army Corp of Engineers.

Response:

Pursuant to Clean Water Act section 401, any applicant for a federal permit must obtain certification from the State prior to any discharge. The proposed Basin Plan amendment includes reference to the need to obtain water quality certification. The Regional Board will conduct water quality certification review for future projects and if warranted may deny certification.

**Comment # 6.30**

Specifically the Regional Board should:.... [i]nvestigate alternative methods of motivating US Army Corp of Engineers to solve the DO problem in the DWSC, such as enforcement of NPDES permit conditions for the 1980's dredging project. EPA has a legal responsibility to enforce NPDES requirement. The Regional Board should remind the EPA of this authority.

Response:

See response to Comment # 6.14.

**Comment # 6.31**

Specifically the Regional Board should:.... [f]ollow the Dissolved Oxygen TMDL Steering Committee Implementation Plan dated February 4, 2003.

Response:

The referenced plan identifies loads of oxygen demanding substances (including algae and ammonia), the DWSC geometry, and reduced DWSC flow as contributing factors to the impairment. Likewise, the proposed TMDL identifies those same contributing factors and apportions loading capacity and responsibility for excess net oxygen demand to each. The phased TMDL proposed in the Basin Plan Amendment provides an opportunity for those responsible for sources of oxygen demanding substances to perform some of the studies proposed by the Steering Committee Implementation Plan. The Regional Board, however, does not have jurisdiction to require all elements in the referenced plan (i.e. aeration demonstration project).

**Comment # 6.32**

Specifically the Regional Board should:.... [a]llow time to complete studies currently being undertaken by the San Joaquin Valley Drainage Authority to help better understand the dynamic of algae in the River as they relate to loading in the DWSC and other related studies.

Response:

The proposed Basin Plan Amendment prompts the Regional Board to reconsider the TMDL by December 2009 to take into consideration the results from these, and other studies. This provides sufficient time for the performance of these studies.

**Comment # 6.33**

Specifically the Regional Board should:.... [a]llow time to complete aeration studies and the construct of an operable aerator as the ultimate solution to the DO problem in the DWSC. These projects are currently underway.

Response:

To the extent that control of sources of oxygen demanding substances can be practically achieved at the source, aeration will not be an acceptable means for their mitigation. Prior to the completion of the upstream studies and further source control studies, the Regional Board cannot determine how much aeration will actually be allowed as a credit for sources of oxygen demanding substances. As such, allowing for time to pursue aeration, prior to performance of upstream and source control studies is not appropriate. Regardless, the phased TMDL provides adequate time for the aeration project to be implemented (in parallel with the upstream studies) before conditional prohibitions of discharge become effective.

**Comment # 6.34**

Specifically the Regional Board should:.... [a]llow Stakeholder time to develop a funding package for the Operation of an aerator in the DWSC once cost estimates are established by aeration feasibility studies.

Response:

See response to Comment # 6.33.

**Comment # 6.35**

Specifically the Regional Board should not:.... [a]llocate responsibility for solving the DO problem in the DWSC as outlined in the proposed Basin Plan Amendment and staff report.

Response:

Regional Board staff disagrees. See responses to all previous comments and the Final Draft Staff Report for detailed justification.

**Comment # 6.36**

Specifically the Regional Board should not:.... [a]dopt a Basin Plan Amendment with little to no policy analysis of the fundamental issues.

Response:

See response to Comment # 6.15, Comment # 6.19 and other related comments above.

**Comment # 6.37**

Specifically the Regional Board should not:.... [p]lace responsibility for solving the DO problem in the DWSC on parties that are not the proximate cause of the problem simply because of perceived inadequate statutory authority of the Regional Board to compel the party (USACOE) actually responsible for causing the DO problem in the DWSC.

Response:

See response to Comment # 6.2 and other related comments above.

**Comment # 6.38**

As part of the San Joaquin Valley Drainage Authority, we are undertaking extensive studies (totaling \$6.8 million) on the San Joaquin River to determine the dynamics of algae growth in the River. We plan to continue this proactive approach but adoption of this inequitable dissolved oxygen TMDL and Basin Plan Amendment will serve to undermine the credibility of the Regional Board and force us to redirect resources away from water quality improvement programs and toward needless appeals and litigation.

Response:

Comment noted.

**Comment # 6.39**

We ask the Regional Board to reject the simplistic allocation of responsibility proposed in the DO TMDL and Basin Plan Amendment, and, instead place the responsibility for solving the problems created by the construction of the Stockton Deep Water Ship Channel on those who made the decision to build the channel in the main stem of the San Joaquin River. The rest of the water users in the basin must be allowed to focus their limited resources on other water quality problems in the basin.

Response:

See response to Comment # 6.2 and other related comments above.

## **Comment Letter # 7: Lowell Ploss, Project Director, San Joaquin River Group**

June 24, 2004

### **Comment # 7.1**

The San Joaquin River Group Authority (SJRGGA) submitted comments by our letter of May 11, 2004 to the Public Review Draft Staff Report, dated April 2004, addressing the same subject amendment.

In addition to those previously provided comments we are submitting for the record the enclosed report, 'Overview of Sacramento-San Joaquin River Delta Water Quality Issues', June 22, 2004, prepared independently by Drs. G. Fred Lee and Anne Jones-Lee, both of G. Fred Lee & Associates. The SJRGGA believes that information presented in the report is pertinent to the understanding of the dissolved oxygen impairment and the decision about to be made by the Central Valley Regional Water Quality Control Board.

### Response:

The administrative record for the dissolved oxygen TMDL must include documents that were relied upon to make the staff recommendation and the Regional Board decision for the Basin Plan Amendment. The record includes key references cited in the staff report, written comments received, and responses to those comments. The record does not include all documents submitted by interested parties. To be included, such documents have to be submitted in a timely manner, relevant to the action, and reviewed and considered in the decision. Documents are not likely to be included in the record unless such a document, or portion thereof, is specifically referenced and used in a written public comment or direct testimony before the Board. No information was provided in comment regarding which portions of this over 140-page document should be considered. As the title suggests, this document provides an *overview* of Sacramento-San Joaquin River Delta Water Quality Issues. For this reason the document will not be included in the record.