State of California The Resources Agency

Memorandum

Date: February 8, 2011

To: Division of Water Rights File Room
State Water Resources Control Board
Cal/EPA Headquarters
1001 "I" Street, 2nd Floor
Sacramento, CA 95814

Via: electronic mail and hand delivery

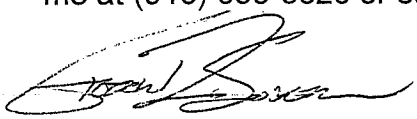
From: **Department of Water Resources**

Subject: Comments on the Review and Potential Modifications to the San Joaquin River Flow and Southern Delta Salinity Objectives Included in the 2006 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary

The Department of Water Resources (DWR) submits the attached comments concerning the State Water Resources Control Board's (State Water Board) process to review and potentially modify the San Joaquin River flow and southern Delta salinity objectives.

As requested in the November 22, 2010, Notice of Opportunity for Public Comment, DWR also will be submitting 6 paper copies by hand delivery.

DWR appreciates the opportunity to comment on this important process and looks forward to working with the State Water Board as it moves forward. If you or your staff have questions on these comments or would like additional information please contact me at (916) 653-8826 or esoderlu@water.ca.gov.



Erick Soderlund
Staff Counsel

Attachments:

Department of Water Resources
Comments Regarding
The Review and Potential Modification of the
San Joaquin River Flow Objectives
And
Southern Delta Salinity Objectives

The Department of Water Resources (DWR) hereby presents its comments regarding the State Water Resources Control Board's (State Water Board) review of and potential modifications to San Joaquin River flow and southern Delta Salinity objectives included in the 2006 Water Quality Control Plan for the San Francisco Bay/ Sacramento-San Joaquin Delta Estuary (Bay-Delta) (2006 Bay-Delta Plan), and program of implementation.

In seeking any information related to the State Water Board's review process, the November 22, 2010, Notice of Opportunity for Public Comment, stated this information should be beyond that covered by the Board's October 29, 2010, workshop notice regarding the Draft Technical Report, and that it may include information pertaining to the program of implementation, economics, or any other pertinent information.

As detailed below, DWR remains concerned with the State Water Board's general approach to potentially establishing new flow objectives for the San Joaquin River at Vernalis. DWR believes that tying Delta exports to unimpaired flows is currently impossible and would lead to inefficient use of water for environmental purposes. Additionally, making changes in one basin plan that would require wholesale changes in operations in the neighboring basin appears infeasible in a process that is only proposing changes to one basin plan. Many of the benefits espoused at the workshops of tying flows to a percentage of unimpaired flow did not concern the Bay-Delta Basin, but were instead focused on the neighboring San Joaquin Basin.

With regard to the southern Delta salinity objectives, DWR believes the time is ripe to modify the objectives and their program of implementation. The current understanding of the water quality needs for agriculture indicates that the current objectives are overly protective. In addition, the current program of implementation is improperly narrow in its assignment of responsibility to meet the objectives. DWR has demonstrated on numerous occasions that southern Delta water quality is dominated by the quality and quantity of San Joaquin River water and that State Water Project (SWP) operations have little effect or control over salinity levels in the southern Delta.

SAN JOAQUIN RIVER FLOW OBJECTIVES

As it has been described thus far, flows that will be considered in this process are intended to help San Joaquin River salmon and steelhead.

DWR agrees with the need to protect the Delta life stages of San Joaquin River salmon and steelhead. During the January 6 and 7 Workshop, participants stated that out-migrating fish needed to move through the Delta without being preyed upon. Some experts said that flows were a cue for out-migrating fish and some stated that flows provided necessary conveyance through the Delta. Because the higher flows of the past were also tied to natural events, the focus has been on flows themselves as the key to improved salmonid survival. However, little attention was placed on water quality parameters that are also important to salmon survival, such as turbidity; or for solutions such as the Head of Old River barrier. There are many non-flow water characteristics and physical or non-physical barriers that play a part in the out-migration life stage of salmonids that should also be examined to determine, and to some extent quantify, how they assist in protecting the Delta life stages.

While the natural hydrograph likely plays a significant role in providing cues for out-migration, little is known about what level of flow is necessary for cues and Delta protection. Information on flows through the Delta, along with physical and non-physical solutions, and water quality needs examination to prevent setting of criteria that are not reasonable.

Although water quality is often cited by some as being necessary for the fish, several water quality parameters have not been considered in these comments. For example, mercury and pesticides adhere to soil particles and may be disrupting fish health. Other contaminants such as endocrine disruptors may also play a role in fish survivability. Still other water quality characteristics may control food productivity critical for life stages of Delta fish species. As the State Water Board addresses flow components critical for specific life stages of fish, the Board should also address water quality issues critical for specific life stages of fish.

Unimpaired Flow Calculations Are Not Suited For Use as Operational Criteria

River flow criteria tied to unimpaired flows cannot be adopted as operational criteria because the data used to calculate unimpaired flow is not available in real-time which is necessary for operational criteria. Furthermore, no agreement has been made on what elements, both flow and structural, should be included in unimpaired flow calculations. Operations of the State and federal water projects require forecasting of river flows and exports to meet many operational criteria in the Delta and the rivers. Because insufficient data exists to forecast unimpaired flow, its use in operational criteria is even less functional.

Many different types of information are necessary to calculate unimpaired flow. In addition to stream measurements, information would be needed regarding diversion that consumptively withdraw water from surface waters, wastewater returns to surface waters, groundwater recharge or accretions, evaporation or direct precipitation, and

upstream storage gains or losses. Each of these measurements introduces error in direct proportion to the area in which it is intended to represent. Monitoring of a single location and assuming it is representative of a much larger area requires significant supporting data that is also costly to obtain. Understanding the interactions between surface and groundwater is particularly difficult and therefore apt to be inexact or unreliable and will greatly influence calculations intended to represent unimpaired flow.

Recommendations on How To Proceed

DWR offers the following recommendations that will help the State Water Board as it proceeds with reviewing and potentially modifying the San Joaquin River flow objectives.

1. The State Water Board should identify as explicitly as possible the benefits the various flow proposals are expected to provide, including where the benefit is achieved and the scientific justification it.

2. The State Water Board should review public notices and workshop details to determine if they have adequately noticed potential changes to Basin Plan(s) for each benefit and/or action.

3. The State Water Board should investigate and determine how such a use of water meets the reasonable use doctrine before setting the flow objective. The State Water Board should further determine if habitat benefits expected from increased flows can be more efficiently gained through habitat restoration actions or other physical solutions.

4. A committee that includes fishery biologists from various agencies should review the scientific papers and associated modeling, and water quality data to determine whether there is or should be a firm relationship to unimpaired flow and fish benefits before relying on this method.

5. A committee that includes water users and water suppliers in the basin or upstream basin should be convened to determine how various flow objectives might be achieved. Estimates of costs and a schedule for implementation should be included.

6. A committee of experts should be convened to examine how unimpaired flow is calculated and whether and to what extent it needs to be refined so that the State Water Board may effectively use the unimpaired flow information in determining specific objectives.

7. A range of climate change scenarios should be studied to understand the long-term feasibility of proposals.

SOUTHERN DELTA SALINITY OBJECTIVES

In general, a substantial amount of information regarding the irrigation water quality requirements for the south Delta, numerous factors contributing to southern Delta salinity, the limited impact of State Water Project (SWP) operations and the narrow range of options available to assist in meeting the current objectives, particularly in dry and critical years, has been provided to the State Water Board during previous water quality and water rights proceedings. These include the current review of the 2006 Bay-Delta Plan, the review of the 1995 Bay-Delta Plan, the Water Rights Decision 1641 (D-1641) hearings and the hearings related to the Cease and Desist Order WRO 2006-006 (CDO). DWR has participated in each of the above processes and has developed and presented information intended to answer two important questions: 1) what should the salinity objectives be to protect agricultural beneficial uses in the southern Delta; and 2) what should the program of implementation be for the southern Delta salinity objectives.

For the most part, the following comments reiterate the information and recommendations DWR has provided in past proceedings. More specifically, these comments should be read in concert with the comments DWR provided on December 6, 2010. Those comments provided DWR's response to the Draft Technical Report and included, as an attachment, comprehensive information regarding the sources of salinity in the southern Delta, causes of elevated salinity levels, and an overview of how SWP operations (including temporary barriers) affect salinity in the southern Delta.

As foretold in our December 6, 2010 comments, the below comments provide 1) a detailed background and timeline of the development of the agricultural salinity objectives and actions that have been taken to meet those objectives, 2) potential updates to southern Delta hydrodynamic modeling, and 3) recommendations pertaining to the program of implementation.

In brief, DWR believes substantial information supports amending the 2006 Bay-Delta Plan with regards to the southern Delta salinity objectives for agricultural beneficial uses by: (1) modifying the 0.7 EC and 1.0 EC objectives to be more reflective of salinity tolerances of crops currently grown in the southern Delta; and (2) modifying their program of implementation that will result in a comprehensive program to implement the objectives and will include not only the SWP and Central Valley Project (CVP) but other users along the watercourse as well.

I. History of the Southern Delta Objectives

The history behind the southern Delta salinity objectives is well documented as it has been an important subject of water quality control plans and water right hearings since 1978 (See Final Environmental Impact Report (FEIR) for Implementation of the 1995 Bay-Delta WQCP, Nov. 1999 (prepared by the SWRCB for Decision 1641 (D-1641) water right hearings).) These comments include historical information to give some perspective on the past complexity in addressing the southern Delta salinity issues. In addition, the historical information helps explain and, to some extent, supports DWR's recommendations regarding the program of implementation.

A. 1978 Bay-Delta Plan and Water Rights Decision 1485

In 1978, the Southern Delta salinity objectives were established to protect agricultural water quality needs of the area based on the type of crops, soil type, and irrigation practices found in the area. The values were determined from University of California Guidelines equations used to establish a maximum salinity of the applied water in order to achieve 100 percent crop yield. (FEIR at IX-3.) Beans and alfalfa, which are salt sensitive, were chosen as target crops.

In 1978 the applied water quality objective for beans was established as 0.7 EC to protect crops during summer irrigation (April through August) and the objective of 1.0 EC was to protect alfalfa during the winter irrigation season (September through March). (*Id.* At IX-4.)

Although the Southern Delta salinity objectives were established as part of the 1978 Bay-Delta Plan, implementation of the objectives was deferred. The 1978 Bay-Delta Plan recognized that upstream depletions and water quality degradation of the San Joaquin River and its tributaries greatly reduced the flows and quality available for protection of the southern Delta. (1978 Bay-Delta Plan at V-11.) Notwithstanding these conclusions, the State Water Board did not believe at that time that it had the authority to amend the permits of water development facilities in the San Joaquin River watershed, including Reclamation's permits. Importantly, however, the State Water Board concluded that the direct effects of SWP and CVP diversions covered by the permits before the Board "do not result in major impact on water quality conditions in the southern Delta." (*Id.* at V-12.) As such, the Board concluded that "[i]t is questionable whether the Board could justify imposing terms and conditions in the permits before the Board to resolve all of the water quality problems in [the southern Delta]." (*Ibid.*)

Water Rights Decision 1485, implementing the 1978 Bay-Delta Plan, maintained a consistent approach with the above conclusion, stating that:

> "only those elements of the plan for which a project mitigation responsibility or a compelling public interest can be shown have been incorporated into this decision. Thus, as indicated earlier, the specific provisions for agriculture in the southern Delta have not been incorporated into this decision." (D-1485 at 11.)

The Board did note that negotiations were occurring at that time between DWR, Reclamation and the South Delta Water Agency (SDWA), concerning the construction of physical facilities to provide adequate circulation in the southern Delta that would help meet the southern Delta salinity objectives. As stated in D-1485, "[t]hese negotiations appear to be directed toward the most practical solution for long-term protection of southern Delta agriculture . . . ." (*Ibid.*) If the negotiations did not result in an agreement by January 1, 1980, the Board stated that it would examine in detail southern Delta water rights, determine the causes and sources of any encroachment, and take appropriate action. (*Ibid.*)

B. Racanelli Decision

The 1978 Bay-Delta Plan and D-1485 were challenged by multiple lawsuits that were coordinated and ultimately resulted in the appellate decision *United States v. State Water Resources Control Board* (1986) 182 Cal.App.3d 82, commonly referred to as the "*Racanelli* Decision," after the appellate judge who wrote the opinion. The *Racanelli* Decision is long and complex, containing a dozen holdings on various issues. One of the more important holdings, and relevant to this discussion, is that the Court held that the State Water Board erred when it based the water quality standards in its water quality plan on water quality conditions that would have been present in the Delta if the CVP and SWP had never been built and then imposed the obligation to meet them on the CVP and SWP alone. Instead, the Board should have established the water quality standards at the level needed to protect all beneficial uses in the Delta, even if that meant other water users would also have to contribute to meet them.

Addressing the southern Delta salinity objectives specifically, the Court stated the following:

> "The role of the Board in acting upon permit applications has been aptly described by this court as a "necessary balancing process" requiring "maximum flexibility" in considering competing demands of flows for instream purposes and diversions for agricultural, industrial, domestic and other consumptive uses to arrive at the public interest. (*Fullerton v. State Water Resources Control Bd.* (1979) 90 Cal.App.3d 590, 603 [153 Cal.Rptr. 518].) (21c) We think the Board could properly conclude that the public interest in the projects requires that they be held responsible only for water quality degradation resulting from the projects' own operations.

> Although we hold the without project standards inadequate to fulfill the Board's obligations to set water quality objectives for the Delta (pt. IA, *ante*), we nevertheless find no legal impediment to the Board's use of such standards to enforce water quality objectives against the projects themselves. The implementation program was flawed by reason of the Board's failure, in its water quality role, to take suitable enforcement action against other users as well.
>
> At least with respect to the southern Delta, the Board seemed aware of its obligation: first, in declaring its intent to take appropriate action in the absence of agreement for construction of new facilities, [footnote omitted] next, in noting the right of the southern Delta riparians to protection against harmful diversions or pollution by upstream users and the conditions subjecting the projects to prior vested rights. [footnote omitted] Yet despite awareness of its "broad enforcement authority" to set and implement suitable water quality objectives ensuring the reasonable protection of beneficial uses in the Delta, the Board-we are advised-took no further action. We presume the Board's scheduled 1986 hearings will not only seek to remedy that glaring omission, but also result in a comprehensive program to implement such objectives which will include the projects *and* other users along the watercourse." (*Racanelli, supra*, 182 Cal.App.3d at pp. 126-127.)

C. South Delta Water Agency Litigation and Negotiations

Proceeding concurrently with the above litigation, in 1982, the SDWA filed a lawsuit against DWR and Reclamation alleging (1) that operations of the CVP have reduced the quantity and diminished the quality of inflow of water of the San Joaquin River to the SDWA; (2) that operation of the CVP and SWP export pumps have caused lowering of water levels, reversing flows, and diminishing the influence of the tides in the SDWA; and (3) that the Secretary of the Interior's designation of the "Stanislaus River Basin" was contrary to Public Law 87-874 for various reasons. (D-1641 Hearings, DWR Exhibit 37, Attachment 1 (Summary of Settlement, August 28, 1990).)

Negotiations among SDWA, DWR and Reclamation resulted in an approach to address SDWA concerns. Beginning in 1985, a series of immediate actions were undertaken in response to complaints about water levels in the southern Delta channels. DWR dredged parts of Tom Paine Sough and installed three temporary pumps to transport water from Sugar Cut (near Old River) into Tom Paine slough for agricultural diversion. DWR also modified its operations at Clifton Court Forebay gates to minimize the potential for operational effects on water level in the southern Delta. Further actions included additional interim releases from New Melones by Reclamation to improve

water quality at Vernalis, and the construction of four large siphons to provide a more reliable supply of water from Old River into Tom Paine Slough.

In 1990 Reclamation, DWR, and SDWA signed a letter asserting that the water quality and water level needed in the south Delta would be adequately met based on a proposed settlement agreement designed to resolve the dispute among them over the impacts of SWP and CVP on SDWA channels. (DWR Exhibit 37, Attachment 1 (Summary of Settlement, August 28, 1990).) These actions include construction of three flow control structures in the southern Delta channels in Old River, Middle River, and Grant Line Canal that could significantly enhance water levels and circulation. An additional barrier at the Head of Old River was later identified to provide benefits to San Joaquin fall-run Chinook salmon. These flow control structures are now known as the permanent operable gates described in the CALFED ROD South Delta Improvement Program (SDIP) (CALFED ROD p. 48-50 (August 28, 2000)).

As a predecessor of the permanent barrier program, in 1991 DWR began installing and operating temporary rock barriers to assist SDWA diversion in the south Delta and help avoid water level and circulation problems. DWR has continued to install and operate the temporary barrier program for the past twenty years.

D. 1991 Bay-Delta Plan

In 1991, the State Water Board issued a revised Bay-Delta Plan. The Plan was not used as a basis for implementing objectives and was replaced by the 1995 Bay-Delta Plan, which is discussed below. However, information in the 1991 Bay-Delta Plan provides some understanding of progress made on analysis related to the southern Delta salinity objectives.

The 1991 Bay-Delta Plan did not modify the southern Delta salinity objectives first proposed in the 1978 Bay-Delta Plan. The plan did note that in developing the objectives, information from a DWR-sponsored South Delta Agriculture Subworkgroup, and the southern Delta negotiations were taken into consideration. (1991 Bay-Delta Plan at 5-12.) It stated that three key issues were identified as influencing the level of salinity required for the protection of beans and alfalfa: crop response during the early stages of growth, the determination of leaching fractions and the effectiveness of rainfall in reducing soil salinity during the irrigation season. (Ibid.) The members of the subworkgroups were not able to reach a consensus and thus the salinity objectives were not modified.

The 1991 Bay-Delta Plan also noted that the subject of agricultural objectives for the southern Delta should consider the ongoing negotiations between DWR, Reclamation and SDWA. It stated "care should be exercised in setting objectives so as not to undermine negotiations but to bring the negotiations to a timely and fruitful conclusion."

(*Ibid.*) With this in mind, the plan called for a staged implementation plan, with the final stage (0.7 EC April to August; 1.0 EC September to March) to be implemented by 1996. In addition, any agreement between DWR, Reclamation, and SDWA, affecting south Delta water quality would be fully reviewed by the State Water Board prior to implementation of the final stage. (*Id.* at 5-13.)

E. 1995 Bay-Delta Plan

In 1995, the State Water Board issued a revised Bay-Delta Plan. The water quality objectives for agricultural beneficial uses were unchanged from the 1991 Plan except that the effective date of the agricultural salinity objectives for the southern Delta stations on the Old River was extended from January 1, 1996 to December 31, 1997.

In the program of implementation, causes for the elevated salinity in the southern Delta are identified and include low flows, salts imported in irrigation water by the State and federal water projects, and discharges of land-derived salts, primarily from agricultural drainage. (1995 Bay-Delta Plan at 29.) The plan stated that the State Water Board would evaluate implementation measures for the southern Delta agricultural salinity objectives in the water rights proceeding. (*Ibid.*)

An important note, this was the first time the SWP was identified as a cause of elevated salinity in the southern Delta. Up until the 1995 Bay-Delta Plan, the SWP was identified as causing water level problems and, to some extent, circulation issues in the southern Delta. However, it had not been identified has a source of salinity. Unfortunately, it is not clear why the State Water Board identified the SWP as a source of the salinity, or what information it relied upon in stating that the SWP was responsible for salts imported in irrigation water.

F. Southern Delta Salinity and Decision 1641

In Water Rights Decision 1641 (D-1641), the State Water Board assigned responsibility to DWR and Reclamation to implement the southern Delta salinity objectives downstream of Vernalis. D-1641 stated that water quality in the southern Delta downstream of Vernalis is influenced by San Joaquin River inflow; tidal action; diversions of water by the SWP, CVP, and local water users; agricultural return flows; and channel capacity. (D-1641 at 86.) The salinity objectives, in turn, could be implemented by providing dilution flows, controlling in-Delta discharges of salts, or by using measures that affect circulation in the Delta. (*Ibid.*)

In assigning responsibility to DWR specifically, D-1641 states that DWR is partially responsible for salinity problems in the southern Delta because of hydrologic changes that are caused by export pumping. (*Id.* at 88.) Export pumping and in-Delta diversions in the southern Delta are identified as causing null zones, areas with little or no

circulation. (*Id.* at 86.) The lack of circulation prevents better quality water that is otherwise available from the main channels from freshening the water in channels where the null zones occur. (*Ibid.*) Based on this finding of responsibility, D-1641 amended DWR's export permits to require that it, along with Reclamation, take actions that will achieve the benefits of the permanent barriers in the southern Delta to help meet the salinity objectives by April 1, 2005. (*Id.* at 88.)

The State Water Board recognized that with the temporary rock barriers, and even with permanent operable gates, DWR may not always be able to control water quality in the southern Delta. (D-1641 at 8-12, 79, and 86-87.) The State Water Board noted that the "permanent barriers would be operated to meet the water quality objectives at three stations in the southern Delta to the extent possible." (Id. at 9.) Also noted is that "construction of the permanent barriers alone is not expected to result in attainment of the water quality objectives. . . . and that operation of the temporary barriers should achieve water quality of 1.0 mmhos/cm at the interior stations under most hydrologic conditions" (*Id.* at 88). The State Water Board references DWR's D-1641 testimony regarding the permanent barrier operations, where DWR explained: "that the barriers (or flow control structures) only improve water quality to the extent that they improve water circulation in the southern Delta channels. . . . [and] water quality in the area is affected by many other factors. Because of this, the attainment of specific water quality objectives cannot be guaranteed by operation of the barriers or flow control structures. For instance, it is also necessary to control and dilute the salt load in the San Joaquin River at Vernalis." (DWR-37 at 15, referenced in D-1641 at 88.)

Arguably, the State Water Board required that DWR be responsible for meeting the 1995 Bay-Delta Plan southern Delta salinity objectives under the assumption that the projects would have the permanent operable barriers in place to meet the objectives by April 1, 2005. (D-1641 at 88.) In 1998, DWR gave testimony that it expected to conclude consultation under the Endangered Species Act (ESA) and complete the final EIR/EIS for permanent barriers by spring of 1999; and operation of two agricultural barriers and the fish barrier by early 2005 (DWR-37 at 6).[1] The State Water Board linked the effective date of the 0.7 EC objective to installation of the permanent barriers in recognition that SWP and CVP operations without the barriers could not, in many years, achieve the more stringent objective. The SWRCB states in D-1641, in reference to the *permanent barriers*, that:

> "benefits of the [permanent] barriers are integral to the implementation of several of the actions approved in this decision. The benefits of the

[1] The third agricultural permanent barrier at Grant Line Canal was scheduled for operation in mid-2006 but the other Interim South Delta Program barriers were expected to begin operation in early 2005 with expected improvements in water circulation and water quality (DWR-37 at 9).

> barriers could be achieved by other means, such as increased flows through the southern Delta and export restrictions, but these measures could result in unreasonable use of water and a significant reduction in water supplies south and west of the Delta" (D-1641 at 10).

Essentially, the permanent barriers program was the only feasible tool identified or analyzed in D-1641 that could significantly help achieve lower salinities in the southern Delta channels.

Because of the testimony presented during D-1641 water right hearings, the State Water Board did include in the southern Delta permit condition a process to withhold decisions to enforce compliance at the three southern delta locations (C-6, C-8 and P12) until it had considered whether the exceedence was due to factors beyond DWR's control. D-1641 provides, in pertinent part, the following:

> "This permit [DWR permit] is conditioned upon implementation of the water quality objectives for agricultural beneficial uses in the southern Delta, as specified in Table 2, attached, at the following locations in the southern Delta:
>
> a. SanJoaquinRiveratBrandtBridge(InteragencyStationNo.C-6);
>
> b. OldRivernearMiddleRiver(InteragencyStationNo.C-8;and
>
> c. Old River at Tracy Road Bridge (Interagency Station No. P-12).
>
> Permittee [DWR] has latitude in its method for implementing the water quality objectives at Stations C-6, C-8, and P-12, above; however, a barrier program in the southern Delta may help to ensure that the objectives are met at these locations. <u>If Permittee exceeds the objectives at stations C-6, C-8, or P-12, Permittee shall prepare a report for the Executive Director. The Executive Director will evaluate the report and make a recommendation to the SWRCB as to whether enforcement action is appropriate or the noncompliance is the result of actions beyond the control of the Permittee."</u>[2]

[2] Table 2 lists four compliance locations (the fourth is C-10 at Vernalis) where the 0.7 EC and the 1.0 EC objectives are measured as 0.7 mmhos/cm EC (EC) from April through August and 1.0 EC from September through March. Compliance applies in all year types and is measured by a maximum 30-day running average of mean daily EC.

(D-1641, Condition 6, p159, for DWR Delta permits)[3] (Emphasis added)

After the SWRCB adopted D-1641, many parties filed petitions for reconsideration of the decision. DWR noted in its petition for reconsideration that it did not "formally" challenge the southern Delta permit condition although it did object to the imposition of the condition. The assignment of responsibility was not challenged because, at that time, DWR believed that the permanent barriers would be implemented in the near future and DWR's obligation would be satisfied. Nonetheless, DWR object to implementing the objective because DWR testimony demonstrated that it had limited ability to influence the southern Delta objectives, that the southern Delta objectives are influenced by numerous factors beyond the control of DWR, and the objectives may not be achieved at all times despite DWR's best efforts. (DWR Petition to Reconsider D-1641, Jan. 28, 2000, p. 5, footnote 2.) DWR believed, and continues to do so, that it is unreasonable to be found in violation of an objective where events are beyond its control. Therefore, DWR indicated in its Petition that it "intends to use the Board process established in D-1641 where appropriate to explain to the Board when the standards [objectives] are not met due to factors beyond DWR's control." (*Id.*) (Emphasis added).

The above condition gives DWR the right to submit a report to the SWRCB Executive Director if there is an exceedence of the southern Delta objective. Based on the report and the Executive Director's recommendations, the SWRCB then will determine if enforcement action is appropriate. The SWRCB could decide that the exceedence is the result of actions beyond DWR's control and therefore no enforcement action should be taken.

G. *Robie* Decision

D-1641 was challenged by multiple parties and was ultimately reviewed by the 3rd District Court of Appeal in *State Water Resources Control Board Cases* (2006) 136 Cal.App.4th 674 (hereinafter referred to as the "*Robie* Decision").

The Robie Decision is important in this context in that it limits the State Water Board's discretion to adopt water rights terms and conditions that deviate from the objectives established in the water quality control plan. The Decision states, in pertinent part, the following:

> "Contrary to State Water Contractors' assertion, the trial court's decision does not rest on 'the assumption that water right decisions adopted by the

[3] This water right condition also applies to Reclamation in D-1641 as condition 1 at pages 159, 160, and 162, for USBR CVP Delta and New Melones permits. DWR is not providing any specific interpretation as to Reclamation's permits.

> . . . Board must provide for full and immediate implementation of the water quality objectives set forth in any applicable water quality control Plan.' The trial court's decision rests on the conclusion (with which we agree) that when a water quality control plan calls for a particular flow objective to be achieved by allocating responsibility to meet that objective in a water rights proceeding, and the plan does not provide for any alternative, experimental flow objective to be met on an interim basis, the decision in that water rights proceeding must fully implement the flow objective provided for in the plan. The guiding principle is that the Board's power to act in a water rights proceeding commenced to implement a water quality control plan is constrained by the terms of the plan it is implementing." (*Robie* Decision, *supra*, 136 Cal.App.4th at 729.)

Speaking specifically on the southern Delta salinity objectives and their program of implementation, the court concluded as follows:

> The Central Delta parties contend the Board "did not in fact implement a plan to achieve" the salinity objectives for salinity in the southern Delta because "[a]lthough the Board assigned the responsibility for meeting the salinity standards to the Bureau and [the Department], the evidence as well as the statements of the Board clearly show that the Bureau ... does not plan to implement any actions which will improve its ability to meet the salinity standards." In their reply brief, the Central Delta parties emphasize the effect of the change the Board made to the footnote in the 1995 Bay-Delta Plan with respect to the southern Delta salinity objectives, noting that this change results in delayed implementation of the salinity objectives at the three locations downstream of Vernalis.
>
> We find no merit in the broader argument of the Central Delta parties that the Board failed to implement the southern Delta salinity objectives by assigning responsibility for meeting them to the Department and the Bureau. Contrary to the suggestion of the Central Delta parties, the Board was not required to tell the Bureau and the Department exactly *how* they were to meet the salinity objectives. For our purposes, it is enough that Decision 1641 directed the Bureau and the Department *to* meet those objectives, and the Central Delta parties have not shown the Bureau and the Department *cannot* meet those objectives. Obviously, if such a showing were made, then the Decision 1641's allocation of responsibility to the Bureau and the Department would have been illusory and would not have complied with the Board's obligation to implement its own water quality control plan. In the absence of such a showing, however, we cannot conclude the Board failed to implement the 1995 Bay-Delta Plan by directing the Bureau and the Department to meet the salinity objectives

in that 1995 Bay-Delta Plan.

We do find merit, however, in the narrower argument that the Board failed to adequately implement the southern Delta salinity objectives at the three locations downstream of Vernalis by delaying implementation of the 0.7 EC objective at those locations. The 1995 Bay-Delta Plan specified that implementation of the 0.7 EC objective at the two locations on Old River would be phased in so that full compliance would be achieved by the end of 1997. No delayed implementation was provided for the San Joaquin River at the Brandt Bridge site. In this water rights proceeding, however, the Board extended the delayed implementation at the Old River sites by more than seven years, to April 1, 2005, and authorized this same delayed implementation for the Brandt Bridge site. Furthermore, Decision 1641 specified that the 0.7 EC objective would be "replaced" by the 1.0 EC objective after April 1, 2005, "if permanent barriers are constructed, or equivalent measures are implemented, in the southern Delta and an operations plan that reasonably protects southern Delta agriculture is prepared by the [Department] and the [Bureau] and approved by the Executive Director of the [Board]."

There is nothing in the 1995 Bay-Delta Plan that allowed the Board to further delay implementation of the 0.7 EC objective at the two Old River sites, or that allowed the Board to delay implementation of that objective at the Brandt Bridge site, or that allowed the Board to replace that objective with a different objective under any circumstances. In taking these actions, the Board failed to adequately implement the 1995 Bay-Delta Plan and instead effectively amended the 1995 Bay-Delta Plan without complying with the procedural requirements for amending a water quality control plan.

Since the extended implementation date of April 1, 2005, has already passed, the Board's delay in implementing the 0.7 EC objective until that date is a moot issue. However, the provision in Decision 1641 that replaces the 0.7 EC objective with the 1.0 EC objective under certain conditions *after* April 1, 2005, is not moot. As with the Vernalis pulse flow objective, the Board must either fully implement the southern Delta salinity objectives as set forth in the 1995 Bay-Delta Plan or must duly amend the plan. Accordingly, we will direct the trial court to modify its judgment in *Central Delta Water Agency v. State Water Resources Control Board* (Super. Ct. S.F. City and County, 2003, No. 311502) to accomplish this result. (*Robie* Decision, *supra*, 136 Cal.App.4th at 734-735.)

H. 2006 Cease and Desist Order

DWR and Reclamation experienced significant delays in developing the environmental documentation for the permanent operable gates and proceeding through the federal Endangered Species Act consultation process. As such, the permanent operable gates were not implemented by the April 1, 2005 deadline, which meant that DWR and Reclamation had, and continue to have, responsibility for meeting the 0.7 EC objective, as provided under D-1641.

Although DWR installs rock barriers and operates the temporary barriers program without the operable gates in place, DWR's ability to meet the 0.7 EC objectives is significantly reduced. After a brief investigation, the State Water Board concluded there was a threat of violation of the permit and license terms requiring DWR and Reclamation to meet the 0.7 EC objective from April through August. On May 2, 2005, the State Water Board sent notices to DWR and Reclamation of proposed Cease and Desist Orders (CDOs) against each of them for a threatened violation of their water right permit condition implementing the southern Delta water quality objectives. At the request of DWR and Reclamation, the State Water Board held a hearing to determine whether the CDOs should be adopted, or modified and adopted.

On February 15, 2006, upon conclusion of the above hearing and after considering the evidence presented, the State Water Board issued Order WR 2006-0006. The State Water Board ordered DWR and Reclamation to take corrective actions under a schedule to correct threatened violations of their permits and licensee. Specifically, the order states that DWR and Reclamation "shall implement measures to obviate the threat of non-compliance with . . . the 0.7 mmhos/cm electrical conductivity (EC) objective by July 1, 2009." (Order WR 2006-0006 at 28.)

The order further requires DWR and Reclamation to submit "a detailed plan and schedule to the Executive Director for compliance with the conditions mentioned above, including planned completion dates for actions that will obviate the current threat of non-compliance with the 0.7 EC objective at stations C-6, C-8, and P-12 by July 1, 2009." (*Id.* at 29.)

On April 14, 2006, DWR and Reclamation submitted a report to satisfy the requirements of the order. The compliance report described the strategy DWR and Reclamation would pursue to obviate a threat of non-compliance of the 0.7 EC standard. For the interior Delta stations, DWR and Reclamation decided that salinity would be most feasibly managed by implementing the permanent operable gates component of the SDIP. DWR and Reclamation acknowledged that additional actions to control local salinity discharges may also be needed, but the permanent operable gates were seen as a "necessary first step."

On May 12, 2006, the State Water Board's Executive Director responded to the compliance report submitted by DWR and Reclamation, stating that the report met the requirements of the conditions set forth in Order WR 2006-0006.

I. 2006 Bay-Delta Plan

In anticipation of workshops scheduled in January 2007, intended to evaluate and develop appropriate measures to protect southern Delta agricultural beneficial uses, the southern Delta objectives were not revised in the 2006 Bay-Delta Plan. The State Water Board, however, identified Delta and Central Valley salinity as an emerging issue and cited its pending effort to evaluate the southern Delta salinity objectives and their implementation as part of its larger salinity planning endeavor.

As part of the 2006 Bay-Delta Plan revisions, the State Water Board invited DWR and Reclamation to pursue a petition to change their water right obligations or petition to add other responsible parties to share in the burden of meeting the southern Delta salinity objectives, if warranted. (2006 Bay-Delta Plan, Append. 1, at 70.) However, before such changes to the water rights can be considered, the State Water Board should complete the current process that will consider such changes.

J. Hoffman Report

As part of the 2006 Bay-Delta Plan, the State Water Board committed to reevaluate the salinity objectives in the southern Delta. A critical component of this reevaluation is the Salt Tolerance of Crops in the Southern Sacramento-San Joaquin Delta report, prepared by Dr. Hoffman (Hoffman Report) for the Board. The Hoffman Report's purpose is to provide the state of knowledge on the irrigation water quality needs of the southern Delta. It analyzes, in depth, the multiple factors influencing the growth of agricultural crops in the southern Delta, including the water quality needed to protect southern Delta agriculture.

The overall conclusions of the Hoffman Report provide strong evidence that existing soil and irrigation water conditions in the southern Delta are favorable for growing agricultural crops, including beans, and that the current salinity objectives are overly protective. In fact, all of the models presented in the report predict that the water quality standard could be increased and all of the crops normally grown in the southern Delta would be protected.

K. Summary

In reviewing the long history of the southern Delta salinity objectives and their program of implementation, several key points become readily apparent. First, the State Water Board has not been in a better position to review and modify the salinity objectives and

their program of implementation since the objectives were first established in 1978. The state of knowledge as to what water quality is needed to protect southern Delta agriculture has been significantly updated through various studies, including the recent Hoffman Report. The *Racanelli* and *Robie* decisions have provided needed clarity as to the Board's responsibility in establishing water quality objectives and the relationship between a water quality plan and water rights proceedings intended to implement that plan. Significant modeling and monitoring data has been developed for and provided to the State Water Board over the last five to six years, so that the Board's understanding of what affects and controls salinity in the southern Delta, and the sources of salinity has never been more comprehensive. Lastly, DWR believes that the State Water Board should not wait for the permanent operable gates to be implemented, at least in the short-term. All of the above factors, together, offer the State Water Board the opportunity to take a "fresh look" at the southern Delta salinity objectives and their program of implementation, one that it has not had since the objectives were first established.

A second key point is the unfortunate result that DWR's willingness to implement the temporary agricultural barriers and the permanent operable gates has evolved over time to being equated as DWR having significant responsibility for elevated levels of salinity in the southern Delta. When the objectives were first established, the State Water Board did not find DWR responsible for the elevated levels of salinity. As stated in D-1485, "only those elements of the plan for which a project mitigation responsibility or a compelling public interest can be shown have been incorporated into this decision. Thus, as indicated earlier, the specific provisions for agriculture in the southern Delta have not been incorporated into this decision." (D-1485 at 11.) The 1982 SDWA lawsuit also speaks to this point. In that litigation, DWR's alleged impacts only dealt with water levels, reverse flows, and diminishing the influence of the tides. In other words, the principal concern related to SWP impacts was low water levels.

In D-1641, the State Water Board concluded DWR was partially responsible for salinity problems in the southern Delta because of hydrologic changes that are caused by export pumping. (D-1641 at 88.) D-1641 provided two examples of the effect SWP pumping can have on water quality. First, during periods of high exports and peak irrigation, higher quality Sacramento River water is drawn into the southern Delta, mix with and improve the quality of San Joaquin flow. (*Id.* at 87.) Second, the State Water Board claimed that SWP pumping created null zones, negatively impacting water quality in certain channels. (*Ibid.*) No attempt was made, however, to quantify the overall impacts the SWP has on southern Delta salinity or its actual impacts, e.g., whether SWP operations actually cause null zones or merely affect existing null zones location and timing, and whether those impacts have a positive or negative impact. Instead, a connection was made to hydrologic changes and SWP operations and a responsibility was assigned. DWR believes the responsibility assigned in D-1641 is due, in large part, to its willingness to implement the permanent operable gates.

As stated above, DWR chose not to protest the assignment of responsibility because it believed at that time the permanent operable gates would be implemented and DWR could satisfy the condition in D-1641.

Nonetheless, it is important to remember why DWR was willing to implement the operable gates. The temporary barriers and permanent operable gates were developed in response to DWR's alleged impacts on water levels and circulation in the southern Delta. The net effect of the temporary barriers is that water levels are increased by retaining flood tide waters in the area and preventing them from draining out during the ebb tide. The net tidal pumping action of the flow control gates would improve the circulation characteristics in the south Delta areas upstream of the gates and help prevent or reduce the number of null zones. The gates also generally would improve localized water quality in the south Delta since salts otherwise trapped in the null zone areas would be transported out of the area due to the enhanced circulation created by the operable.

DWR's ability to implement the permanent operable gates in the near future has been affected by recent concerns related to impacts on fish. Also, DWR believes recent information reduces the bases for assigning it responsibility for impacts that it either does not cause, or is an insignificant factor to. To further support this position, DWR has, and will continue to, develop and present information that demonstrates the limited role SWP pumping has in affecting and controlling salinity in the southern Delta.

The last key point concerns the direction the *Racanelli* and *Robie* Decisions provide to this process. In the *Racanelli* decision, the court stated that "the Board could properly conclude that the public interest in the projects requires that they be held responsible only for water quality degradation resulting from the projects' own operations." (*Racanelli, supra*, 182 Cal.App.3d at 126.) DWR agrees with this reasoning and believes it should apply in the current review process. The time is ripe to reevaluate the actual impacts SWP operations have on salinity in the southern Delta. Instead of just focusing on the SWP and CVP, a comprehensive approach, as presumed by the court in *Racanelli*, is necessary to implement the southern Delta salinity objectives, which will include the projects and other users along the water course. (See *Id.* at 127.) DWR believes such an approach would be in the public interest.

The *Robie* Decision declared that the "Board's power to act in a water rights proceeding commenced to implement a water quality control plan is constrained by the terms of the plan it is implementing." This principle is important in that the determination of whether it is reasonable and in the public interest to require water quality objectives be implemented by water rights holders must be considered, in large part, in the basin planning process and not solely in the water rights process. In other words, the State Water Board does not have the flexibility in implementing water quality objectives in a water rights proceeding if the language included in the plan does not provide for such

flexibility. This principle provides another reason for developing a comprehensive approach to implement the southern Delta salinity objectives.

II. Hydrodynamic Modeling Update

DWR has developed significant information that identifies and explains the factors that contribute to and affect salinity levels in the southern Delta.[4] Much of this information demonstrates the little impact and control SWP operations have on southern Delta salinity. As part of obtaining permits for installation and operation of the temporary barriers, DWR has modeled and analyzed the effect of the temporary barriers. DWR has concluded that the temporary barriers program reduces the number of null zones. DWR will continue to operate these barriers to the extent we can to improve circulation and reduce the occurrence of null zones, through such tools as culvert flap gates and changes in weir heighth of the Middle River barrier.

An important factor related to SWP operations that has not been clearly explained and quantified, however, is whether and to what extent SWP operations cause or affect null zones in the southern Delta. As already explained, D-1641 relied heavily on the assumption that SWP operations cause null zones to apply responsibility to DWR to implement the southern Delta salinity objectives. If null zones are a primary reasons for assigning responsibility to DWR, then a thorough understanding of DWR's actual impacts in this context is necessary. As such, DWR will be conducting modeling runs in the near future that will attempt to single out the effects SWP pumping has on circulation, in general, and null zones. The modeling will also include with and without barriers comparisons.

III. Recommendations on Changes to the Program of Implementation

In general, DWR believes the program of implementation should be comprehensive and flexible. The State Water Board should investigate several alternatives that could be applied separately or in combination for implementing the southern Delta salinity objectives. In addition, the State Water Board should assign the responsibility for achieving the objective among several entities shown to affect southern Delta salinity. To allow for flexibility, the objectives should be implemented in phases based on the schedule for constructing any physical solution, achieving waste discharge requirements, or other methods proposed for implementing the objectives.

Other factors that the State Water Board should consider in developing or revising the program of implementation are environmental characteristics of the hydrographic unit under consideration, including the quality of water available to the area. In other words, factors affecting water quality on the San Joaquin River upstream of the compliance monitoring stations should be considered. In past workshops, the Department of

[4] This information can be found in the attachment to DWR's December 6, 2010, comments.

Interior (DOI) and the San Joaquin River Group Authority (SJRGA) indicated that hydrology on the San Joaquin River may be significantly different from what was presented to the Board during its last workshops and hearings on the 1995 WQCP and Decision 1641. (See DOI Exhibits 42 and 42; and SJRGA Exhibit 07; presented to the State Water Board at the March 2005 Workshops.) This information has potential to factor into what a reasonable objective and program of implementation should be for the southern Delta. For example, based on recent flow, salinity, and waste discharge information affecting the San Joaquin River, the State Water Board could determine that a more reasonable objective on the San Joaquin River at Brandt Bridge may be 1.0 EC, while objectives on the San Joaquin River at Vernalis may be appropriate at 0.7 EC.

Specific factors affecting water quality available to the area that the Board must consider in establishing a program of implementation is the influence of dischargers into the San Joaquin River between Vernalis and Brandt Bridge. For example, in 2007, DWR provided a report that identified and characterized over 50 dischargers between Vernalis and the Old River stations. Many of these discharges were significant in both the quantity and the level of salinity. Also, in 2004, the Central Valley Regional Water Quality Control Board issued a Waste Discharge Requirement to the City of Manteca requiring that the City not discharge greater than 1.0 EC to the San Joaquin River, at Highway 120 near Mossdale. (This location is upstream of the confluence of the San Joaquin River and Old River.) (CVRWQCB WDR Order R5-2004-0028.) Subsequent to issuing the WDR, the Regional Board issued a cease and desist order to meet a schedule of compliance and interim standards until the schedule is met. The interim standards, among other changes, relaxed the 1.0 EC requirement to allow a discharge 1.3 EC to the San Joaquin River. The result of this recent water quality decision emphasizes that despite salinity of 0.7 EC at Vernalis, water quality downstream at Brandt Bridge is degraded by higher salinity entering the River in areas not within the control of either DWR or Reclamation. Information such as this should be considered by the State Water Board when developing the program of implementation.