

**TESTIMONY OF ALEX HILDEBRAND IN SUPPORT OF
SOUTH DELTA WATER AGENCY'S
PHASE 2A CASE IN CHIEF**

Phase 2A seeks to evaluate and compare all of the Alternatives in the Draft EIR for Implementation of the 1995 Water Quality Control Plan, especially comparing the alternatives with Alternative 8, the SJRA proposal. SDWA would like to first propose a method of implementing one of the Alternatives and then compare it with the other Alternatives including the SJRA. It is my understanding that the Central Delta Water Agency will be joining in on portions of the proposals herein.

SDWA offers the following comprehensive water management plan for the San Joaquin River watershed ("Comprehensive Plan") as a method of implementing the 1995 Water Quality Control Plan and meeting all of the Objectives therein with the minimum amount of impact to any water user.

This proposal is generally Flow Alternative No. 2 (USBR and DWR being responsible for the 95 Plan Obligations) but with certain significant changes and restrictions so that discretionary decisions by the USBR are limited in order to avoid adverse impacts to other interests. Alternative 2 is appropriate and consistent with SDWA's previous position that before any other interest be charged with obligations to improve fisheries and water quality, the Bureau must first mitigate its adverse impacts thereon.

The 1980 Report on the Effects of the CVP Upon the Southern Delta Water Supply (SDWA No. 48) clearly describes the Bureau's adverse impacts on both quality and flow in the San Joaquin River. The Bureau and the State's impacts on fisheries are clearly evidenced by the large numbers of fish entrained and killed at the pumps (see DFG and USF&WS websites). The projects in fact operate under biological opinions that require decreases or actual cessation of export pumps after certain numbers of endangered or threatened species are killed.

SDWA's Comprehensive Plan includes the following objectives:

- 1) Provide the full proposed VAMP flows at Vernalis in all years with the April/May 31-day pulse flow never below 3,200 cfs.
- 2) Meet the Vernalis salinity standard at all times in all years.
- 3) Provide substantial protection for downstream salmon smolt migration throughout the migration period and not just for 31 days. (35% of the migration was alleged in expert testimony before the SWRCB to occur before and after the 31-day Vernalis pulse flow).

- 4) Provide improved flow and lowered selenium and salinity concentrations in the San Joaquin mainstem from Mud Slough to the mouth of the Tuolumne in order to benefit fisheries and protect those parties who divert from this reach of the river. (Phase 2 testimony by biologists and fishery experts revealed that there has been no analysis of the effect of these high concentrations in the river on salmon smolts).
- 5) Maintain adequate Vernalis flow, particularly in the summer, to meet channel depletion needs in the South Delta (riparian and public trust needs).
- 6) Reduce the salinity in the Delta Mendota Canal (DMC) in order to reduce the salt load delivered to the Westside Service Area and to reduce the drainage salt load that then reaches the San Joaquin River, thereby reducing the need for dilution water to meet the Vernalis salinity standard.
- 7) Minimize both the dollar and water cost of providing the desired Vernalis April/May pulsed flow.
- 8) Avoid water acquisitions that impact water users downstream of the sellers and/or export water users other than water sellers.
- 9) Facilitate a quick transition from salmon and export protection to endangered species protection whenever an export "take limit" would otherwise be exceeded.

Description of Comprehensive Plan

SDWA's Comprehensive Plan seeks to provide the necessary flows for fishery and water quality from three potential sources: (1) recirculation and/or (2) purchases from export users and/or (3) water currently being provided outside of the Bureau's permitted areas of use. The water will be provided at times and in a manner to maximize multiple beneficial uses and thereby use water efficiently.

SDWA's Comprehensive Plan also includes the coordination of the initial spring-time drainage from the west side of the San Joaquin Valley (areas served by export water) in order to take advantage of the dilution capacity of the San Joaquin River during the pulse flow. SDWA's Comprehensive Plan also requires the operation of the three South Delta tidal barriers in conjunction with export pumping (in order to fully protect superior water rights in the Delta on a real time basis). Furthermore, it benefits out-migrating smolts in times other than the 31-day pulse period, decreases exportation of salt, and improves South Delta channel circulation.

SDWA's Comprehensive Plan also insures the Vernalis Water Quality Standard is met at all times as well as providing channel depletion flows which include public trust needs.

SDWA's Comprehensive Plan limits the USBR and DWR operations by placing restrictions on their relevant permits such that those entities would have to show ahead of time

how and where they would provide the water. If they could not show this ahead of time or did not meet any Objective in the 1995 WQCP, then their ability to store or export water would be curtailed.

Sources of Water

The Board currently has two proposals before it regarding what the flow Objectives for fish and wildlife should be. The first choice is to implement an Alternative or Alternatives that will provide the full amount of water as set forth in the 1995 Water Quality Control Plan (Table No. 3 therein).

The second choice is to adopt new flow Objectives for fish and wildlife as part of the Board's triennial review of the water quality control plan. SDWA believes this is the required step if the Board is considering the adoption of flows consistent with SJRA which are lower than those in the 1995 WQCP. SJRA seeks to provide flows that are less than the 1995 Plan based upon the expert testimony given in Phase 2. That testimony clearly stated that the Department of Fish and Game and the Fish and Wildlife Service believe there is currently no discernable relationship between flows at Vernalis and smolt survivability. There may be a correlation between flows past Stockton when the HOR barrier is in place; however, that relationship and any other relationships would be determined based upon data developed under the VAMP study.

Based on this testimony, the Board as part of this process can "re-evaluate" and change the flow Objectives. The legal issues involved in this will be part of the SDWA's closing brief.

SDWA takes no position on which set of flows the Board should require. However, in light of the lack of any excess water on the San Joaquin River system, it would seem to be an unreasonable use of water to require the higher flows if the fishery agencies do not believe there is any correlation between flows at Vernalis and smolt survivability. For purposes of this presentation, I will assume the Board is requiring the VAMP (not the lesser SJRA) flows and that export rates are also limited by the VAMP recommendations.

According to the testimony in Phase 2 by Daniel Steiner, providing the supplemental flows for VAMP (the amount above the existing flows) varies from year to year and requires from zero to 150,000 acre-feet of water annually. This water should be provided from one of three sources:

Recirculation. This method is the primary source proposed in SDWA's Comprehensive Plan. It anticipates the release of water (at a point no lower on the San Joaquin River than the Newman Wasteway) where it will add to the flow of the San Joaquin River during the 31-day pulse flow. This proposal is more specifically described in SDWA Exhibit Nos. 13 and 27 and partially described in Alternative No. 6 of the DEIR. The proposal requires the use of available export pump capacity in order to re-pump the additional pulse flow water and a "priming" of the system to allow the 31-day pulse to occur as desired.

Effects of Recirculation. The proposed recirculation of DMC releases would be superimposed on the base conditions. The recirculation could provide up to about one-third of the VAMP flow at Vernalis. Recapture of this component of flow would increase export pumping during the pulse flow as compared to furnishing the flow by reallocation of water from users of tributary flows or from export water users. The question is whether this higher pump rate is significantly adverse to fisheries and if so are there offsetting fishery benefits from the proposal? The increased pumping will not draw Sacramento water across the Delta as the additional water is coming from the San Joaquin. However, the concern that has been expressed is that when the recirculated water is conveyed to the Central Delta and an equivalent amount is then drawn to the export pumps from the Central Delta, it will draw with it both resident fish and San Joaquin smolts. Testimony by fishery experts before the SWRCB during Phase 2 indicated that when dye and tagged smolts are released at Mossdale, the fish soon arrive in the western Delta even though most of the dye does not. This and other testimony such as the movement of Delta smelt seems to indicate that although small fish largely move with net river flow upstream of the Delta, they cease to do so in the Central Delta where the net cross flow is very small compared to tidal flows. This net cross flow should be small during the pulsed flow. In any event, fishery benefits for the plan should also be considered. The plan will decrease the need for New Melones releases to meet the Vernalis salinity standard. This makes more water available for other uses including fishery flows.

The actual effect this additional pumping will have on Delta smelt is currently unknown. Although the smelt Biological Opinion suggests that it may be a problem, my conversations with DFG and USF&WS personnel suggest that the factors governing the location and movement of smelt are simply unknown. Regardless, the questions arise as to whether recirculation pumping can be accomplished in compliance with the current Biological Opinion for that species. The answers to these questions is yes.

Taking the later first, the Biological Opinion (page 19 therein) requires the USBR to seek additional flows above the Vernalis Objective in order that the actual Vernalis flow totals export pumping plus one-half of the Vernalis pulse flow Objective. Since USBR and DWR always attempt to maximize exports, the net effect is that most people interpret the Biological Opinion to require a 2:1 ratio of San Joaquin River flows to exports.

My analysis of this reveals that at the lower end of the Vernalis pulse flows and depending upon the base flow in the River, there are times when the additional export pumping of recirculated water simply continues to “ratchet up” the amount of Vernalis flow necessary under the Biological Opinion. However, I conclude that as the required Vernalis pulse flow amount increases, you can generally provide all or at least most of the additional water needed to meet the Objective through recirculation without violating the Biological Opinion. The following is a good example: Base flow 5,000 cfs; Vernalis pulse flow Objective 7,000 cfs; Base export rate 1,500 cfs.

In this example, you would need to recirculate and thus increase export pumping by 2,000 cfs in order to meet the Objective. That makes the total export rate 3,500 cfs. The Biological

Opinion requires the maximum flow in this instance to be: 3,500 cfs (total export pumping) plus 3,500 cfs (one half the 7,000 cfs objective) or, 7,000 cfs.

As you can see, in this example all of the flow necessary to bring the base flow up to the Vernalis pulse flow Objective can be recirculated and still comply with the Biological Opinion. Clearly as the base flow approaches the Objectives, there is an increasing likelihood that all of the necessary flow can be provided through recirculation.

With regard to the second question I pose, if export pumping in combination with tidal barrier operations and/or a pulse flow and/or recirculation result in unacceptable takes of smelt, then export pumping would have to be decreased. Export pumping cannot and does not take priority over endangered or threatened species or over superior water rights.

At any time that exports must be curtailed and thus recirculation opportunities decrease, other alternatives can take over.

The relevant San Luis Reservoir storage permits could be adjusted to allow a borrowing of export water in order to control export levels during the pulse period. This borrowed water could be replaced at other times just as the joint point proposal contemplates. Such a borrowing method could strive for a "no-net loss" goal as contained in the current joint point operations under WR 96-5. However, this principal cannot be used to override existing water right priorities and must be considered only a goal.

Finally, the other methods of providing the pulse flow water (described below) could take up the slack occasioned by decreased recirculation.

Benefits. The benefits from the recirculation method are tremendous. Any amount of flow contributed towards the pulse period up to the full 1995 Water Quality Control Plan amounts can be provided without a loss to any water user. It also makes it unnecessary to purchase water on the San Joaquin River tributaries which can harm users other than the seller as described in SDWA 7 and 34. This method can also be used in conjunction with the other methods in order to determine the most efficient and beneficial method of providing fishery flows and holding exports at certain levels.

Finally, by providing a portion of the pulse flow above the mouth of the Merced, other benefits are realized. Increased flows in that stretch of the San Joaquin River assist in transporting and protecting Tuolumne and Merced River smolts. It also helps dilute the salinity and selenium in the river.

I believe it is important to note that this and any other proposal may require further consultation under ESA. The existing Biological Opinions were based on pre-barrier data and so should be re-examined. SDWA's Comprehensive Plan described herein provides numerous and flexible options for protecting fish which should be included in the Biological Opinion. Such changes should inure to the benefit of all users as well.

Purchases from Exports. The second method for providing flow Objective water is through purchases from export users. Purchases can be made from the export contractors of the CVP and SWP including Friant. In recent years we have seen that export or out-of-basin interests have water to sell. One example is the USBR's Draft FONSI and Environmental Assessment dated March 1997 which shows that the Arvin-Edison Water Storage District seeks to sell 350,000 acre-feet over 25 years (see Exhibit "A"). Another example is the Diablo Grande Project. Two of its possible sources of water are from Kern County; the Berenda Mesa Water District (offering to sell 75,000 acre-feet), and Bravo Management Company (offering to sell 2,000 acre-feet) (see Exhibit "B"). All of these sources of water can either be directly delivered to the San Joaquin River System or through exchanges can result in a corresponding amount of water being directly delivered to the San Joaquin River.

Effects. Purchases from export interests appear to generate benefits while causing no meaningful harm. By adding water to the San Joaquin River system that was previously not present, we avoid the adverse effects that accompany in-basin transfers. That is to say, return flows and the beneficial uses thereof are not affected. These purchases also free up other water in New Melones which has the potential of increasing allocations for other purposes thus benefitting those beneficial uses including area of origin parties.

Water Currently Exported in Violation of Permits. The third source of water to meet the 1995 Water Quality Control Plan Objectives is from water that is currently exported by the CVP in violation of its permits. As part of this same water right proceedings, there is before the Board the CVP's request that it conform and consolidate the places of use in its existing permits. Pursuant to that request, the CVP has admitted that it is currently exporting water to places outside of its permitted places of use. A review of the documents submitted in support of the request to conform and consolidate the places of use in the Bureau's permits suggests that the amount of unpermitted exports is substantial. It is our position that such a significant and admitted permit violation cannot simply be ignored. There must be a sanction for such actions. We suggest that the CVP's permits be changed to decrease its total export for deliveries to contractors by this same amount, and then allow part or all of this amount to be exported (and perhaps stored in San Luis) in order to provide pulse flow water to the San Joaquin River.

Benefits. By using this source of water, the Board insures compliance with the Objectives without any increased exports of water or increased export rates. In addition, by not delivering DMC water to an agricultural user, there is a small improvement in the San Joaquin Valley salt problem in that the total salt imported to the area is decreased. [The Board will remember from my earlier testimonies that there is currently a large net salt load increase in the San Joaquin Valley due to CVP deliveries.]

Controlling Drainage. SDWA's Comprehensive Plan also recommends that the Board control the release of drainage water to the San Joaquin River via Salt and Mud Sloughs so that about 50 percent of the drainage is withheld from March 1 to April 15. This withheld drainage is then released during the pulse flow period when substantial dilution is available. The dilution must be available near Mud Slough in order to protect the downstream reach that could be effected by the delayed drainage. This greatly reduces water quality problems in the mainstem of

the river and the need for New Melones releases prior to April 15. This disposes of salt during the April-May pulse flow when it can be diluted where it reaches the river instead of having to flow down to the Tuolumne and Stanislaus inflows before full dilution is available. The Board should note that the smelt Biological Opinion recognizes that upstream poor quality drainage “likely adversely affects Delta smelt and its food organisms.” Until the Board or the Regional Board takes action to address this problem, mixing part of the drainage with the pulse flow should benefit smelt.

As I have stated before, many of these contractors whose drainage reaches the San Joaquin River are attempting to voluntarily cooperate and implement this program. I would like to insure that their efforts are recognized and encouraged by the Board. It is my understanding that some of these entities are actually working towards a “no drainage” goal. Although this helps to keep salt out of the San Joaquin River, it means that the salt is being kept in the Valley and will therefore exacerbate the long-term salt build up problem I have mentioned.

I recommend the Bureau’s permits to export and deliver water to the San Joaquin Valley be conditioned upon the CVP requiring their users to implement this coordinated drainage program with certain reasonable goals of increasing percentages mandated over time. In the alternative, an agreement might be worked out among those parties and thereafter recognized by the Board as part of its implementation of the 1995 Plan.

Tidal Barriers. Our proposed Comprehensive Plan also requires the operation of the three tidal South Delta barriers except when “take limits” reduce export pumping. These barriers (a) mitigate the impact of the Head of Old River barrier on downstream water supply during the April/May pulse; (b) create a hydraulic barrier to keep downstream smolt migrants from being drawn to the export pumps before and after the 31-day pulse; (c) protect South Delta diverters from the loss of adequate water depth caused by export pumping; (d) restore the circulation in some South Delta channels that is needed to avoid stagnant channel reaches and to control water quality; and (e) avoid re-exporting most of the westside drainage salt load that reaches the Delta via the San Joaquin River. The conceptual operation of the four South Delta barriers is discussed in SDWA Exhibit No. 13 which is the memo by myself and Mr. Bill Loudermilk of Department of Fish and Game.

I would like to re-emphasize that the operation of the tidal barriers must be linked to export operations. Although DWR and USBR choose not to admit it in public, the barriers are the best and only practical method of mitigating the adverse effects of the export pumps on the South Delta. Because of this, the operation of the pumps must be linked to barrier operations. At any time exports cause lowered levels, reverse flows, and quality problems such that other beneficial users are impaired, the barriers must be operating if export pumping is to be continued. Should the pumping and barrier operations result in an unacceptable situation such as an increased take of Delta smelt, then barrier operations should only cease if export operations are decreased to the point that the adverse effects on the other beneficial uses have been cured. It makes no sense to inhibit or prohibit barrier operations in order to maintain exports as the CALFED OPS Group decided in 1997.

The enforcement of this proposal is more complicated but not impossible. We suggest the Board require that the existing permits of the USBR and DWR be amended to require that export operations be conditioned upon the operation of the tidal barriers or some other actions that similarly mitigate the effects of the pumps on water levels and water quality in South Delta channels. We realize that the Interim South Delta Program and the permits for the barriers are contingent upon "approvals" by USF&WS, COE, and DFG. However, the results of that process do not change the fact that the South Delta beneficial users are entitled under their existing water rights to be free of harm caused by export pumping.

As you know, the Head of Old River Fish Barrier is part of the ISDP. The memorandum I authored with Bill Loudermilk (SDWA 13) describes how the HOR barrier can and should allow for some water to "leak" or pass through as needed for downstream rights and uses. The needed amount of pass through can be minimized by coordinated management of the tidal barriers.

We have suggested the addition of culverts in the temporary HOR barriers. These culverts can be screened (as practicable). This practice can also provide further opportunity for flexibly operating the systems. Water flowing through the culverts can provide more "fish-free" water reaching the export pumps. When there is a smelt problem, this would/could help avoid smelt take problems by decreasing the amount of water flowing from the Central Delta. If there is a Delta smelt problem, this would also help provide additional recirculation water with similar smelt benefits.

Meeting the Vernalis Water Quality Standard. We believe that any plan that assumes the Vernalis standard will not be met is unacceptable if not illegal. The Board is clearly not protecting beneficial uses or water quality if it adopts an implementation of the 1995 Plan that anticipates not meeting Objectives of that Plan.

In order to accomplish this, we suggest the Board require the Bureau to budget a sufficient amount of water in New Melones to meet the Vernalis standard. Since the other parts of this Plan allow for the fishery pulse flows to be supplied through sources other than New Melones, the Bureau could increase its New Melones budget for water quality. Subsequent to the passage of CVPIA, the Bureau changed its New Melones operations to emphasize fishery flows. This adversely affects the ability to meet water quality obligations as well as the area of origin contractors of New Melones water. We believe this change in emphasis, formally instituted through the Interim Operation Plan, is in violation of paragraph 27 of the Bureau's New Melones permits. That paragraph states:

Before making any change in the project determined by the State Water Resources Control Board to be substantial, Permittee shall submit such change to the Board for its approval in compliance with Water Code § 10504.5(A).

In order to cure this problem and to add the necessary incentive to get the Bureau to follow through with the above-mentioned methods of providing fish flow water, there need to be simple

changes made to the Bureau's New Melones permits. The original permits recognize the obligation to make fishery releases and water quality releases. However, the mechanism to insure compliance only applied to fishery releases. Paragraph 18 of the New Melones permits state:

Permittee shall file with the Board a reservoir operation study showing the water level elevations required to provide the yield specified in paragraph 17. A reservoir operation schedule shall be submitted by the Permittee which shall be subject to approval of the Board. The study shall be updated at least once every five years until further order of the Board.

Unfortunately, this only applied to the fish release obligation which was in paragraph 17. We recommend the Board make this provision also apply to the water quality obligation which appears in paragraph 19 and the required report be produced every year or two. The Bureau's operation of New Melones must result in compliance with the water quality standard at Vernalis. If the Bureau cannot budget sufficient amounts for water quality, then the Board should require automatic decreases in exports. It is patently unfair to allow the Bureau to continue exports (the benefits of the system) when it chooses or fails to meet its permit obligations (the responsibilities of the system). Such a new incentive will also force the Bureau to take action on the Valley salt problem caused by the CVP.

Maintaining Adequate Flow for Riparian and Public Trust Needs. As we have shown, the operation of the CVP (prior to New Melones) resulted in an average annual decrease of flows at Vernalis of 553,000 acre-feet with 345,000 acre-feet of this decrease occurring between April and September. The draft EIR for these hearings incorporates the SDWA's proposal for the minimum amounts of flow at Vernalis required to provide adequate channel depletion needs. As I stated before in earlier testimony, these numbers were developed using the information contained in the Draft Contract and supporting documents produced by DWR, USBR, and our Agency in the development of the South Delta Barrier Program.

We suggest that the Bureau's export and New Melones permits be amended to include a requirement that it maintain these channel depletion needs. This does not create a significant burden on the Bureau as might first appear. The methods of providing fishery flows listed above can also be used to provide channel depletion water, again, in most instances at no water cost to other interests. In addition, those flows decrease the obligations on New Melones thus freeing up water, and could further decrease those New Melones obligations if they are used to provide water quality flows and not just fishery flows.

An alternative method would be to adopt an amended Flow Alternative 5 if the Board decides that downstream channel depletion needs should be a responsibility of all tributaries. My analysis though suggests that the decrease in San Joaquin River flows caused by the Friant project are greatly in excess of any decreases caused by the other tributary projects since Friant removes water from the system and generates no return flow. I therefore conclude and recommend that the obligation rest squarely on the Bureau.

Comparison of Alternatives.

I will now attempt to compare this Comprehensive Plan with the other Alternatives and the SJRA.