



Natural
Heritage
Institute

Gregory A. Thomas
President

114 SANSOME STREET, SUITE 1200
SAN FRANCISCO, CA 94104
(415) 288-0550
FAX (415) 288-0555

Non-Profit Law and Consulting in Conservation of Natural Resources and the Global Environment

APRIL 18 1994

**COMMENTS AND RECOMMENDATIONS TO THE
STATE WATER RESOURCES CONTROL BOARD REGARDING**

**REVIEW OF STANDARDS FOR THE SAN FRANCISCO BAY/
SACRAMENTO-SAN JOAQUIN DELTA ESTUARY**

April 26, 1994 Workshop

**Presented by Gregory A. Thomas
Natural Heritage Institute**

This round of the Bay-Delta standard setting process marks the fifth time in seven years that the State Board has announced its intention to set standards to, at last, halt the decline in environmental resources of the estuary that has been going on since the current standards were adopted sixteen years ago. During this time, the public trust resources of the estuary have declined to the point where the Endangered Species Act, the last line of defense for species on the brink of extinction, has effectively placed the estuary into federal receivership.

In its 1987-88 proceedings, the Board collapsed in the face of pressure from certain legislators. In 1991 the Board failed to finesse the core problem--inadequate delta outflows--when a water quality plan that ignored it was disapproved by EPA. In 1992, even emergency relief ordered by the governor collapsed when that same governor discovered that relief for the fish spelled water. Now that federal default standards, however reluctantly, have become inevitable by the end of the year, the stakeholders are asked to step forward once again and devote their time and resources to addressing basically the same set of issues, under the pretext of a routine triennial review of the D-1485 standards, never mind that those standards are now in their fifth triennium. Behind that wink, it is understood, of course, that the real motive is to take back the field from the federal government by issuing standards that will forestall finalization of the federal water quality standards.

If, indeed, the State Board is resolved to retake the initiative by finally developing adequately protective and approvable standards for the estuary, we applaud and will try to assist that effort. But the issues have been rather thoroughly ventilated by now. The most

interesting question remaining is whether the Board's present resolve will be durable enough to produce standards at least as protective as the marker EPA has already laid down, or whether it will again evaporate if and when the governor or the disaffected legislators once again discover water for fisheries to be politically inexpedient. In all candor, NHI as a grant-dependent, public interest law firm cannot continue this war of attrition indefinitely. Every time the State Board finds religion, we have to find the resources to field another team of experts to address the issues, and we have to do it the hard way--through charitable contributions. We simply cannot afford to go through this drill another time for naught. If the State Board drops the ball again, we must thereafter confine our play to the federal arena where there appears to be a return on investments.

SUMMARY RESPONSE TO KEY ISSUES

1. Which standards should the State Water Board focus on during this triennial review?

This is an easy one. The State Board must concentrate on the same standards that have been proposed by the federal agencies for several reasons. First, these have been devised to protect many of the environmental resources currently at risk in the estuary, including both resident and anadromous fish and the western tidal marshes. Second, a considerable administrative record has already been compiled on these standards, both in the D1630 proceeding and in the EPA rulemaking proceeding. There is an ample basis in these records to support most of the necessary standards, including salinity and/or flow standards at checkpoints at least as far westerly as Roe Island. Finally, the state standards cannot be approved unless they are as protective as those proposed by the federal regulators as necessary to satisfy federal law. Promulgation of another set of unapprovable standards would be another colossal waste of everyone's time, resources, patience and political capital. But the ~~federally~~ federal proposals also leave some critical resources under-protected. These deficiencies, noted below, should be corrected in the State Board promulgation.

Setting water quality standards for the estuary is a function of (1) designating beneficial uses; (2) determining the level of protection of the environmental beneficial uses that is legally required under the Porter Cologne Act and, to the extent more demanding, the Clean Water Act; (3) deciding which physical, chemical and/or biological parameter(s) to control in the estuary, and (4) determining the values or limits of those parameters necessary to provide the requisite level of protection (the "criteria").

The State has already designated the beneficial uses in its basin plans, and this part of the standard setting process has not been overridden by EPA. Contrary to the suggestion of the State Board in its comments on the EPA proposed standards, the issue of use designation and the economic considerations that are appropriate to it are not part of the federal standard-setting process and there is no reason to reopen these decisions in the current State Board review. Should the State Board nonetheless choose to do so, it may

not employ economic considerations to downgrade the designated environmental uses, all of which were attained as of 1975 (the federal antidegradation marker) or 1968 (the state antidegradation marker).

The legally mandated level of protection is considered under the second issue, below.

As to the parameter to be controlled to achieve the requisite level of protection, we agree with EPA's choice to use the position of the 2 ppt (near-bottom) salinity isohaline (denominated X2) in the upper estuary. That measure was found to be a robust indicator of the estuary's overall ecological health by the San Francisco Estuary Project's technical workshop on the response of biological resources to flow variability.¹ This workshop was comprised of notable authorities on the estuarine hydrodynamics and its relation to biological response from the state and federal agencies (including the U.S. Geological Survey), the academic world and the private sector.

However, that workshop, and more recent work by the Contra Costa Water District, also showed that there is a straightforward algorithm for translating near-bottom salinity into flow measurements and conversely, thus allowing either parameter to be used by regulators. Should the State Board prefer to articulate a flow standard rather than a salinity standard, we view that choice as largely a matter of regulatory convenience, provided that the numerical values prescribed for the parameter are sufficient to provide the legally requisite level of protection.

Regarding the determination of the numerical values to achieve the mandated level of protection, the record established in the State Water Board's aborted evidentiary hearings in 1992 on D1630 is a useful starting point. It must be borne in mind, however, that the regulatory objective of that proceeding, to halt the decline in public trust resources, was more modest than the level of protection required by federal law and operative for this current proceeding, namely standards sufficient to protect the designated beneficial uses. In any event, because the State Board raised the issue in its comments on the EPA proposal, we wish to emphasize that, in establishing the appropriate numerical standards to achieve the requisite level of protection, it is impermissible under the Clean Water Act to balance the benefits of protecting the estuary's fish and wildlife resources against the economic and social costs of limiting diversions of the freshwater inflow for irrigation and municipal water supply. Federal law requires that the Board may only consider scientific data when determining what water quality standards are appropriate to protect the fish and

¹ The workshop did not recommend specific positions of X2, perceiving that judgment to be regulatory rather than scientific and therefore best left to the cognizant public agencies. The workshop did conclude, however, that "progressive seaward displacement of the 2 ppt isohaline -- a phenomenon which is achieved by increasing freshwater inflow -- produces a fairly rapid increase in biological benefits". See, the workshop report "On the Refinement of the Use of Salinity as the Basis for a Standard to Use in Conjunction with Flow to Protect Important Living Resources of the San Francisco Estuary" (Dec. 17, 1991) at p. 8.

wildlife resources in the Delta. The discretion that a state may exercise in weighing economic and social factors when designating the uses to which a particular water body will be put does not extend to the state's determination of the water quality objectives or criteria that are necessary to protect those designated uses. Rather, a state may only rely on scientific, technical, and biological data in making that regulatory judgement.²

One of the submissions on which EPA principally relies in formulating its proposed salinity standard was the testimony of Dr. Peter B. Moyle presented by the Natural Heritage Institute. Dr. Moyle testified regarding the general and specific declines in key organisms in the delta throughout the food chain, including most notably a suite of fish species that depend on the delta for spawning, rearing and migratory habitat. Dr. Moyle showed that current conditions are so adverse that many of these species are now in jeopardy of extinction. Dr. Moyle assessed the sixteen putative causes of these declines, determined the most significant for regulatory purposes, and recommended measures that would be effective to arrest the decline in these species. In general, Dr. Moyle proposed that standards be adopted that would keep X2 (the 2 ppt salinity gradient) at or below Roe Island. This would provide adequate outflows to move larvae of striped bass, Delta smelt, longfin smelt, and other species with pelagic larvae into Suisun Bay and provide other habitat related benefits. Dr. Moyle suggested that a February through mid-July standard may be sufficient to allow for estuarine recovery.

Our analyses of the EPA proposed salinity standard points to several respects in which the Roe Island standard as proposed is too weak to protect certain essential resources:

A spring run salmon hydrodynamic criteria is needed. Spring run Chinook were once the most abundant and commercially important race of Chinook salmon in California. Last year, *less than 200* adults returned to their natal streams in the Sacramento basin to reproduce.

In 1992, NHI, on behalf of the American Fisheries Society and seven other conservation organizations, filed an Endangered Species Act petition seeking listing of native fish species in imminent danger of extinction in California. Notwithstanding compelling information regarding their endangered status, we agreed to a conditional reprieve in the filing of a spring run ESA petition to provide an opportunity for less drastic interventions such as regulatory action by the State Board. Should the Endangered Species Act be invoked, commercial harvesting would be severely restricted or prohibited. That would be devastating to the State's commercial fishermen, coming on the heels of

² In Mississippi Commission on Natural Resources v. Costle, 625 F.2d 1269 (5th Cir. 1980), the court expressly rejected the argument that a state has discretion to consider economic and social factors in setting water quality criteria. It held that although consideration of economic factors was relevant to the designation of uses, these factors were irrelevant to the scientific and technical factors to be considered in setting criteria to meet those uses.

harvesting restrictions on other salmon species.

Salmon fishery experts from the federal and state government and the University of California recently met at NHI's behest to discuss the measures needed to rescue the spring run from the brink of extinction, beyond those proposed in the Club Fed suite of initiatives. That meeting revealed that about half of the loss of spring run between the ocean and the upper reaches of their habitat in the Sacramento tributaries occurs in the delta as a direct result of the action of the export pumps. We discussed the need for a hydrodynamic standard more precise than a Q-West standard, perhaps one based on limits on the rate of pumping as a function of inflow for the periods when the spring run smolts are most vulnerable. Between now and the June workshop on fisheries protection, NHI intends to work further with these experts to develop a recommendation for a spring run restoration standard.

This issue is of particular salience in this proceeding. There is no federal proposal of measures specifically to protect the spring run salmon, and the incidental protection afforded by the smolt survival criteria and the winter run salmon biological opinion and take limit do not appear to be sufficient to rescue the spring run. This regulatory void will have to be filled by the State Board, and it will have to be filled in this proceeding, given the severely depressed state of the stocks. In the event that the State Board fails to respond, it appears that there will be no alternative to seeking federal protection through a listing petition under the federal Endangered Species Act. In short, the respite will have to come to a close. Because of the dire consequences that that could present for California's severely depressed salmon fishing industry, members of the Pacific Coast Federation of Fishermen's Associations have indicated a desire to join us in developing the recommended spring run delta standard and pressing the State Board for its adoption.

The San Joaquin salmon smolt survival criteria may also be also too lax to permit these stocks to recover. The San Joaquin fall run is now in danger of extinction. As a set of biocriteria, this index should be set by reference to unimpaired conditions in the estuary, which are essentially equivalent to the pre-project conditions, before the construction of the dams that have denied the salmon access to the upstream spawning habitat. Since the dams cannot be removed, this means that the survival conditions for the diminished number of smolts need to be good enough to compensate as much as possible for the loss of spawning habitat, so that the populations can recover to approximately the pre-project levels of abundance. The proposed smolt survival values for the San Joaquin are roughly 50% of the values that actually occurred during the pre-project period. Thus, a higher survival index for these stocks appears to be warranted, at least for the immediate future until the San Joaquin spawners recover to the pre-1968 (antidegradation) levels. If this more stringent requirement were coupled to an implementation strategy that included pulse flows and pumping curtailments at the times that San Joaquin smolts were moving into the delta, this higher level of survival might be accomplished at little or no additional water cost.

Other Jeopardized Fish Species: For the jeopardized fish species reviewed by Dr. Moyle, it is critical to be sure that the species that have a pelagic life stage are provided low salinity habitat frequently enough and for a sufficient duration. The minimum flow requirement in drier years should not be less than the flow needed in the Sacramento and San Joaquin Rivers to move pelagic eggs and larvae of striped bass, Delta smelt, and longfin smelt to suitable nursery areas in upper Suisun Bay. In Dr. Moyle's judgment, the Roe Island standard may be relaxed in drier years, but must not be relaxed for more than 2 consecutive years. By contrast, the EPA proposal relaxes the salinity requirements in all drier years, without limit. A limit on relaxations is necessary to protect chinook salmon (which have a three year life cycle), longfin smelt (two year life cycle), and Delta smelt (one year life cycle).

Protection of the tidal brackish marsh: In the drier years, the EPA proposal does not limit salinities at all in January or enough in February to provide the conditions needed to prevent transformation of the uniquely valuable tidal brackish marsh habitat into salt marsh. The empirical information suggests that the brackish marsh can sustain single years of very low salinity, but not multiple years. This analysis shows that the Roe Island standard not only must be maintained, but must be strengthened in order to adequately protect the brackish marsh habitat. The final standards should include a salinity limit at Roe Island or downstream of it for January and a strengthened standard for February during periods of extended drought so that high salinities (above 10 ppt at Martinez) would not occur more than one year in a row. The westernmost control point (Roe Island or another one further downstream) takes on added importance as the mechanism for protecting the tidal marshes. See the NHI Comments on the EPA proposed standards for a full analysis of this lacunae.

2. What level of protection is required by the California Water Code and the Clean Water Act for protection of public trust uses in the Bay-Delta Estuary?

The most basic legal mandate under the Clean Water Act is that State water quality objectives, to be approvable, must be "based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use." 40 CFR §131.11(a)(1). Thus, the adequacy of State standards must be judged against the water quality requirements of the environmental resources sought to be protected. At a minimum, the Clean Water Act requires the State, in setting water quality standards, to maintain both the uses and the water quality conditions on which they depend at the level that existed as of a specified marker date. The State of California has adopted an antidegradation marker date of 1968. While conditions considerably better than the pre-1968 conditions may be warranted, based on the evidence of declines in key biota during that period, surely standards that are worse than pre-1968 conditions cannot be sustained.

EPA's rules require that a state's water quality standards contain three basic parts. First, the state must designate the water uses to be protected. 40 C.F.R. §§131.6(a), 131.10. Second, the state must adopt criteria to protect these designated uses. 40 C.F.R. §131.6(c), 131.11. These criteria relate to chemical, biological or physical characteristics of the waters (salinity levels, in the current proposal). 40 C.F.R. §131.3(b). Third, a state must adopt an anti-degradation policy to prevent deterioration of waters and the resulting loss of existing uses. 40 C.F.R. §§131.6(d), 131.12. Federal antidegradation policy requires that "the level of water quality necessary to protect the existing uses be maintained and protected." 40 C.F.R. §131.12(a)(1).

The federal anti-degradation policy essentially tracks and provides instructions for the first two steps in the standard setting process. In designating uses, federal antidegradation policy instructs that "existing instream water uses . . . shall be maintained and protected." 40 C.F.R. §131.12(a)(1).³ In other words, if the water body was suitable for drinking water supply or fish propagation as of the marker date, these uses have to be maintained and cannot be lost by designating a use requiring a less demanding water quality (such as navigation or agricultural usage).

The antidegradation policy is also pertinent to the process of establishing water quality criteria or objectives, which is what the State Board apparently intends to "review" in this proceeding. Where the existing water quality is not good enough to support the designated beneficial uses, the Act requires the state to establish water quality objectives to improve it. Where the existing water quality is better than is needed to support the

³ Existing uses are those attained as of November 28, 1975, the effective date of the federal antidegradation policy, or earlier where state antidegradation policies were previously established. Dept. of Interior, Federal Water Pollution Control Administration Guidelines for Establishing Water Quality Standards for Interstate Waters 5-10 (May 1966) (cited in 58 Fed. Reg. 20885, April 16, 1993); 40 C.F.R. §131.12(a).

designated beneficial use, however, the state is not at liberty to allow that water quality to deteriorate:

Where the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained unless the State finds . . . that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. . . .

40 C.F.R. §131.12(a)(2) (emphasis added).⁴ It is notable in the current context that the area in which the waters are located is the delta, whereas economic arguments for permitting deteriorated water quality pertain to the areas to which delta water is exported. Thus, federal law does not permit the State Board to promulgate standards that permit either the designated uses or the water quality conditions experienced as of the applicable marker date.

The applicable marker date for maintenance of water quality under California law is 1968.⁵ However, in an estuary, salinity and flow conditions will naturally vary considerably from year to year in response to variations in runoff. Thus, we suggest that the antidegradation reference period not be reduced to a discrete year, but include a representative range of years assuming a 1968 level of water development (storage and diversions).⁶

⁴ The burden of demonstration on those who seek to degrade high quality waters pursuant to the process reflected in this regulation is very high. EPA Qs & As, p. 7.

⁵ SWRCB Resolution No. 68-16. This policy provides that:

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

⁶ It is notable that, as proposed, the EPA proposed standards do not provide the State antidegradation level of protection in two important respects. First, the proposed standards are not adequate to reestablish pre-1968 conditions, or even the 1968-75 conditions in the western tidal marshes of Suisun Bay. This is particularly pronounced in the months of January - March, when salinity limits are needed to protect germination of the seeds of brackish marsh plants, and particularly in the dry and critically dry years, when transformations to salt march vegetation are particularly likely to occur. Second, the EPA proposal fails to reestablish the pre-1968 degree of variability in X2. The standard as now articulated only requires that X2 be maintained downstream of certain control points for a specified number of days, depending on hydrologic conditions. The proposed standards do not specify how far downstream X2 has to be maintained. But the downstream reach of X2 is a critical feature of natural variability. The periodic extension of low salinity conditions well downstream of the proposed control points provided significant biological benefits that would not be achieved by

3. What are the principal environmental, water supply and economic effects of USEPA's draft standards?

NHI has conducted an economic analysis of the proposed federal (Endangered Species Act and Clean Water Act) standards under a specific assumption regarding the choice of implementation methods by the State which we intend to present in detail at the workshop in July on this subject. This analysis demonstrates that, if the State chooses a least-cost implementation approach, the economic costs of the federal proposals will be remarkably modest. An easily implemented "least-cost" strategy would entail the purchase of the water needed to comply with the federal requirements from willing sellers in market transactions. A petition to establish such an environmental mitigation and water purchase fund has been filed by NHI and is currently awaiting action by the State Board.

Our model shows that, if implemented by a purchase fund, the combined Endangered Species Act and Clean Water Act (ESA/CWA) standards would cost the California economy \$6.582 million annually in lost agricultural sales in an average water year and \$66.435 million annually in a critically dry year, if there is ample opportunity to transfer water across the delta. *In the event that water trading is limited by delta pumping constraints (the more likely case), average year impacts are \$3.691 million and critically dry year impacts of \$42.896 million.*⁷

These figures are to be compared to implementation of the federal requirements without a compliance water purchase fund. If those requirements were implemented by pro rata cuts to CVP and SWP contractors, the impacts of ESA/CWA protection are much greater, especially when there is only a limited water market. The additional Bay/Delta standards would cause average year impacts of \$19.826 million annually and \$117.246 million annually in a critically dry year if there is a broad market for the cuts and average year impacts of \$64.899 million and critical year impacts of \$248.693 million if the market is limited. Note that the marginal impact of marketing on costs is the opposite here to the case with the purchase fund: private water marketing reduces the costs of ESA/CWA protection when they are implemented by pro rata cuts. The reason is that pro rata cuts to meet ESA/CWA requirements hit many CVP contractors twice -- once for CVPIA and again for ESA/CWA.

the EPA proposal.

⁷ The costs are larger where the water market is relatively unfettered by delta pumping constraints because that would allow south of the delta water users access to north of the delta water, which would bid up the price. The purchase fund lowers the economic costs of ESA/CWA protection even when there is broad-scale private water trading. The purchase fund can access a number of water users who cannot otherwise readily participate in private trading. Most importantly, riparian users in the Delta. Because these growers use water for low-value crops, such as alfalfa hay and irrigated pasture, the ability of the purchase fund to tap Delta water users is a significant advantage over private marketing.

It is especially important for the State to create a purchase fund when private water markets are limited in their ability to move water between regions, particularly across the delta from north to south. In this case, the purchase fund creates a market where none existed previously. *When private water trading is limited, a purchase fund lowers the economic impacts of additional Bay/Delta standards on agriculture by \$61.208 million (a 94% reduction) in an average year and \$205.797 million (an 83% reduction) in a critically dry year.*

These results are quite conservative in that it does not subtract from the calculated economic costs the obvious economic gains that would result from restoration of the estuarine fisheries. For instance, the rehabilitation of the commercial salmon fishery.

This analysis demonstrates that, contrary to the wild assertions of economic ruin that will be made by some commenters, the actual cost of the federal proposals can be quite low assuming that the state of California will assume a constructive posture and develop a "least-cost" implementation program. This the state can easily do by creating the type of compliance water purchase mechanism that has already been proposed in a petition now pending before the State Board.

On the basis of this analysis, NHI concludes that the State Board should consider the EPA draft standards, as improved per the comments that NHI has filed with EPA, as an alternative in the State proceeding.

**COMMENTS SUBMITTED TO THE STATE WATER RESOURCES CONTROL BOARD
BY GREGORY A. THOMAS, NHI
APRIL 26, 1994**