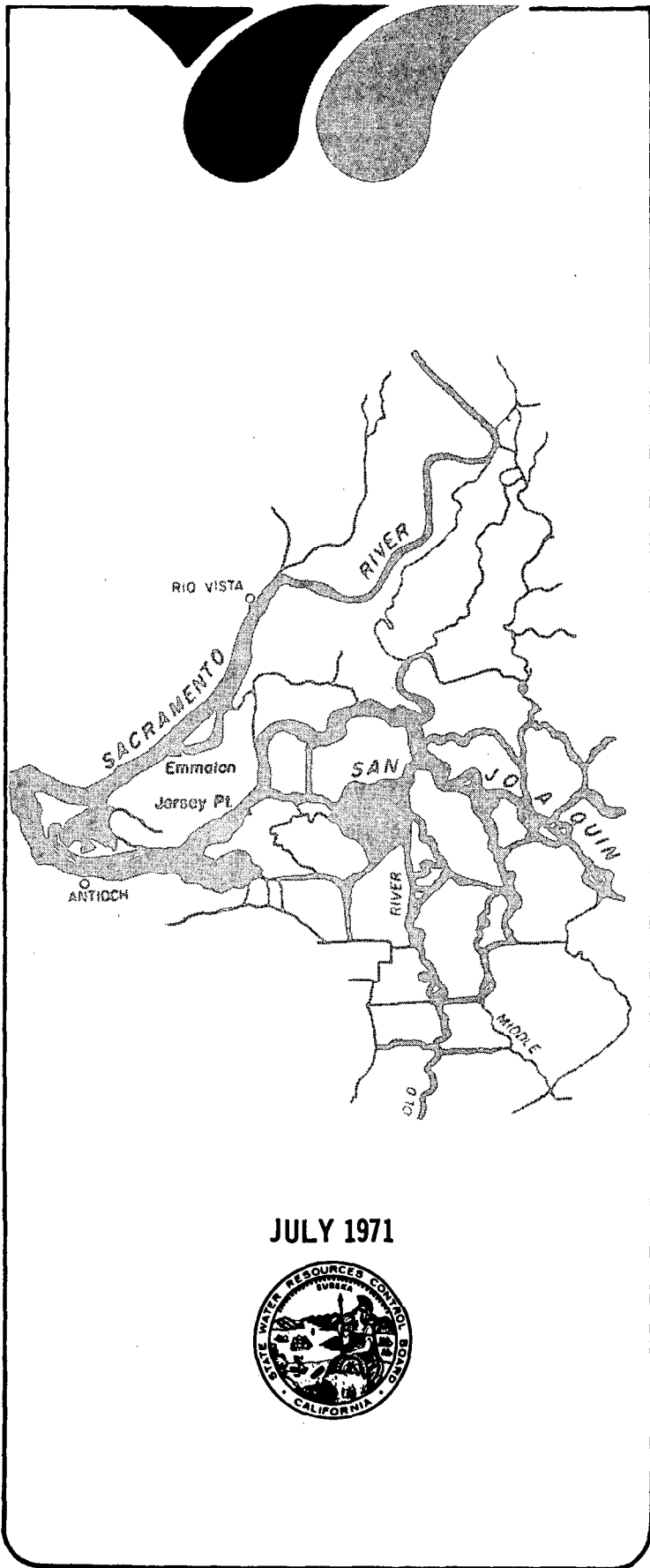


*San Joaquin
Pascua's Creek
Antioch
Jersey Pt
Emmerton
Rio Vista
Antioch
1971*

DELTA WATER RIGHTS DECISION



In the Matter of Application 5625 and 38 Other Applications of United States Bureau of Reclamation and California Department of Water Resources to Appropriate from the Sacramento-San Joaquin Delta Water Supply

DECISION 1379

DECISION IN FURTHERANCE OF JURISDICTION RESERVED IN DECISIONS D 893, D 990, D 1020, D 1250, D 1275, D 1291, D 1308, D 1356, and PERMIT ORDER 124

JULY 1971



STATE WATER RESOURCES CONTROL BOARD

1379

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD
Room 1140, Resources Building
1416 Ninth Street
Sacramento, California 95814

In the Matter of Application 5625)
and 38 Other Applications to)
Appropriate from the Sacramento-)
San Joaquin Delta Water Supply)

ORDER DENYING RECONSIDERATION OF,
AND CLARIFYING AND CORRECTING DECISION 1379

Eight petitions for clarification and/or reconsideration of
Decision 1379 have been filed. These petitions are on behalf
of ten parties as follows:

1. Central Valley Eastside Project Association,
County of Tulare, and Friant Water Users
Association (CVESPA)
2. Contra Costa County Water District (CCCWD)
3. Delta Water Agency (DWA)
4. Department of Water Resources (DWR)
5. Metropolitan Water District (MWD)
6. Santa Clara County Flood Control and Water
District (SCCFCWD)
7. U. S. Bureau of Reclamation (USBR)
8. Westlands Water District (WWD)

The Board denies reconsideration but clarifies and corrects
Decision 1379 and responds to the following numbered items
upon which reconsideration has been requested.

EXHIBIT "B"

1. The release of stored water for fish and wildlife enhancement required by section 2.C. of the State Delta Standards should be conditioned on the provision of funds by the California Legislature to cover the cost of the Department's share of providing such water. (DWR)

This subject was fully considered by the Board in Decision 1379 and the Board is satisfied that its decision in this respect should not be changed.

2. State Delta Standards 2.C.1.a. (striped bass spawning), 2.C.1.c. (Chippis Island, neomysis), and 2.C.3.b. (Suisun Marsh Channels) should be relaxed in dry and critical years in keeping with the standards for agricultural and municipal and industrial use in sections 2A and 2B. (DWR, MWD except standard 2.C.3.b.)

The Board recognizes that relaxation of these standards may appropriately be allowed during certain dry or critical years. However, the record indicates that there is not likely to be a problem in meeting these standards during the next seven years. In the event an emergency does arise, the decision already provides in term 8 of the order that the project operators may petition the Board for the necessary relief.

3. Term 3 of the order should be modified to allow the Board to permit testing of fish and wildlife standards in dry years below the 2 millimhos EC and 350 mg/l Cl⁻ provided for agricultural protection in section 2.A.1. of the State Delta Standards. (DWR)

Protection to agricultural uses afforded by section 2.A.1. should not be sacrificed to permit experimentation with fish and wildlife protection.

4. State Delta Standards 2.C.1.a. (striped bass spawning) and 2.C.1.c. (Chippis Island standards for neomysis) should require flows on the basis of a 14-day mean, rather than a daily mean. (DWR, MWD)

Reasons for using a 14-day average were adequately presented in the hearing. Use of 14-day mean daily basis is consistent with the other provisions of the Board's order. The Board orders that those portions of State Delta Standards 2.C.1.a. and 2.C.1.c. referring to mean daily salinities and mean daily chloride concentration be changed to a 14-day running average of the mean daily salinities or concentration.

5. The State Water Project cannot eliminate reverse flows in the San Joaquin River portion of the Delta (2.C.2.a.) or provide predominantly San Joaquin River water in the southeastern Delta in the months of September, October and November (2.C.2.b.) prior to the operation of the Peripheral Canal.
(DWR, MWD)

The Board recognizes that the project operators cannot eliminate reverse flows in the San Joaquin portion of the Delta during the months of September, October and November without a cross-Delta transfer facility. Prior to the operation of such a facility it is implicit in the Board's order that the permittees shall maintain the standard to the best of their ability with the facilities available. The decision needs no modification in this respect.

6. The electrical conductivity requirement in the agricultural standard (2.A.1.) should be changed from 3 millimhos to 3.6 millimhos. (DWR, MWD)

The number "3" was taken from testimony and was not intended to reflect a direct correlation with 1000 mg/l Cl^- . However, petitioners' argument has merit since there is inconsistency between the two figures.

The evidence shows that the proper correlation is 3.6 millimhos and the Board orders that this modification in section 2.A.1. of the State Delta Standards be made.

7. (a) Term 6 of the order in Decision 1379 should provide that adjustments in the monitoring program can be made by a task force composed of staff level representatives of the Board, the Department of Water Resources, and the Bureau of Reclamation. (DWR)

(b) A staff task force should be established to implement the technical aspects of the decision's monitoring program in cooperation with the California Departments of Water Resources and Fish and Game, the United States Bureaus of Reclamation and Sports Fisheries and other affected agencies, and to tailor the monitoring program so as to make the best use of available resources and funds. (MWD)

The Board recognizes that there will be changes in the monitoring program and therefore provided adequate flexibility in term 6 of its order. However, term 6 should be rewritten to clarify the Board's intent as follows:

"6. The Delta monitoring program as set forth in Tables 2, 3, and 4 will be subject to continuing review. Any

party to this proceeding may for good cause at any time, either before or after the program is initiated, petition the Board to adjust the program, or the Board on its own motion, after evaluation of the results of the required monitoring, may adjust the program. Such action may be taken only after notice to all parties and allowance of opportunity for objection."

8. The Board should re-examine the technical calculations as to the outflows required by the decision. (USBR, SCCFCWD)

The outflow figures provided by petitioners are greatly in excess of the outflow figures which can be derived from the evidence presented in the hearing. The figures provided by petitioners are based on information not in evidence and the Board has no means of verifying them. It appears that actual operating experience will be necessary in order to obtain reliable data. Any substantive information which will enable more accurate computations of Delta outflows and

impact upon the projects should be presented to the Board at a later hearing involving the Delta water rights.

9. (a) Do uses protected by the decision include all quantities of water to be delivered to Contra Costa County Water District by the U. S. Bureau of Reclamation pursuant to its water supply contract with said District? (CCCWD)

(b) Must the State Delta Standard for the intake of the Contra Costa Canal be maintained by the permittees for the period specified in Decision 1379 irrespective of the quantities diverted for municipal and industrial use on lands within the Sacramento-San Joaquin Delta pursuant to prior vested rights, valid appropriative rights, or repayment contracts with the U. S. Bureau of Reclamation or the Department of Water Resources, and irrespective of the time of said diversions and irrespective of the points of said diversions? (CCCWD)

Yes. These matters were fully considered in reaching Decision 1379. The decision carries implicit recognition of vested rights and provides that uses in the Delta shall have priority over export. Therefore, as uses in the Delta build up, it is clear that they will enjoy preference over export of water.

10. The Board did not set criteria at a sufficient number of stations to protect the central and southern Delta and the standards for protection of agricultural uses established by the Board are not as high as those recommended by the Delta Water Agency either in terms of chlorides or electrical conductance. (DWA)

The Board fully considered these matters in arriving at its decision. No changes are needed.

11. The decision does not make reference to the problem of water levels in the channels of the Delta. (DWA)

This is a subject which merits further study and the Board orders that study of water levels in the southerly and southeasterly channels of the Delta be included in term 7 of the Board's order.

12. The Board should reconsider Decision 1379 for the purpose of modifying the Delta standards to conform with the recommendations contained in the Department's joint Opening Brief and the joint Reply Brief. (DWR)

No cause for modifying the standards has been shown.

Other issues, including questions raised by the Bureau regarding the Board's jurisdiction, have been considered and are judged to have no merit except to the extent included in the errata section below.

The Board further orders the following corrections be entered in Decision 1379:

Page 54 - State Delta Standard B.2. - change "Cl⁻" to "TDS". Except as otherwise noted, computations as indicated below are based on this change. .

Page 24 - third line from bottom - change "2,383,000" to "2,893,000"

Page 25 - Line 1 - change "4500" to "6200" and "1,350,000" to "1,860,000"

Line 5 - change "2,383,000" to "2,893,000"

Line 11 - change "4,112,000" to "4,622,000"

Line 16 - change "2,383,000" to "2,893,000"

Line 17 - change "4,112,000" to "4,622,000"

Line 21 - change "4500" to "6200" and "900,000" to "1,240,000"

Line 23 - change "105" to "230" and "378,000" to "828,000" (see correction for page 31)

Line 24 - delete entire line

Line 25 - change "1,906,000" to "2,376,000"

Page 26 - Line 1 - change "477,000" to "517,000"

11 lines from bottom of page, change "30 c" to "30 e"

5 lines from bottom of page, delete "the exhibit" and insert "CCCWA 30 e and 30 f"

Page 27 - The figures in "State Delta Standards" column which are listed as "70" should be changed to "*"

Footnote /2, add at end of footnote, "in a normal year"

Page 31 - Last line of last full paragraph, add "according to plate 15 but in the neighborhood of 1800 cfs, based on testimony"

Page 42 - 4th line from the bottom, insert "the Department intends to" before the word "abide"

Page 43 - Line 10 - change "2.4" to "2.9"
Line 12 - change "1.1" to "1.6"
Line 13 - change "400,000" to "500,000"

Page 44 - Line 1 - change "almost doubling that outflow" to "multiplying the outflow by 2.2"

Line 2 - change "double" to "2.2 times" and change "100,000" to "about 120,000"

Line 4 - change "2.4" to "2.9"

Line 6 - change "100,000" to "120,000" and change "1" to "1.2"

Line 12 - change "1.9" to "2.4"

Line 16 - change "0.9" to "1.4"

Line 18 - change "0.8" to "1.4"

Line 25 - change "double" to "triple"

Page 45 - Line 1 - change "200,000" to "300,000"

Line 3 - change "\$2" to "\$3"

Adopted as the order of the State Water Resources
Control Board at a meeting duly called and held at Los Angeles,
California.

Dated: September 16, 1971

KERRY W. MULLIGAN
Kerry W. Mulligan, Chairman

ABSENT
E. F. Dibble, Vice Chairman

NORMAN B HUME
Norman B. Hume, Member

RONALD B. ROBIE
Ronald B. Robie, Member

W. W. ADAMS
W. W. Adams, Member

STATE WATER RESOURCES CONTROL BOARD

ROOM 1140, RESOURCES BUILDING
1416 NINTH STREET • SACRAMENTO 95814

Phone 445-3993



KERRY W. MULLIGAN, *Chairman*
E. F. DIBBLE, *Vice Chairman*
N. B. HUME, *Member*
RONALD B. ROBIE, *Member*
W. W. ADAMS, *Member*
JEROME B. GILBERT, *Executive Officer*

NOTICE OF CHANGE OF HEARING
CONCERNING
STATE POLICY FOR
WATER QUALITY CONTROL
SACRAMENTO-SAN JOAQUIN DELTA

The Board had previously announced its intent to hold a hearing on October 7, 1971, to consider adopting revised water quality standards for the Sacramento-San Joaquin Delta.

PLEASE NOTE THAT THIS DATE HAS BEEN CHANGED.

The hearing will be held as follows:

Date: October 14, 1971

Place: Resources Agency Auditorium
First Floor, Resources Building
1416 Ninth Street
Sacramento, California

Time: 9:30 a.m.

The Board adopted "State Delta Standards" together with other terms for implementing the standards as part of its recent Delta Water Rights Decision 1379. It now proposes to adopt these amendments to the objectives and the implementation sections of the Water Quality Control Policies for the Sacramento-San Joaquin Delta and the Tidal Waters Inland From The Golden Gate Within The San Francisco Bay Region.

The proposed amendments will provide objectives and means of implementation in addition to those contained in the subject policies.

The attached material has been taken from Decision 1379 and appropriate editorial changes made.

Dated: September 24, 1971



Jerome B. Gilbert
Executive Officer

EXHIBIT "C"

TABLE OF CONTENTS

Nature of Proceedings	1
Past Proceedings	1
The Present Proceedings	3
The Delta	3
Geographic Description	3
The Delta Environment	4
The Issues	5
Legal Questions	7
Protection of Vested Water Rights	7
The Public Interest	9
Public Interest Guidelines	11
Use of Stored Water	15
Fish, Wildlife and Recreation	16
Coordination of Water Rights and Water Quality	16
General or Coordinated Plans	17
Authority to Condition Permits of the Bureau	18
Requirements for Vested Water Rights and Other Uses in the Delta	21
Delta Water Requirements during a Normal Year	22
Channel Depletion in Delta Lowlands	23
Consumptive Use in Delta Uplands	23
Diversion to Contra Costa Canal	23
M and I Offshore Supply	23
Net Delta Outflows	24
Net Delta Outflow Requirements during a Critical Year	25
Enhancement of Summer Delta Outflow	26
Beneficial Uses to be Protected	28
Protection of Agricultural Uses	30
Protection of Municipal and Industrial Uses	31
Protection of Fish and Wildlife	32
Protection of Neomysis	34
Protection of Suisun Marsh	34
Overland Supply	35
Protection for all Beneficial Uses	36
State Delta Standards	37
Monitoring	38

Related Water Quality Activities	39
Algae	41
Other Items of Reserved Jurisdiction	41
Effect of State Delta Standards on CVP and SWP	42
Additional Outflow Required to Maintain	
State Delta Standards During Normal Year	43
Additional Outflow Required to Maintain	
State Delta Standards During Critical Year	44
Summary	46
Order	50
State Delta Standards	53
Standards for Protection of Agricultural Uses	53
Standards for Protection of Industrial and	
Municipal Uses	54
Standards for Protection of Fish and Wildlife	56
Table 1 - Average CL ⁻ Content by Months -	
Sacramento River at Emmaton	27
Table 2 - Monitoring Stations for Delta Water	
Quality Management Program	60
Table 3 - Water Quality Parameters	61
Table 4 - Monitoring Requirements	62
Plate 1 - Sacramento-San Joaquin Delta	

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

In the Matter of Application 5625
and 38 Other Applications of United
States Bureau of Reclamation and
California Department of Water
Resources to Appropriate From the
Sacramento-San Joaquin Delta Water
Supply

Decision 1379

DECISION IN FURTHERANCE OF
JURISDICTION RESERVED IN DECISIONS
D 893, D 990, D 1020, D 1250, D 1275,
D 1291, D 1308, D 1356 and PERMIT ORDER 124

Nature of Proceedings

Past Proceedings

During the last 13 years or more, the State Water Resources Control Board (Board) and its predecessor agency, the State Water Rights Board, have been considering water rights for the Federal Central Valley Project and the State Water Project, the two largest water diversions from the Sacramento-San Joaquin Delta (Delta). These diversions would supply a total of over ten million acre-feet per year to state and federal service areas in the Bay Area, the Central Valley and Southern California. On March 18, 1958 the State Water Rights Board adopted Decision D 893, which approved applications of the United States Bureau of Reclamation (Bureau) for the Folsom

unit of the Central Valley Project on the American River. In 1959, 1960, and 1961 the State Water Rights Board held hearings on applications of the Bureau regarding the Sacramento River and Delta portions of the project and on February 9, 1961 adopted Decision D 990 approving the applications subject to certain limitations and conditions. Other decisions approving applications of the Bureau for additional features of the project have also been adopted. They are Decisions D 1020 and D 1250 (Old River, adopted June 30, 1961 and June 1, 1966, respectively), 1308 (Rock Slough, adopted July 18, 1968) and 1356 (Auburn Reservoir, American River, adopted February 5, 1970).

The Water Rights Board was concerned about the protection of fish and wildlife and the control of salinity which can move into the Delta from San Francisco Bay if not kept out by adequate freshwater outflows. At the time the Bureau's applications were approved information was insufficient for the Water Rights Board to establish permanent conditions for salinity control and terms and conditions for coordination with permits to be issued on the State Water Project and other units of the Central Valley Project. Consequently, the Water Rights Board reserved jurisdiction for these purposes. In 1966 and 1967 the Water Rights Board held hearings on applications of the Department of Water Resources (Department) for the State Water Project. On May 31, 1967 and November 30, 1967 Decisions

D 1275 and D 1291 conditionally approving these applications were adopted. In these later decisions on the State Water Project, the Water Rights Board established interim conditions for the protection of fish and wildlife and salinity control and again reserved jurisdiction to revise or formulate additional terms concerning these subjects pending development of further information and to coordinate terms of the various permits for the state and federal projects.

The Present Proceeding

A hearing of the Board was convened on July 22, 1969, for the presentation of evidence and argument as to what further permit terms and conditions should be imposed in the exercise of the reserved jurisdiction. The hearing continued, with intermittent recesses, until October 5, 1970. Thereafter, concurrent opening and closing briefs were filed by the parties.

The Delta¹

Geographic Description

The Delta as defined in Section 12220 of the California Water Code is a roughly triangular area extending from Chipps Island near Pittsburg on the west to Sacramento on the north and to the Vernalis gaging station on the south, about 10 miles southeast of Tracy. The total area is about 738,000 acres or more than 1100 square miles. The water surface is over 75 square miles or approximately 48,000 acres. There are approximately 700 miles of waterways with an aggregate navi-

¹ See plate 1

gable length in excess of 550 miles. Some of the channels are as deep as 50 to 60 feet. The total water volume below elevation zero, USGS datum, is about 520,000 acre-feet and as of 1962 the mean tidal prism or volume of water between mean lower-low and mean higher-high tide was about 116,000 acre-feet. Present Delta outflow in a median year would be about 17.8 million acre-feet with present imports.

Many years of diligent effort have failed to find a satisfactory method of accurately measuring Delta outflow. Accordingly, Delta outflow is a calculated quantity determined from measurements of river inflows, estimates of use, evaporation and soil absorption or releases within the Delta, and measurements of quantities pumped out of the Delta for export.

The exceptional fertility of the Delta was a great attraction to the early settlers and attempts to reclaim some of the islands were made as early as 1852. By about 1930, reclamation of the Delta had been substantially completed.

The Delta Environment

Those who would wish to return the Delta to a "natural" system, should review the history of the development of the Delta, its present level of economic development and its potential for future use. Before construction of the present series of channels bounded by high levees which in turn create sunken islands that require pumping for maintenance

of crops, the Delta was a vast marsh which was replenished each year by winter floods.¹ Since the sediment no longer replenishes the "islands," since the channels which contain the water are restricted to artificial banks, since upstream development going back before the turn of the century has reduced and altered the widely fluctuating natural patterns of water flow, and since extensive dredging changed water configuration and altered water quality, the Delta has become a man-made ecosystem which must be protected and managed intelligently to achieve a level of environmental quality that will meet all present and future needs.

There is a common misconception that with the water diversion by the projects, the Delta will be dried up. The total annual freshwater outflow will be reduced, but wintertime fluctuations will continue to cause flood or near flood conditions. The real problem will be maintenance of adequate flows during periods of heavy water use and reduced runoff in the summer and fall seasons when the natural flow has been historically low.

The Issues

The briefs of some of the parties indicate a misconception of the scope of this proceeding and of the issues that are involved. Therefore, at the outset of this decision these matters should be clarified.

¹ DWR 8 (Oroville Hearing) p. 17; DWR 4 (Oroville) p. 45

The issues that are before the Board for determination were defined in the staff summary which accompanied the Notice of Hearing and of Prehearing Conference that was sent to all parties in March 1969. They were further explained in the written response of the Board on October 6, 1969, to motions of Contra Costa County Water Agency, the Department and the Bureau. In brief, they are those, and only those, which relate to the Board's reserved jurisdiction to establish or revise conditions for salinity control, for protection of fish and wildlife and to coordinate terms of the various permits for the two projects.

The jurisdiction reserved by the Water Rights Board is sufficiently broad to enable this Board to provide the Delta with adequate protection for its water supplies. However, contrary to the contentions of some parties, the Board has no authority to redetermine issues and matters which were finally determined in previous decisions. Issues finally determined include, among others, the availability of unappropriated water to supply the applicants, that the uses of water proposed by applicants are beneficial, that the proposed appropriations are in the public interest when subjected to the limitations and conditions expressed in the decisions, and that permits should be issued to the applicants subject to those limitations and conditions and also subject to reserved jurisdiction.

The question whether certain portions of the Delta are entitled to the benefits of the Watershed Protection Law ¹

1 Water Code Secs. 11460-11463.

is likewise not a proper issue in this proceeding. Any area illegally deprived of those benefits has a legal remedy in court.

Legal Questions

In exercising its reserved jurisdiction, the Board has two broad areas of concern based upon its statutory responsibilities. These are (1) protection of vested water rights and (2) the public interest.

Protection of Vested Water Rights

Prior vested right holders include (1) users of water on riparian lands, (2) appropriators whose rights are based upon water right permits or licenses with priority earlier than those of the Department and the Bureau and (3) pre-Water Commission Act appropriators.¹

In addition, the permits of both the Department and the Bureau for use beyond the Delta or outside the watershed of the Sacramento River are subject to rights initiated by applications for use within the Delta and watershed regardless of the dates of such applications.² The effect of this limitation is to make the rights of all legal users of water in the Delta and in the watershed senior to the rights of either the Department or the Bureau to store or divert water for use outside the Delta or the watershed.

¹ Water Code Secs. 1201 and 1450.
² Decision D 990 and D 1275.

To the extent the diversions and use under these senior rights conform with the constitutional policy of reasonableness, the projects must be operated so as not to cause any material deterioration of the quality of water which would impair its usefulness for the beneficial uses which are made of the water by senior right holders.^{/1} The Department and the Bureau can be relieved of this responsibility only if they provide an adequate substitute water supply without additional expense to the Delta water users.^{/2} However, the rights of users of water on riparian lands and appropriators in the Delta extend only to water quality and quantity which would have existed in the absence of the projects, taking into consideration current upstream uses under vested rights.

The Board does not have jurisdiction to adjudicate or determine the validity of individual vested water rights -- this is a judicial function. In view of the Board's determination expressed later in this decision that beneficial uses of water in the Delta must be protected in the public interest without regard to whether or not the users have prior vested rights, the legal basis upon which such rights depend is of significance only to indicate to what extent compensation is required for benefits to those rights by virtue of the subject projects.

/1 Wright v. Best, 19 Cal.2d 368, 378. - (1942)
/2 Water Code Section 12202

The Public Interest

By amendments to the Water Commission Act in 1917 and 1921¹ the Board's predecessors were authorized to consider the public interest in authorizing new appropriations of water. This authority was included in the Water Code in Sections 1253 and 1255, which read:

1253. The board shall allow the appropriation for beneficial purposes of unappropriated water under such terms and conditions as in its judgment will best develop, conserve, and utilize in the public interest the water sought to be appropriated.

1255. The board shall reject an application when in its judgment the proposed appropriation would not best conserve the public interest.

In recent years the Legislature has affirmed and emphasized this important function of the Board by including as Section 1257 of the Water Code, the following:

1257. In acting upon applications to appropriate water, the board shall consider the relative benefit to be derived from all beneficial uses of the water concerned including, but not limited to, use for domestic, irrigation, municipal, industrial, preservation and enhancement of fish and wildlife, recreational, mining and power purposes, and any uses specified to be protected in any relevant water quality control plan, and may subject such appropriations to such terms and conditions as in its judgment will best develop, conserve, and utilize in the public interest, the water sought to be appropriated.

The Board's authority to condition permits in the public interest is supported by court decisions.

¹ Stats. 1917, Ch. 133, Sec. 1; Stats. 1921, Ch. 329, Sec. 1

Water Code Sections 1253 and 1255 were before the court in Temescal Water Company v. Department of Public Works, 44 Cal.2d 90 (1955), where it was said:

"In carrying out its present duty, the department now State Water Resources Control Board exercises a broad discretion in determining whether the issuance of a permit will best serve the public interest."

The most recent court decision which has had occasion to comment on these sections is Johnson Rancho v. State Water Rights Board, 235 Cal. App.2d 863 (1965), which said:

"'Public interest' is the primary statutory standard guiding the Water Rights Board in acting upon applications to appropriate water. (Secs. 1253-1256.) The board is to consider the variety of beneficial uses which the particular water may serve and may subject the appropriation to conditions which will best develop and conserve the water in the public interest. Sec. 1257.)"

In Decision D 935 (1959), which conditionally approved applications of the Bureau for the Friant unit of the Central Valley Project, the State Water Rights Board stated the following concerning its power to act in the public interest:

"1. The public interest is involved in varying degree but to some extent in every application to appropriate the unappropriated waters of the State.

"2. The public interest is a beacon light to guide this Board in arriving at each decision made by it.

"3. The public interest includes how, where, and for what purposes the water should be used.

"4. If the Board finds that a particular application, as shown by the evidence before it, contains any element that does not conform to the public interest, it is the duty of the Board to devise terms and conditions to require the proposed appropriation to conform thereto. If that appears infeasible the Board must deny the application."

Public Interest Guidelines

In determining the public interest in a particular situation the Board may properly look to any guidelines which the Legislature has provided. As related to this proceeding, general guidelines include the direction in Water Code Section 1257 to consider the relative benefit to be derived from all beneficial uses of the water concerned (not limited to beneficial uses proposed by the applicant), the policy statement in Water Code Section 11900 that preservation of fish and wildlife should be provided for in connection with the construction of state water projects, and a policy statement in Water Code Section 12581 that in studying water development projects, full consideration shall be given to all beneficial uses of the State's water resources, including irrigation, generation of electric energy, municipal and industrial consumption of water and power, repulsion of salt water, preservation and development of fish and wildlife resources, and recreational facilities, but not excluding other beneficial uses of water.

The latest and most comprehensive expression of policy for the guidance of this Board in determining the public interest is the Environmental Quality Act of 1970¹, which declares that it is the policy of the State to:

¹ Public Resources Code, Div. 13 (commencing with Sec. 21000).

(a) Develop and maintain a high-quality environment now and in the future, and take all action necessary to protect, rehabilitate, and enhance the environmental quality of the state.

(b) Take all action necessary to provide the people of this state with clean air and water, enjoyment of aesthetic, natural, scenic, and historic environmental qualities, and freedom from excessive noise.

(c) Prevent the elimination of fish or wildlife species due to man's activities, insure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities and examples of the major periods of California history.

(d) Ensure that the long-term protection of the environment shall be the guiding criterion in public decisions.

(e) Create and maintain conditions under which man and nature can exist in productive harmony to fulfill the social and economic requirements of present and future generations.

(f) Require governmental agencies at all levels to develop standards and procedures necessary to protect environmental quality.

(g) Require governmental agencies at all levels to consider qualitative factors as well as economic and technical factors and long-term benefits and costs, in addition to short-term benefits and costs and to consider alternatives to proposed actions affecting the environment.

Of controlling importance to the Board's determination of this matter are the provisions of Part 4.5 of Division 6 of the Water Code which include the following:

"12201. The Legislature finds that the maintenance of an adequate water supply in the Delta sufficient to maintain and expand agriculture, industry, urban, and recreational development in the Delta area as set forth in Section 12220, Chapter 2, of this part,

and to provide a common source of fresh water for export to areas of water deficiency is necessary to the peace, health, safety and welfare of the people of the State, except that delivery of such water shall be subject to the provisions of Section 10505 and Sections 11460 to 11463, inclusive, of this code."

"12202. Among the functions to be provided by the State Water Resources Development System, in coordination with the activities of the United States in providing salinity control for the Delta through operation of the Federal Central Valley Project, shall be the provision of salinity control and an adequate water supply for the users of water in the Sacramento-San Joaquin Delta. . . ." (Emphasis added.)

"12203. It is hereby declared to be the policy of the State that no person, corporation or public or private agency or the State or the United States should divert water from the channels of the Sacramento-San Joaquin Delta to which the users within said Delta are entitled."

"12204. In determining the availability of water for export from the Sacramento-San Joaquin Delta no water shall be exported which is necessary to meet the requirements of Sections 12202 and 12203 of this chapter." (Emphasis added.)

The effect of these sections, particularly the underlined portions, is to give first priority to satisfying all needs for water in the Delta and to relegate to second priority all exports of water from the Delta to other areas for any purpose.

Of course, statutory policies are subject to the overriding constitutional policy that all uses of water and diversions of water must be reasonable (Calif. Const., Art. 14, Sec. 3). What is reasonable depends upon the entire range of factors and circumstances involved in the particular water use. What was reasonable yesterday may not be reasonable today or tomorrow.^{/1} The Department places great reliance on the Antioch

/1 Joslin v. Marin Municipal Water District, 60 Cal.Rptr.377 (1967)

decision¹ in contending that maintenance of large outflows to protect quality of water for municipal and other consumptive uses in the western Delta would be unreasonable and unlawful. While the Board agrees that a suitable alternative to use of flows for these purposes is desirable, we can only speculate on how the courts would view present day uses of municipalities and industries in this part of the Delta which are many times in quantity the one-second-foot the Town of Antioch sought to protect. Furthermore, present laws such as the Environmental Quality Act of 1970 might well compel a different decision from that reached in the Antioch case.

The Legislature has determined that an adequate water supply for all uses in the Delta, including industrial and urban, must be maintained. It has indicated that this may be accomplished by providing a substitute water supply at no added financial burden to the users by virtue of such substitution. Unless and until a substitute supply is provided, water of suitable quality for all beneficial uses must be maintained. In the face of these legislative directives, the Board cannot say that either of the alternatives is unreasonable in a constitutional sense. In this regard the Department suggests that the Board should distinguish between reimbursable and nonreimbursable project costs and indicate those who have responsibility for payment for benefits derived from project operations (DWR Opening Brief, pp. 152-160). However, how much those who receive benefits from the use

1 Town of Antioch v. Williams Irrigation District, 188 Cal.451 (1922)

of project water, either as the result of better quality water or in other ways, should pay is a matter to be resolved by execution of repayment contracts with the Department or to be determined by the Legislature and not this Board. To the extent there is an existing statutory liability for payment for diversions in excess of vested rights which is not covered by repayment contracts, it can and should be enforced by appropriate legal action including injunction against continued diversion. Nowhere does the Board find any California law which provides that the Delta users shall be provided with supplies in excess of their vested rights without payment. On the other hand depletions of water in the Delta are also caused by diversions from upstream tributaries that have been made by many metropolitan and agricultural systems for the last century or more (SWSC 507). California law provides no method by which all of these diverters must share in the cost of maintaining an adequate water environment in the Delta channels. Some streams have been drastically depleted. The state and federal water projects have no effect on many of those streams. Aside from pursuit of possible legal remedies in court, any measures for requiring the beneficiaries of these upstream depletions to share in the cost of protecting Delta water supplies must be taken by the Legislature. The Board has no jurisdiction over these beneficiaries for that purpose.

Use of Stored Water

The Board concludes on the basis of legislative policy declarations and the Board's statutory powers to condition permits so as to best develop, conserve and utilize in the public interest the water sought to be appropriated, it may not only require

the project operators to refrain from interfering with natural flow required for proper salinity control and for fish and wildlife in the Delta, but also provide a reasonable quantity of water that has been conserved by storage under authority of their permits for these purposes. The Board does not address itself to the subject of repayment of costs of enhancement of fish and wildlife but, hopefully, the Legislature and the Congress will give high priority to this matter.

Fish, Wildlife, and Recreation

That beneficial uses which may be protected include preservation and enhancement of fish and wildlife and recreation is expressly stated in various sections of the Water Code and policy statements previously quoted, and also in Section 1243, which reads:

"1243. The use of water for recreation and preservation and enhancement of fish and wildlife resources is a beneficial use of water. In determining the amount of water available for appropriation for other beneficial uses, the board shall take into account, whenever it is in the public interest, the amounts of water required for recreation and the preservation and enhancement of fish and wildlife resources."

In compliance with legislative directives and in exercising its reserved jurisdiction, the Board has the duty and authority to control any water quality parameters in the Delta which are necessary, in the judgment of the Board, to protect and enhance fish and wildlife.

Coordination of Water Rights and Water Quality

A major purpose of combining the functions of the former State Water Rights Board and State Water Quality Control Board into one agency, the State Water Resources Control Board, was

to provide for consideration of water pollution and water quality, and availability of unappropriated water, whenever applications for appropriation of water are granted (Water Code Section 174). This purpose was implemented by various amendments to the Water Code declaring legislative intent that protection of water quality for beneficial uses is a major consideration of the Board when it authorizes new appropriations of water (Water Code Sections 1242.5, 1243.5, 1258).

General or Coordinated Plans

Section 1256 of the Water Code requires that in determining public interest under Sections 1253 and 1255, the Board shall give consideration to any general or coordinated plan looking toward the control, protection, development, utilization and conservation of the water resources of the state, including the California Water Plan, prepared and published by the Department or any predecessor thereof and any modification thereto as may be adopted by the Department or as may be adopted by the Legislature by concurrent resolution or by law.

In accordance with this code section the Board has given consideration to plans prepared and published by the Department and its predecessors, which form the basis for the Central Valley Project and the State Water Project, in determining what terms should be prescribed at this time in the permits for the projects. These terms can be met without seriously affecting the capacity of the projects to meet their commitments during the next several years, after which time the terms will be again reviewed. In any event, however, the Board must recognize legislative pronouncements that needs in the Delta

are a primary project responsibility and have the effect of modifying any general water development plans affected thereby.

Authority to Condition Permits of the Bureau

The Board's authority to impose conditions in permits issued to the Bureau has been discussed in previous Board decisions, particularly in Decision D 990. As was there pointed out, under state law all water right permits are conditional and this requirement applies equally to federal agencies which apply for and receive permits as to any other applicant. Section 8 of the Federal Reclamation Act of 1902¹ requires the Bureau to comply with state laws in the acquisition of water rights.

The Bureau contends that it cannot be required "to comply with state laws which would frustrate the National policy and the operation of the Federal project." (Opening Brief of the United States, p. 18.) It cites court decisions which involved efforts by individuals and local agencies to compel the Bureau to deliver water to more than 160 acres of land in single ownership in contravention of federal reclamation law (Ivanhoe Irrigation District v. McCracken, 357 U.S. 275 (1958)) and to deliver water for municipal and domestic uses in preference to irrigation (City of Fresno v. California, 372 U.S. 627 (1963)). Neither of these cases, or any others that have been decided, involved acquisition of water rights by the federal government from a state or the authority of a state to issue a conditional permit or license to a federal agency.

¹ 32 Stat. 390, 43 U.S.C.A. 383.

That salinity control is a purpose of both the Central Valley Project and the water right applications which were assigned to the Bureau for the project was determined by the State Water Rights Board in Decision D 990 and is not an issue subject to redetermination in this proceeding. In any event, this Board is convinced that the determination of its predecessor was correct.

The Bureau's suggestion that a requirement that project water be used to help repel salinity "would frustrate the National policy" is untenable in light of numerous federal laws and policies which have been enacted by Congress and promulgated by executive orders in recent years. The Environmental Quality Improvement Act of 1970 declares that there is a national policy which provides for the enhancement of environmental quality and that each federal department or agency conducting and supporting public works activities which affect the environment shall implement this policy. Similar provisions are contained in the National Environmental Policy Act of 1969 and in Executive Order 11514 (March 5, 1970).

Section 21(a) was added to the Federal Water Pollution Control Act in 1970 and requires each federal agency having jurisdiction over any real property or facility, or engaged in any public works activity of any kind, to insure compliance with applicable water quality standards and the purposes of the act in the administration of such property, facility or activity.

Decision D 990 did not reserve jurisdiction for protection of fish and wildlife. However, jurisdiction was reserved to coordinate terms of the permits issued to the Bureau pursuant to that decision with terms of permits issued to the Bureau on other applications for the Central Valley Project and permits issued for the State Water Project. Coordination requires that terms for protection of fish and wildlife be included in all of these permits. Inclusion of such terms in some, but not all, of the permits for the Central Valley Project and State Water Project would create confusion and would be unworkable.

The Bureau contends that jurisdiction reserved in Decision D 893 has expired because of "undue delay" in holding further hearings (Bureau's Opening Brief, p. 10). The decision contained no time limit; therefore none exists, at least until issuance of licenses on the permits.

Decision 1356, adopted February 5, 1970, after the hearing in this proceeding had commenced, reserved jurisdiction to impose such additional terms as shall be specified in this decision relative to salinity control, coordination of permit terms and fish and wildlife. The Bureau contends that because the Board ordered reconsideration of Decision 1356 and later amended it after the conclusion of this hearing, terms and conditions adopted in this decision should not be included in Decision 1356 without allowing the Bureau to further argue the

merits of such action (Bureau's Opening Brief, pp. 14-15). The Bureau's contention has no merit; reconsideration of Decision D 1356 was expressly limited to other issues and the reservation of jurisdiction was not subject to change. If the Bureau wanted to argue the merits of that provision, it should have asked for reconsideration within the time allowed by law. Since the Bureau did not do so, the provision became final 30 days after it was adopted.

Requirements for Vested Water Rights
and Other Uses in the Delta

The record shows that the quantity needs of almost all of the Delta users are met almost all the time and depletion of inflow will not affect this availability. With the exception of periods during extraordinary low tides, at which time the southeast portion of the Delta is particularly affected, water is generally available at the intakes of the numerous pumps of Delta users (DWR 519). However, the quality of the water at the intake of the pumps is not always suitable for the uses intended, nor is it always suitable for spawning of striped bass, maintenance of a good population of the principal food of juvenile striped bass, the opossum shrimp (Neomysis awatchensis), maintenance of an adequate food supply for migratory waterfowl in the Suisun Marsh area, or passage of salmon.

For the foregoing reasons quantitative determinations of the extent of vested rights are meaningless. The measure

of a water rights entitlement in the Delta is the quality of the entitlement.

This Board must recognize and protect existing rights in acting upon applications to appropriate water. The level at which these rights are recognized must be determined on the basis of the law and the physical facts. In addition, it is incumbent upon the Board to protect fish and wildlife in the Delta. The outflows necessary to supply the qualities that vested rights and fish and wildlife require, to the extent such outflows conform to constitutional mandate, constitute prior demand on the supply which is not available to the state and federal projects.

Delta Water Requirements During a Normal Year

An analysis of water required in the Delta can be conveniently made by considering the following five categories of use:

1. Channel depletion in the Delta lowlands.¹
2. Consumptive use in the Delta uplands, which are served almost exclusively by diversions from Delta channels.
3. Contra Costa Canal diversions.
4. Offshore supply to municipalities and industries in the western Delta.
5. Delta outflow required for salinity repulsion.

¹ Direct diversions and seepage from Delta channels (DWR 17, Oroville).

USBR 576 provides information as to Categories 1 and 2. USBR 561 provides information as to Category 3. CCCWD 503 provides data for Category 4. Category 5 is estimated by quality-outflow charts. (Plate 15, DWR 17, Oroville.)

Channel Depletion in Delta Lowlands

USBR 576 gives channel depletion by months, and shows that the average annual depletion from the Delta lowlands channels is 1,266,000 acre-feet.

Consumptive Use in Delta Uplands

The Delta uplands net use is shown by USBR 576 to average 340,000 acre-feet per year.

Diversion to Contra Costa Canal

Historic diversion to Contra Costa Canal is shown in USBR 561, Sheet 1, Column 6. The last 5 years shown are as follows:

<u>Year</u>	<u>Historic Diversion</u> (1000 acre-feet)
1964	86.4
1965	70.1
1966	88.1
1967	69.5
1968	<u>101.3</u>

Total 415.4 Average 83.1

M and I Offshore Supply

Historic diversion from the offshore supply for municipal and industrial supply for the years 1964 through 1968 were as follows:

<u>Year</u>	<u>Total Diversions</u> (1000 acre-feet)
1964	30.2
1965	50.3
1966	33.7
1967	55.0
1968	<u>30.8</u>
Total	200.0
Average	40.0

The wet year of 1967 with its long season of availability of offshore supply is reflected in the high quantity of water diverted there and the lower need for water from Contra Costa Canal. This was followed by the rather dry year of 1968 with its short season of availability from the offshore supply and large demand on Contra Costa Canal. More than 2 million acre-feet of water are diverted annually for industrial cooling water. However, this water has no quality limit and will not be considered in this analysis. (Table 5, CCCWD 503.)

Net Delta Outflows

The net outflows required for the Delta depend principally on the level at which the Delta uses are protected and the hydrologic condition each year. At the level at which Delta uses will be protected in this decision, the net outflow would be about 2,383,000 acre-feet per year. This is determined by the quantity of water estimated to be required to protect the specified beneficial uses as follows:

Municipal and Industrial	150 days at 4500 cfs =	1,350,000 acre-feet
Fish and Wildlife	35 days at 4400 cfs =	308,000 acre-feet
Agricultural (Blind Point)	55 days at 2500 cfs =	275,000 acre-feet
Agricultural (Resolution 68-17)	125 days at 1800 cfs =	<u>450,000 acre-feet</u>
	Total	2,383,000 acre-feet

Although the protection contemplated for agricultural use will be for longer periods than the 180 days indicated, the remaining protection will occur during the time when higher flows are provided for other uses.

The estimated Delta water requirement during a normal year would then be 4,112,000 acre-feet as follows:

Delta Lowlands Channel Depletion	1,266,000 acre-feet
Delta Uplands Consumptive Use	340,000 acre-feet
Contra Costa Canal Diversions	83,000 acre-feet
Offshore M and I Supply	40,000 acre-feet
Net Delta Outflow Requirement	<u>2,383,000 acre-feet</u>
Total	4,112,000 acre-feet

Net Delta Outflow Required During a Critical Year

The net outflow requirements are reduced in a critical year to about the following:

100 days at 4500 cfs =	900,000 acre-feet
35 days at 4400 cfs =	308,000 acre-feet
105 days at 1800 cfs =	378,000 acre-feet
125 days at 1300 cfs =	<u>320,000 acre-feet</u>
Total	1,906,000 acre-feet

This is a reduction of about 477,000 acre-feet from normal year requirements.

Enhancement of Summer Delta Outflows

It seems clear that prior vested rights of users in the Delta do not entitle them to all the water, either as to amount or quality, they have been diverting and using, although there may be additional water available at certain times of the year. Since commencement of operation of Shasta Dam on December 30, 1943, Delta water users have enjoyed great benefits from the Central Valley Project and more recently from the State Water Project. Aside from substantial flood control, navigation and recreational benefits, the usable water supply during the dry summer months, usually July and August, has been substantially augmented as shown in Table 1 on the following page. For example, CCCWA 30C (Shasta) shows the three successive years 1935, 1936 and 1937 had calculated net outflows from the Delta of 22.478; 24.725 and 26.939 million acre-feet. The year 1936 is considered to be a median year. The calculated net outflows for the month of August in the respective years were 2, minus 2 and minus 64 thousand acre-feet. The year 1963 is the last year shown in the exhibit with a comparable outflow, 23.425 million acre-feet. The August 1963 outflow was 257,000 acre-feet, or 4350 cfs average rate of outflow which, when compared to the previous comparable year referred to above, illustrates a substantial enhancement of the flow.

TABLE 1

AVERAGE CL⁻ CONTENT BY MONTHS, MG/L
SACRAMENTO RIVER AT EMMATON

<u>Month</u>	<u>Actual 1955-1965</u>	<u>W/O CVP¹ and SWP 1955-1965</u>	<u>State Delta² Standards</u>
January	34	*	70
February	18	*	70
March	12	*	70
April	24	*	70
May	30	*	75
June	80	*	350
July	220	2600**	350
August	420	4650**	1000
September	80	*	1000
October	60	*	1000
November	50	*	1000
December	40	*	70

∠¹ Conditions which would have existed without the Central Valley Project and State Water Project

∠² Level to be maintained under Term 2 of the Order of this decision

* Chloride content substantially the same as "Actual"

** Significant seawater incursion. In critical years seawater incursion would have occurred during additional months.

Bureau Exhibits 502 and 507 show the location of maximum intrusion of the 1000 mg/l Cl⁻ line pre-Shasta and post-Shasta, respectively. In the 24 years before Shasta Dam commenced operation the 1000 mg/l line was below Emmaton 10 years (42% of the years) and above 14 years (58% of the years). In the 25 years shown after commencement of operation of Shasta Dam the 1000 mg/l line has been below Emmaton 16 years (64% of the years) and above 9 years (36% of the years).

With the projects in operation, 1944 was the last year with negative outflows. However, USBR 564 shows that in the absence of the state and federal projects negative outflows would have occurred in the Delta in 20 years of the 26-year period 1944 - 1969 since commencement of operation of Shasta Dam. The period of computed negative outflow in 1966 and 1968 without the state and federal projects would have extended for three months. This illustrates the disastrous conditions that would presently prevail in the Delta in the absence of the releases from the state and federal projects.

Beneficial Uses to be Protected

The Board's reservations of jurisdiction encompass the following uses which the state and federal governments have adopted for protection pursuant to the Federal Water Pollution Control Act (Staff 502-B, p. XIX-6 and Staff 503¹, p. 5): agricultural supply, protection of fish and wildlife, and municipal and industrial supply.

1 Report of Board of Consultant to Bay-Delta Program.

It is the Board's view that these uses should also be adopted for protection through conditions in permits issued for the state and federal projects.

At the present time the Board's objectives for chlorides (Cl^-) and total dissolved solids (TDS) are (1) objectives adopted primarily to protect the quality of several municipal water sources which were included in the 1967 "Water Quality Control Policy for the Sacramento-San Joaquin Delta," and (2) the "Supplemental Water Quality Control Policy" adopted by Board Resolution 68-17. Resolution 68-17 provides that implementation shall be obtained through the conditioning of the permits of the Department and the Bureau for projects affecting the Delta. It is appropriate that the Board's objectives for TDS and chlorides at the Rock Slough location also be implemented through the conditioning of the permits in this proceeding and that all the other objectives in the 1967 policy for the Delta be implemented through the regulation of waste discharges.

The Kaiser ¹ report indicates that with two exceptions (spawning of striped bass and some municipal and industrial water supplies) the provisions of Resolution 68-17 will protect the beneficial uses within the Delta (Staff 502-B, p. XIX-7). Unprotected municipal and industrial water supplies include the City of Vallejo Intake on Cache Slough and the proposed

¹ San Francisco Bay-Delta Water Quality Control Program final report to the State of California, by Kaiser Engineers, Staff 502-B.

location of the State's North Bay Aqueduct Intake on Lindsey Slough. It appears that these intakes are not affected by ocean salinity. Municipal and industrial users in the western Delta, currently served totally or in part by overland supply, would continue to be served in this manner at such times as TDS and chloride levels in the immediate offshore channels are not acceptable for the intended uses. (Response of SWRCB to CCCWD Interrogatory No. 7, dated 7-25-69) Spawning of striped bass is discussed under the heading "Protection of Fish and Wildlife."

The Kaiser report also indicates that when the standards of Resolution 68-17 are being met the objectives of the 1967 policy for the Sacramento-San Joaquin Delta will ordinarily be satisfied. One exception is Cache Slough, as noted above, where modeling studies indicated that the TDS concentration would exceed 800 mg/l during winter conditions with a net outflow of 4500 cfs. (Staff 502-B, p. XIX-27)

Protection of Agricultural Uses

The agricultural protection afforded by Resolution 68-17 is predicated on overland agricultural supply to some 12 to 15 thousand acres in the extreme westerly part of the Delta. If the present uses are to be continued without overland supply, the water available from the Delta channels must be suitable for irrigation. Irrigation water with EC¹ greater than 2 millimhos and chloride ion concentration over 350 mg/l

¹ Electrical conductivity, a measure of the total ionic activity in units of millimhos per square centimeter at 25°C.

is classified as poor (RT 2586). In the hearings on the State Water Project, it was found that Blind Point was below the lowest agricultural intake on the San Joaquin River, and if the quality of water at Blind Point was suitable for irrigation with respect to chlorides, the water throughout the Delta was suitable for irrigation with respect to chlorides. The quality of water available to irrigators should not be allowed to degrade to poor in any except critical years. Therefore, the Board will require that the quality of water at Blind Point shall not be allowed to reach chloride concentrations exceeding either 350 mg/l or an EC of 2 millimhos during the principal growing season from April 1 to August 1 of all but critical years, nor exceeding 1000 mg/l chlorides or an EC in excess of 3.0 at any time.

A water quality of 350 mg/l Cl^- at Blind Point is associated with a Delta outflow of about 2500 cfs, according to interpolations on Plate 15 of DWR 17, Oroville. A water quality of 1000 mg/l Cl^- at Blind Point is associated with outflow of about 1300 cfs.

Protection of Municipal and Industrial Uses

A proposal to remedy the lack of protection afforded to municipal and industrial uses in the western Delta by the 1967 policy and Resolution 68-17 was made by the former Federal Water Pollution Control Administration in a letter dated January 9, 1969, from the Secretary of the Interior to the Governor of California. This is known as supplemental standard

B-5.¹ The Board finds that this standard is reasonable and should be adopted for interim protection to municipal and industrial intakes, pending provision of a supply by alternate means.

Protection of Fish and Wildlife

The statement in the Kaiser report that the provisions of Resolution 68-17 do not protect the spawning of striped bass is based on a recommendation by the Department of Fish and Game which is recited on page XIX-11 of the report. This recommendation is that above Threemile Slough on the Sacramento River and between Jersey Point and Venice Island on the San Joaquin River, TDS should be limited after April 1, during the striped bass spawning season to daily median values of 350 mg/l until water temperatures reach 60°F. Thereafter daily mean values of TDS of 180 mg/l or less should be maintained for five weeks. This is similar to the proposed federal B-2 standard¹ except that the Fish and Game recommendation provides no relaxation during below normal, dry and critical years. However, the evidence shows that during the dry year of 1968 these standards were not maintained but the bass spawned anyway, and previous conclusions were negated (DFG 506, pp. 2-8, 2-9).

The Department of Fish and Game recommends that the SWP and CVP be operated under conditions described in the memorandum of understanding dated March 10, 1969 (DFG 509) through 1975; that the tentative guidelines contained in Item V of DFG

¹ Recommended by Department of Interior task force established to consider salinity standards in the Delta. Also recited in letter dated January 9, 1969, from Secretary of the Interior Stewart L. Udall to Governor Reagan. (USBR 524)

510 be used as a guide to the Department and Bureau in project planning, construction and operation until such time as more definitive criteria can be developed; that these guidelines not be used as specific permit conditions but that the Board declare its intent to protect the resource (RT 923). The Board accepts the tentative guidelines with the exception of guideline V-A-4. To the extent that the guidelines contain recommendations which are sufficiently specific to provide for a meaningful standard they have been incorporated in the Order of this decision. It is expected that the parties to the memorandum of understanding will operate within the framework of the guidelines. The record is far more sparse in the area of fish and wildlife than for other beneficial uses and we recognize that some adjustment may be necessary as additional information is developed.

Water Code Section 11912 provides procedures whereby an amount sufficient to repay all costs incurred by the Department for the preservation of fish and wildlife and determined to be allocable to the costs of the project may be included as reimbursable costs, and costs incurred for enhancement of fish and wildlife shall be nonreimbursable. These latter costs should be eligible for support through tidelands oil and gas revenues. (DWR 555, p.3).

Submerged Delta islands appear to offer possibilities as semi-artificial rearing ponds for salmonid fishes. Rather

than install overland supplies to tracts in the lower Delta where productivity of the soil has been impaired due to salt build-up, portions of the leveed area might make ideal fish ponds for culturing fall chinook salmon. This and other proposals for fish culturing should be explored by the Department of Fish and Game.

Protection of Neomysis

The Department of Fish and Game has recommended that chloride concentrations in Suisun Bay at Chipps Island should not exceed 4000 mg/l. The Kaiser studies found that this concentration would not be exceeded even with the lesser outflows necessary to meet the requirements of Resolution 68-17. (Staff 502-B, p. XIX-11) Nevertheless the protection for Neomysis will be provided by a specific standard.

Protection of the Suisun Marsh

The Suisun Marsh provides an important waterfowl habitat in the Pacific Flyway and marsh plants provide the major source of waterfowl food. As these plants are controlled in their distribution and productivity by several environmental factors, including soil salinity, it is proper that they be protected by water quality standards in this decision. The tentative guidelines as outlined in DFG 510 relating to Suisun Marsh will be included in the State Delta Standards.

Overland Supply

A previous decision ⁷¹ of the Board concluded that the most appropriate method to provide water supplies to the westerly Delta and Contra Costa County including certain agricultural uses is by alternate means; facilities which can deliver good quality water to the user areas during the low-flow periods of late summer and early fall. However, until adequate alternate supplies are provided, and the Board modifies the water quality standards accordingly, the standards herein provided which are necessary for protection of this area must be maintained. Water users should pay only for benefits, if any, which they receive through such an alternate arrangement both in regard to quality and quantity in excess of their vested rights. The Board does not have the authority to determine what payments should be made.

As indicated previously, it seems clear that the Delta interests have been diverting water in the summer months which would not be available if the state and federal projects were not operating. The appropriate method for Delta users to assure themselves of continued availability of good quality water throughout the year is to enter into contracts with the permittees. The Board will review progress toward completion of the contracts periodically and when the Delta water rights

71 Decision D 990, p. 56

hearing is reopened.

Some industries in the western Delta who claim vested water rights have attempted to negotiate contracts with the Department which would provide for payments by the Department to the industries to compensate them for added costs they expect to incur as the result of poorer quality water at their intakes as the State Water Project becomes fully operative. These industries ask the Board to require the Department to make such payments. The Board has no authority to adjudicate the amount of damages water users may suffer. The objective of the Board in this decision is to require both the Department and the Bureau to provide water of suitable quality for the beneficial uses specified either by maintaining in-channel supplies or by substitute facilities. If the parties cannot agree on the terms of a contract, the dispute will have to be settled by a court.

Protection for all Beneficial Uses

Based upon the record of the hearing and for reasons explained elsewhere in this decision, the Board finds that the public interest requires that all beneficial uses of water in the Delta be protected by appropriate terms in the permits for these projects, including uses for domestic, irrigation, municipal, industrial, preservation and enhancement of fish and wildlife and recreational purposes and that such protection should be afforded whether or not the water is beneficially

used pursuant to vested rights. This conclusion makes unnecessary permit terms for salinity control limited to protection of vested rights and dispenses with the need for a definition of such rights, a judicial function which the Board has no jurisdiction to undertake.

State Delta Standards

The water quality standards which the Board now establishes shall be known as State Delta Standards. The Board finds that these standards are necessary and proper to provide reasonable protection for all beneficial uses of water in the Delta and that they are in the public interest. The standards are enumerated in Term 2 of the Order and are summarized as follows:

- (1) Protection of municipal, industrial and agricultural uses, including the needs of the Suisun Marsh and the fisheries food chain by limits on electrical conductivity (which correlates with total dissolved solids) in Old River at Clifton Court Ferry, Rock Slough at Contra Costa Canal Intake, South Fork Mokelumne River near Terminous, Sacramento River at Rio Vista and San Joaquin River at San Andreas Landing and chloride limits in the Sacramento River at Emmaton and in the San Joaquin River at Jersey Point, Blind Point and Antioch;
- (2) protection of striped bass spawning by limits on electrical conductivity in the San Joaquin River at Antioch Water Works Intake and at Prisoners Point; and
- (3) protection of fish and

wildlife through imposition of criteria at certain points in the Delta.

As discussed earlier in this decision, the Board may in the public interest attach conditions to the permits for the state and federal projects for the protection of water users and fish and wildlife. The Board intends to establish and regularly review these conditions. The State Delta Standards are designed to assure protection of fish and wildlife and the water-dependent Delta environment and salinity control for all beneficial uses.

Monitoring

Despite extensive monitoring, particularly in the last two decades by state and federal agencies, there is still not as much information as desirable on which to base an intelligent management system. Plans for obtaining this information were outlined in newly developed study programs by the Department and others and in a study specially commissioned by the Board and completed by Stanford Research Institute. The Board as part of this decision is requiring that the Department and the Bureau conduct or cause to be conducted a comprehensive monitoring program including 32 monitoring stations strategically located throughout the Delta, at which some or all of 23 parameters will be observed as enumerated in Tables 2, 3 and 4 of the Order.

The Department and the Bureau will be required to submit to the Board, on a monthly basis, reports on this and any other significant monitoring in the Delta. It is the intention of the Board to explore the possibility of engaging the U. S. Geological Survey in establishing monitoring standards and techniques, in coordinating and analyzing reports submitted and providing assistance in any way in which the program may be effectively implemented.

One of the essential characteristics of a successful monitoring program is that it must be flexible. What is now thought to be an essential element of monitoring may be found to be essentially duplicative and unnecessary or what is now essential may become unnecessary through changed conditions. Conversely, lack of essential monitoring may be revealed by fish kills or other incidents, the causes for which can not be traced by existing monitoring. It is important to provide a mechanism where technical factors involved in monitoring can be adjusted with a minimum of delay and formality. The Board will provide for such a mechanism in its Order.

Related Water Quality Activities

By letter of January 9, 1969, the Secretary of the Interior approved the state's Delta salinity standards as promulgated by the 1967 "Water Quality Control Policy for the Sacramento-San Joaquin Delta" and the "Supplemental Water Quality Control Policy" adopted by Resolution 68-17, "as far

as they go," and indicated he was relying upon this Board's commitment to conduct further public hearings and consider the matter of supplementing the salinity standards now established.

This decision will provide the basis on which the Board will immediately begin a series of water quality hearings to provide additional information to the Environmental Protection Agency concerning the State-Federal Water Quality Standards.

Recent state and regional board activity in the regulation of waste discharges demonstrates an intent to protect the Delta environment with stringent controls on waste discharges at the earliest reasonable date. Waste discharges will be managed and where possible reused with a view toward achieving these prime objectives. No one has a right to pollute the waters of the state regardless of the quantity of water that may flow in the particular streams. The Board believes that through clean-up and reuse of the water reclaimed from municipal and industrial wastes, and maintenance of flows to achieve the State Delta Standards, the Delta and San Francisco Bay can be protected and enhanced.

The construction of major water diversion and delivery facilities has been the cornerstone of the prosperity that has been achieved. This prosperity has not been without its side effects and it is necessary to have a balanced program for water enhancement and protection. In its role as a coordinator of water quality investigations and monitoring programs, and

in carrying out the detailed basin planning requirements of federal law, the Board will cooperate with other state, federal and local agencies to achieve a statewide management approach to our water resources.

Algae

Algae is a matter of serious concern in the Delta. A Federal Water Pollution Control Administration report stated that typical summer plankton counts in the Delta system ranged from 3 million cells per liter in the Sacramento River at Walnut Grove to more than 30 million cells per liter in the San Joaquin River below Mossdale (Staff 502-B, p. IX-4). It is desirable to prevent a worsening of this condition. As this is of concern to the Board it will require the Permittees to conduct further studies on this problem with a later report to the Board.

Other Items of Reserved Jurisdiction

By Paragraph 28 of the order of Decision D 1291, jurisdiction was reserved for the purpose of reviewing the Oroville-Thermalito power sales contract upon request of any interested party and, after a hearing, make such revisions in permit terms as may be appropriate. A copy of the Oroville-Thermalito power contract was received in evidence (DWR Exh.507) and explained at the hearing. The Board has reviewed the contract and finds that no revisions in permit terms would be appropriate

as a result of the contract. Therefore, the jurisdiction reserved by Paragraph 28 of the order of Decision D 1291 will be terminated.

By Paragraph 5 of the order of Decision D 1356 jurisdiction was reserved for the purpose of conforming the season of diversion to later findings of the Board on prior applications involving water in the Sacramento River Basin and Delta. As the present decision makes no change in the season of diversion to which the permits issued pursuant to Decision D 1356 should be conformed, the jurisdiction reserved by Paragraph 5 of the order of Decision D 1356 serves no useful purpose and will be terminated.

Although the foregoing two items were not included in the list of matters that were noticed for hearing, they are believed to be noncontroversial and their disposition in this decision will not prejudice any of the parties.

Effect of State Delta Standards on CVP and SWP

The State Delta Standards will have an effect on the water available for the federal Central Valley Project and the State Water Project. Representatives of the Department and the Bureau have indicated that they intend to respect the rights in the Delta and abide by the terms and conditions imposed by the Board. The qualities imposed by the Board require outflows or carriage water in substantial amounts. The requirements for stored water to support these outflows have been estimated, as

discussed in the following paragraphs, for the 1990 level of development.

Additional Outflow Required to Maintain
State Delta Standards During Normal Year

The Department contended that 1800 cfs outflow would maintain the provisions of Resolution 68-17 (RT 170, 1116). That can be considered equivalent to about 1.3 million acre-feet per year. Insofar as the State Delta Standards can be evaluated, as shown in the subsection on net Delta outflows, the net outflow requirements in a normal year are about 2.4 million acre-feet. Therefore the standards will require about 1.1 million acre-feet of additional outflow, which according to data derived from Table 3, DWR 502, would require about 400,000 acre-feet of additional stored water over the requirements to maintain the standards of Resolution 68-17 under a 1990 level of development. DWR 502, page 46, indicates that the stored water should be valued at \$30 per acre-foot in estimating the cost of a long-term future commitment of water for increasing salinity control on a firm, no-deficiency basis. However, the present requirements will be temporary, making use of water which is already developed. The value of such water developed by the State is said to be \$9.62 per acre-foot in the Delta (DWR 555 p. 238).

An estimated 100,000 acre-feet of stored water are presently required to maintain the standards prescribed by Resolution 68-17, which requires 1.3 million acre-feet of outflow.

An estimate based on almost doubling that outflow indicates that it would take about double the stored water or 100,000 acre-feet of additional stored water to provide the present normal year outflow requirement of about 2.4 million acre-feet estimated to be required by the State Delta Standards. The value of 100,000 acre-feet at \$9.62 per acre-foot would be about 1 million dollars annually, which should be apportioned in an equitable manner. There may also be an adverse effect on the power contracts.

Additional Outflow Required to Maintain
State Delta Standards During Critical Year

In a critical year, the net Delta outflow required by the State Delta Standards would be about 1.9 million acre-feet, (see page 25). The amount of outflow required under Resolution 68-17 would be 1800 cfs for 7 months and 900 cfs for 5 months or approximately 1.0 million acre-feet per year.

Therefore the standards require about 0.9 million acre-feet of additional outflow. In a critical year this will require about 0.8 million acre-feet of additional stored water at a 1990 level of development.

We are unable to determine from the records the present amount of stored water that would be needed in a critical year. It is reasonable to conclude, however, that the increase will be about proportional to the increase in stored water requirements from a normal year to a critical year for 1990 conditions, or approximately double. This would indicate a present additional

stored water requirement of about 200,000 acre-feet in a critical year to meet the State Delta Standards, with a value of about \$2 million.

Since use of this water for Delta maintenance may hasten the need for new supplies, it would tend to increase the cost of water for further consumptive uses from the projects. However, there should be no great problem in the projects meeting their commitments during this interim period.

Summary

The complex interplay between inflows, Delta uses, export diversions, waste disposal, irrigation return water, and tidal action, has made it difficult to predict future conditions in the Delta. For this and other reasons, water right permits for the Central Valley Project and the State Water Project have included various reservations of jurisdiction. One reservation that has consistently appeared in all of the decisions approving appropriation of water from the Sacramento River watershed is the reservation to formulate terms and conditions relative to salinity control in the Delta. The determination of the level of salinity control to be maintained in the Delta is based on the beneficial uses to be protected. These uses are municipal, industrial, agricultural, fish and wildlife, recreation, and enjoyment of esthetic values.

Weighing the mass of conflicting evidence, the Board finds that new chloride and TDS criteria at Blind Point and TDS criteria recommended by the Kaiser Report for the Delta area east of Jersey Point and Emmaton should be used for the protection of agriculture and fish and wildlife; that these should be supplemented by additional requirements at Contra Costa Canal Intake and at Antioch for the protection of industrial and municipal uses; and that certain standards at Antioch and Prisoners Point for protection of striped bass

spawning should be established. The Board also finds that additional criteria regarding temperature, velocity, algal growth, dissolved oxygen, scour, and turbidity and productivity in those reaches of the Sacramento and San Joaquin Rivers which are susceptible of control by providing inflow to the Delta should be the subject of continuing study by the Department and the Bureau. The Board will require that such studies be conducted and that a progress report on the studies be made to the Board not later than August 1, 1973. Evidence at the hearing favors slight modification of the TDS requirements at Terminous, Rio Vista, San Andreas Landing, and Clifton Court Ferry to express TDS requirements in terms of electrical conductivity and to use a 14-day average in lieu of a 10-day average. These criteria have been designated as a part of the State Delta Standards.

The Board finds no economic justification for permanently maintaining high quality offshore supplies from the western Delta channels for consumptive uses. However, the maintenance of a satisfactory environment for fish and wildlife may result in such quality condition being available. The Department and the Bureau have the responsibility of providing overland supplies of equal quantity and comparable quality to existing in-Delta users to the extent of their vested rights at no additional cost to these users at such time as the in-channel supply is no longer maintained at the

standards set herein. Arrangements for enhancement should be made through appropriate water supply contracts.

Regardless of the degree of cooperation between the Department and the Bureau, the Board believes that as both projects will have similar effects on the water supplies and uses of others and on the environment of the same area, the permits should have similar terms and conditions, except for the permit for direct diversion of water for power purposes. The Board will continue the reservation of jurisdiction to coordinate terms and conditions with future permits for additional units of the State Water Project and Central Valley Project as appropriate, but terminate the reservation on the permit which covers only direct diversions for power use at Keswick power plant.

The Board will continue its jurisdiction to formulate terms and conditions relative to flows to be maintained in the Delta for salinity control and the protection of fish and wildlife.

The Board will terminate its jurisdiction to review the Oroville-Thermalito power sales contract and make such revisions in permit terms as may be appropriate.

The Board will terminate its jurisdiction to conform the season of diversion to later findings of the Board on prior applications involving water in the Sacramento River and Delta, contained in Decision 1356.

The Board acting under Water Code Section 1051 will coordinate a Delta water quality program. The monitoring

reports from the permittees herein will be integrated with all other monitoring done in the Delta, possibly under contract to the U. S. Geological Survey.

The Board takes no position concerning the Peripheral Canal. It believes however that if project deliveries are not to be curtailed in the future, it will be necessary to have either a cross-Delta transfer facility or that arrangements must be made for additional water to augment the combined project yields. Additional water could come from projects for storage and diversion, waste water reclamation, or desalting of brackish or ocean water. This additional water must be supplied to the system south of the Delta pumping plants, due to the lack of cross-Delta transfer capability.

The tentative guidelines for protection of fish and wildlife resources in the Delta contained in Item V of the recommendations in Department of Fish and Game Exhibit 510, except Item V.A.4. will be adopted, insofar as they contain recommendations which are sufficiently specific to provide for meaningful standards and will be incorporated in the Order of this decision, for protection of the fisheries resources and for the Suisun Marsh.

The Board will require qualitative and quantitative monitoring of fish, benthos, phytoplankton, and zooplankton. When definite correlations are developed regarding the productivity of fish and elements of the food chain, definitive terms can be formulated and the State Delta Standards will be amended upon hearing and further order.

The Board in establishing these standards intends that this great productive and useful area shall be managed intelligently for the benefit of all Californians now and in the future. These standards come first. They must be maintained as a first priority operating criteria for any and all projects or parts thereof that may be constructed and operated as part of the federal and state project facilities. The Board will reopen the hearings on this matter no later than 7 years depending upon the availability of additional information on which to refine the standards. However, in the event unexpected adverse conditions arise before that time or it appears the parties are not negotiating in good faith toward water supply contracts, the hearings will be reopened promptly.

Order

IT IS HEREBY ORDERED THAT:

1. The Board continue the reservation of jurisdiction to:
 - (a) formulate terms and conditions relative to flows to be maintained in the Delta for the protection of fish and wildlife in the permits issued or to be issued pursuant to Applications 5629, 5630, 14443, 14444, 14445A, 17512, 17514A, 17515A, 18721, 18723, 21636 and 21637, contained in Decisions 1275, 1291 and 1356.
 - (b) formulate terms and conditions relative to salinity control in the Delta and to coordinate terms and conditions with other permits to be issued in furtherance of the State Water Project or the Central Valley Project. Both reservations will continue in effect on permits issued or to be issued on Applications 5625, 5626, 9363, 9364, 9365, 9366, 9367, 9368, 15764, 21542, 5629, 5630, 14443, 14444, 14445A, 17512, 17514A, 17515A, 22316, 13892, 18721, 18723, 21636 and 21637, and the reservation relative to salinity control in the Delta will continue in effect on permits issued on Applications 13370, 13371, 13372 and 14662.

- (c) coordinate terms and conditions of the permits issued pursuant to Applications 5627, 5628, 15374, 15375, 15376, 16767, 16768 and 17374 with other permits in furtherance of the Central Valley Project and State Water Project, contained in Permit Order 124 (Trinity River Group).
2. Permittees shall maintain, either by a discontinuation of direct diversion at the project pumps and/or by release of natural flow or water in storage, water quality in the channels of the Delta equal to or better than those enumerated in the State Delta Standards.

State Delta Standards

The stations referred to herein will be abbreviated as follows: Old River at Clifton Court Ferry, CCF; Rock Slough at Contra Costa Canal Intake, CCCI; San Joaquin River at Jersey Point, Jersey; Sacramento River at Emmaton, Emmaton; South Fork Mokelumne River near Terminous, Terminous; Sacramento River at Rio Vista, Rio Vista; San Joaquin River at San Andreas Landing, SAL; and San Joaquin River at Antioch, Antioch.

A. Standards for Protection of Agricultural Uses

1. Station	Cl ⁻ & TDS Criteria	Type of Year	Months	
			AMJJ	ASOND
Blind Point*)	Running Average of mean daily for any 14 consecutive days:			
	(TDS) EC maximum millimhos	non-critical	2	3
	(Cl ⁻) maximum, mg/l	non-critical	350	1000
	(TDS) EC maximum millimhos	critical	3	3
Jersey & Emmaton)	(Cl ⁻) maximum, mg/l	critical	1000	1000
	Average of mean daily Cl ⁻ content for at least 10 consecutive days between April 1 and May 31 maximum 200 mg/l	normal and below normal		

* Jersey and Emmaton will be substituted for Blind Point when an overland supply is provided to existing irrigation uses on Sherman and Jersey Islands and Hotchkiss Tract.

2. Station	Type of Year	JFM	AMJJ	ASOND	
		EC--maximum millimhos			
Terminous Rio Vista SAL CCF	Running average of mean daily for any conse- cutive 14 days	normal or above	1.25	1.25	1.25
		below normal	1.25	1.25	1.40*
		dry or critical	1.25	1.40*	1.40*
	Average of mean daily for any calendar month	normal or above	0.88	0.88	0.88
		below normal	0.88	0.88	1.05*
		dry or critical	0.88	1.05*	1.05*
	Average of mean daily for any calendar year	normal or above	0.80	0.80	0.80
		below normal	0.80	0.80	0.88*
		dry or critical	0.80	0.88*	0.88*

* The EC value at any of these 4 stations may reach, but not exceed the starred value shown, but the average of the EC value at the 4 stations shall not exceed the adjacent unstarred value.

Criteria Adjustment: Whenever the recorded EC in Sacramento River at Green's Landing exceeds a running average 14-day or a mean monthly value of 0.240 millimhos, the maximum values for Terminous, Rio Vista, SAL and CCF may be increased by adding 1-1/2 times the amount by which the recorded EC at Green's Landing exceeds 0.240 millimhos.

B. Standards for Protection of Industrial and Municipal Uses

1. Station	EC--Millimhos	CI- Maximum mg/l	
CCCI	Mean tidal cycle value	1.32	250
	MTC value at least 65% of any year	0.67	100

2. Station	Type of Year	No. of Days	
Antioch**	(Average of mean daily Cl ⁻ for any 14 consecutive days shall not exceed 450 mg/l	normal	150
		below normal	
		dry	120
		critical	100

** These requirements will be terminated when existing industrial and municipal uses are fully supplied by an overland supply.

Definitions

The definitions of certain terms used in the State Delta Standards are as follows:

1. "Critical year" shall mean any year in which either of the following conditions exists:
 - a. The forecasted full natural inflow to Shasta Lake for the current water year (October 1 of the preceding calendar year through September 30 of the current calendar year) is equal to or less than 3,200,000 acre-feet; or
 - b. The total accumulated actual deficiencies below 4,000,000 acre-feet in the immediately prior water year or series of successive prior water years each of which had inflows of less than 4,000,000 acre-feet, together with the forecasted deficiency for the current water year, exceed 800,000 acre-feet.
2. "Dry year" shall mean any year other than a critical year in which the forecasted full natural inflow to Shasta Lake for the current water year is equal to or less than 4,000,000 acre-feet.
3. "Below normal year" shall mean any year in which the forecasted full natural inflow to Shasta Lake for the current water year is equal to or less than 4,500,000 acre-feet but more than 4,000,000 acre-feet.
4. "Full natural inflow to Shasta Lake" shall mean the computed inflow to Shasta Lake under present water development above Shasta Lake.

C. Standards for Protection of Fish and Wildlife

1. Standards for striped bass

- a. For five weeks after the water temperature at Antioch reaches 60°F the mean daily salinities in the San Joaquin River at the Antioch Water Works Intake and at Prisoners Point shall not exceed 1,500 micromhos and 550 micromhos, (approximately 1,000 and 350 mg/l TDS) respectively.
- b. Export pumping shall be minimized for a five (5) week period from April 25 through May 31 of each year during the peak of striped bass spawning. Permittees shall file with the State Water Resources Control Board by April 15 of each year the proposed schedule of pumping during the immediately following said 5-week period.
- c. A mean daily chloride concentration of 4,000 mg/l or less at Chipps Island shall be maintained for Neomysis.

2. Standards for Salmon

- a. There shall be a positive downstream flow in all principal channels of the Sacramento-San Joaquin Delta including the Sacramento below the proposed Peripheral Canal Intake and the San Joaquin River from the head of Old River to Antioch.
- b. There shall be a sufficient supply of water of San Joaquin origin, via the natural channel of the

San Joaquin River, to produce and maintain a pre-dominance of San Joaquin River water in the southern and eastern portion of the Delta from September 1 through November 30.

- c. Project facilities shall be designed, constructed, and operated to minimize interference with downstream migrant salmon and steelhead and reasonable measures undertaken to salvage those diverted by project works. For purposes of definition, a reasonable objective is to salvage 95% of the salmon and steelhead approaching salvage facilities.

3. Standards for Suisun Marsh

- a. There shall be available by February 1 of each year, water sufficient in quantity and quality so as to produce under reasonable management practices, between April 15 and June 1 of each year, an average salinity of 9,000 mg/l TDS in the first 12 inches of soil.
- b. The mean monthly salinity of the natural channels and the bay surrounding and adjacent to the marsh shall not exceed 18,000 mg/l TDS until a suitable alternative water supply is provided.

3. Upon request to and approval of the Board, variations in flow for experimental purposes for protection and enhancement of fish and wildlife may be allowed provided that they do not cause violation of Paragraphs A and B of the State Delta Standards.
4. Permittees shall independently or in cooperation with other agencies or individuals install and operate water quality monitoring stations at the locations shown on Plate 1 and identified in Table 2, monitor the parameters specified in Tables 3 and 4, with the frequency specified in Table 3, and shall submit monthly reports showing the results of such monitoring to the State Water Resources Control Board as soon as practicable following the month during which the monitoring was accomplished. Permittees should also provide the Board with monthly reports of any other Delta monitoring accomplished by them.
5. Permittees shall conduct quarterly synoptic monitoring by aerial surveillance and report the results to the State Water Resources Control Board as soon as practicable until further order of the Board.
6. The Delta monitoring program as set forth in Tables 2, 3 and 4 will be subject to continuing review. Any party to this proceeding may for good cause petition the Board, and the Board on its own motion after evaluation of the results of required monitoring may take action to adjust the

monitoring program. Such action may be taken only after notice to all parties and allowance of opportunity for objection.

TABLE 2

MONITORING STATIONS FOR DELTA WATER
QUALITY MANAGEMENT PROGRAM

1. Big Break off Jersey Island
2. Carquinez Strait at Martinez
3. Grizzly Bay
4. Hog Slough
5. Middle River at Victoria
6. Mokelumne River below Cosumnes River
7. Mokelumne River, South Fork near Terminous
8. Old River at Clifton Court Ferry
9. Old River at Middle River
10. Old River at Palm Tract
11. Rock Slough at Contra Costa Canal intake
12. Sacramento River upstream from confluence of American River
13. Sacramento River at Chipps Island
14. Sacramento River at Collinsville
15. Sacramento River at Emmaton
16. Sacramento River at Green's Landing
17. Sacramento River at Rio Vista
18. Sacramento River just below Sacramento
19. Sacramento River at Threemile Slough
20. San Joaquin River at Antioch
21. San Joaquin River at Blind Point
22. San Joaquin River at Jersey Point
23. San Joaquin River at Mossdale
24. San Joaquin River at Prisoners Point
25. San Joaquin River at San Andreas Landing
26. San Joaquin River below confluence of Stanislaus River
27. San Joaquin River below Stockton
28. San Joaquin River at Threemile Slough
29. San Pablo Bay off Hercules in dredged channel
30. Suisun Bay at Port Chicago
31. Suisun Slough at Joice Island
32. Tom Paine Slough

TABLE 3
WATER QUALITY PARAMETERS^{/1}

Parameter	Frequency				
	Contin- uous ^{/4}	Week- ly ^{/5}	Month- ly	Season- ally	Annu- ally
1. Benthos: biomass, number per unit area and volume, identification and enumeration to genus and species where possible, diversity				X	
2. BOD			X		
3. Chlorides ^{/2}	X	X			
4. Chlorophyll ^{/3}		X			
5. Coliform, fecal and MPN			X		
6. Electrical conductance	X	X			
7. Fish:					
a. Number and weight per unit area and species diversity along transects in the vicinity of stations as indicated in Table 4				Sept. Oct.	
b. Young of the year striped bass will be enumerated bimonthly during at least June and July along selected transects between Martinez, Rio Vista and Stockton to assist in determining the relationship of striped bass survival to Delta outflow					X
8. Heavy metals, pesticides, polychlorinated biphenyls ^{/6}					X
9. Light transmittance	X				
10. Nitrates		X			
11. Nitrogen-organic, ammonia & total		X			
12. Oxygen, dissolved	X	X			
13. pH	X	X			
14. Phosphates-inorganic and total		X			
15. Photosynthesis rate		X			
16. Phytoplankton: biomass, enumeration of genus and species, diversity		X			
17. Sediment profile and composition				X	
18. Solids, suspended		X			
19. Solids, total dissolved ^{/2}	X	X			
20. Temperature: air and water	X	X			
21. Turbidity	X	X			
22. Water velocity	X	X			
23. Zooplankton: biomass, enumeration of genus and species, diversity		X			

^{/1} Based on Table 10, Staff 505 and DWR 531.

^{/2} May be monitored by electrical conductance provided that suitable correlations are developed and verified seasonally by standard methods.

^{/3} This parameter may be used to monitor algae concentrations provided suitable correlations are developed and verified.

^{/4} Continuous monitoring preferred. However, if permittee installs a 6-channel monitor, any six of the parameters may be selected for continuous monitoring and the remaining parameters monitored weekly.

(continued)

(Footnotes continued)

- ∠5 During the months of December, January, February and March and also adjacent periods of time during which computed Delta out-flow exceeds 10,000 cfs, weekly frequency may be reduced to monthly.
- ∠6 Analyses to be performed on sediments, water column and selected biota during January, May and September.

TABLE 4
MONITORING REQUIREMENTS

<u>Station</u>	<u>All Parameters Except</u>
1	7
2	22
3	1, 2, 8, 9, 17 and 22
4	7, 8 and 22
5	7
6	1, 2, 7 and 17
7	7, 8 and 9
8	1, 2 and 17
9	1, 2, 7, 8, 9 and 17
10	8
11	1, 2, 7, 8, 9 and 17
12	7 and 22
13	
14	9
15	1, 2, 8 and 17
16	7 and 22
17	1, 2, 8, 9 and 17
18	7, 8, 9 and 22
19	4, 5, 9, 10, 11, 14, 15, 16 and 23
20	9
21	1, 2, 8, 9 and 17
22	1, 2, 8, 9 and 17
23	7, 8 and 9
24	1, 2, 7, 9 and 17
25	1, 2, 4, 5, 8, 9, 10, 11, 14, 15, 16, 17 and 23
26	1, 2, 7 and 17
27	9
28	7, 8 and 9
29	9
30	9 and 22
31	1, 2, 7, 8, 9, 17 and 22
32	1, 2, 7, 8, 9, and 17

7. Permittees shall conduct a continuing study regarding temperature, velocity, scour, dissolved oxygen, algal growth, turbidity and productivity in those reaches of the Sacramento and San Joaquin Rivers which are susceptible of control by providing inflow to the Delta. Permittees shall provide a progress report on said studies to the State Water Resources Control Board not later than August 1, 1973.
8. Should conditions arise which would warrant earlier consideration, or if it appears that the parties are not negotiating in good faith for necessary water service contracts the Delta water rights hearing will immediately be reopened. In any event, not later than July 1, 1978, the State Water Resources Control Board shall reopen the hearing for the purpose of receiving further evidence relating to salinity control, protection of fish and wildlife in the Delta, and coordination of terms and conditions of the permits involved in this decision with terms and conditions arising in subsequent decisions concerning the Delta.
9. The Board terminates the reservation of jurisdiction for:
 - (a) the purpose of formulating terms and conditions relative to salinity control in the Sacramento- San Joaquin Delta in connection with the permit issued pursuant to Application 10588 (Keswick) and the reservation of jurisdiction for the purpose of coordinating terms and conditions of the permit

issued pursuant to Application 10588 with other permits in furtherance of the Central Valley Project and State Water Project contained in Decision D 990.

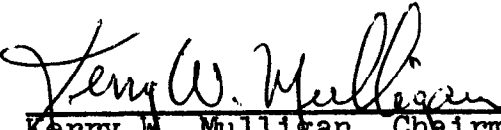
(b) the purpose of reviewing the Oroville-Thermalito power sales contract and making such revisions in the permit terms as may be appropriate in the permits issued or to be issued pursuant to Applications 5629, 5630, 14443, 14444, 14445A, 17512 and 17514A, contained in Decision 1291.


(c) for the purpose of conforming the season of diversion under permits issued or to be issued pursuant to Applications 18721, 18723, 21636 and 21637 to later findings on prior applications involving water in the Sacramento River Basin and Delta contained in Decision 1356.

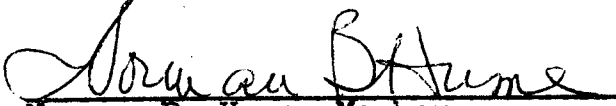
10. Conditions relating to salinity control in the Delta in any of the prior decisions involved herein are rescinded.


Adopted as the decision and order of the State Water Resources Control Board at a meeting duly called and held at Sacramento, California.

Dated: July 28, 1971


Kerry W. Mulligan, Chairman

 *
E. F. Dibble, Vice Chairman


Norman B. Hume, Member


Ronald B. Robie, Member


W. W. Adams, Member

* Subject to the attached exceptions and qualifications.

EXCEPTIONS AND QUALIFICATIONS
OF BOARD MEMBER E. F. DIBBLE
CONCERNING DECISION 1379

Use of Stored Water

At page 15 of the decision, it is stated "The Board concludes on the basis of legislative policy declarations and the Board's statutory powers to condition permits so as to best develop, conserve and utilize in the public interest the water sought to be appropriated, it may not only require the project operators to refrain from interfering with natural flow required for proper salinity control and for fish and wildlife in the Delta, but also provide a reasonable quantity of water that has been conserved by storage under their permits for these purposes. The Board does not address itself to the subject of repayment of costs of enhancement of fish and wildlife but, hopefully, the Legislature and Congress will give high priority to this matter".

I concur with the above, except that water conserved by project storage can and should be required by the Board to be released only to the extent that the permittee is compensated for the release of stored water required of him.

As discussed elsewhere in this decision, I strongly concur that the Board is obligated to protect the vested rights and other uses in the Delta, including protection of fish and wildlife, and this decision and order clearly does that.

Also as discussed elsewhere in this decision, water users should pay only for benefits, if any, which they receive, both in regard to quantity and quality in excess of their vested rights. It further states that the Board does not have the authority to determine what payments should be made for those benefits.

The benefits which the various uses in the Delta receive are from flows of water in the Delta which would not have been available if the state and federal projects were not operating. In other words, this refers to releases of stored water, rather than natural flows.

One of the conclusions of the decision is that the appropriate method for Delta users to assure themselves of continued availability of good quality water throughout the year is to enter into repayment contracts with the permittees for the benefits received which would not have been without the release of stored water from the projects.

The decision rightly points out that Water Code Section 11912 provides a procedure for payment of costs of fish and wildlife to the project, such as from the tidelands oil and gas revenues or from other funds.

The Board is providing an interim period during which the permittees will be required to maintain certain flows in the Delta, during which time it is expected that contracts will be negotiated between certain users and the permittees

for providing water through alternate arrangements, and for repayment of any benefits. The maintenance of flow being required includes the natural flows but also releases of stored water at certain periods and I believe this is appropriate during the interim period.

At such time as the Board reviews the progress of negotiations between Delta water users and the permittees for repayment contracts for payment for benefits received and for a substitute source, it should also review whether progress has been made regarding payment for releases of stored water for fish and wildlife purposes. Although the Board cannot require payment for such a purpose, it would be an indication of a lesser public interest than the Board had concluded if such payments were not authorized by an appropriate body, and the Board should take this into consideration when later modifying the standards.

Experimentation in the Delta

During the hearing, the Department of Fish and Game testified regarding tentative guidelines agreed upon in a memorandum of understanding with the DWR and USBR to be used as a guide to the permittees in project planning, construction and operation until such time as more definitive criteria can be developed; and it also recommended that these guidelines not be used as specific permit conditions, but that the

Board declare its intent to protect the resource (RT 923).

In my opinion, this decision clearly reflects the intention and determination of the Board to protect the Delta resources.

The Board indicates (at page 33) that the guidelines are being incorporated into the Order where sufficiently specific to provide for a meaningful standard. It then further states it is expected that the parties to the memorandum of understanding will operate within the framework of the guidelines. To this I concur.

However, in my opinion, provision C.2.a. and C.2.b. are improperly included in the Order, as both being not possible to implement by the permittees with water from the Sacramento River which is essentially the subject of these permits.


Provision C.2.a. (page 56) is in contradiction to the determination of the Board in Decision 1356 which rejected the protest of Mr. Holthouse. That decision concluded that the protestant, a riparian on the lower Mokelumne River, did not have a right to have water from the Sacramento River flow up the Mokelumne Channel or be backed up the channel by tidal action to him. This is somewhat similar to the situation we are now confronted with in the southeasterly portion of the Delta.

Provision C.2.b. (pages 56-57) would require water to be supplied from San Joaquin River origin to produce and

maintain a predominance of San Joaquin River water in the southern and eastern portion of the Delta from September 1 through November 30. The State Water Project does not have any water under its control which can be used to comply with this provision. The Bureau does have a project on the San Joaquin River, but it is operating under a permit issued in a previous decision of this Board's predecessor without reservation of jurisdiction having been made for this purpose. Such provision is therefore not properly included in this decision.

The problems within the southeasterly portion of the Delta are properly a matter of concern to the Board and studies should be encouraged by the Department of Fish and Game and the DWR and Bureau to find adequate solutions. It is clear that such a solution is contemplated by the Board in Decision 1356 in which jurisdiction was reserved looking toward such a solution.

With the above exceptions and qualifications, I concur in the decision and the Order.


E. F. Dibble
E. F. Dibble, Vice Chairman

CALIFORNIA

Resources Agency

STATE WATER RESOURCES CONTROL BOARD

1416 Ninth Street, Sacramento 95814
California

DIVISION OF WATER RIGHTS

1. COASTAL REGION
2. NORTHERN REGION
3. CENTRAL REGION

LOS ANGELES OFFICE
Room 9038, 107 S. Broadway
Los Angeles, California 90012



STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

In the Matter of Application 5625)
and 38 Other Applications to)
Appropriate from the Sacramento-)
San Joaquin Delta Water Supply)

SUPPLEMENT TO ORDER DENYING RECONSIDERATION OF,
AND CLARIFYING AND CORRECTING DECISION 1379

On September 16, 1971 the State Water Resources Control Board adopted "Order Denying Reconsideration of, and Clarifying and Correcting Decision 1379". On October 6, 1971 the Board received from The Metropolitan Water District of Southern California, a party to this proceeding, a request that the Board further clarify whether failure to question at this time matters over which the decision continues reserved jurisdiction will prejudice the ability of the parties to raise those issues during subsequent board proceedings.

It appearing that Decision 1379 and the order denying reconsideration of the decision should be clarified in accordance with the request of The Metropolitan Water District of Southern California, it is hereby ordered that the aforesaid "Order Denying Reconsideration of, and Clarifying and Correcting Decision 1379" be supplemented with the following statement:

Except as set forth in Item 9 of its order, Decision 1379 makes only interim determinations on the issues that were then before the Board. Therefore, the parties may raise, without prejudice and without the necessity of judicial appeal at this time, any question or right pertaining

to those determinations, in any appropriate board proceeding held pursuant to the jurisdiction reserved in that Decision or in any related judicial proceedings.

Adopted as the order of the State Water Resources Control Board at a meeting duly called and held at Sacramento, California.

Dated: October 13, 1971

KERRY W. MULLIGAN
Kerry W. Mulligan, Chairman

E. F. DIBBLE
E. F. Dibble, Vice Chairman

NORMAN B. HUME
Norman B. Hume, Member

W. W. ADAMS
W. W. Adams, Member

Board Member Robie did not participate in the vote.

1. The release of stored water for fish and wildlife enhancement required by section 2.C. of the State Delta Standards should be conditioned on the provision of funds by the California Legislature to cover the cost of the Department's share of providing such water. (DWR)

This subject was fully considered by the Board in Decision 1379 and the Board is satisfied that its decision in this respect should not be changed.

2. State Delta Standards 2.C.1.a. (striped bass spawning), 2.C.1.c. (Chippis Island, neomysis), and 2.C.3.b. (Suisun Marsh Channels) should be relaxed in dry and critical years in keeping with the standards for agricultural and municipal and industrial use in sections 2A and 2B. (DWR, MWD except standard 2.C.3.b.)

The Board recognizes that relaxation of these standards may appropriately be allowed during certain dry or critical years. However, the record indicates that there is not likely to be a problem in meeting these standards during the next seven years. In the event an emergency does arise, the decision already provides in term 8 of the order that the project operators may petition the Board for the necessary relief.

3. Term 3 of the order should be modified to allow the Board to permit testing of fish and wildlife standards in dry years below the 2 millimhos EC and 350 mg/l Cl⁻ provided for agricultural protection in section 2.A.1. of the State Delta Standards. (DWR)

Protection to agricultural uses afforded by section 2.A.1. should not be sacrificed to permit experimentation with fish and wildlife protection.

4. State Delta Standards 2.C.1.a. (striped bass spawning) and 2.C.1.c. (Chippis Island standards for neomysis) should require flows on the basis of a 14-day mean, rather than a daily mean. (DWR, MWD)

Reasons for using a 14-day average were adequately presented in the hearing. Use of 14-day mean daily basis is consistent with the other provisions of the Board's order. The Board orders that those portions of State Delta Standards 2.C.1.a. and 2.C.1.c. referring to mean daily salinities and mean daily chloride concentration be changed to a 14-day running average of the mean daily salinities or concentration.

5. The State Water Project cannot eliminate reverse flows in the San Joaquin River portion of the Delta (2.C.2.a.) or provide predominantly San Joaquin River water in the southeastern Delta in the months of September, October and November (2.C.2.b.) prior to the operation of the Peripheral Canal. (DWR, MWD)

The Board recognizes that the project operators cannot eliminate reverse flows in the San Joaquin portion of the Delta during the months of September, October and November without a cross-Delta transfer facility. Prior to the operation of such a facility it is implicit in the Board's order that the permittees shall maintain the standard to the best of their ability with the facilities available. The decision needs no modification in this respect.

6. The electrical conductivity requirement in the agricultural standard (2.A.1.) should be changed from 3 millimhos to 3.6 millimhos. (DWR, MWD)

The number "3" was taken from testimony and was not intended to reflect a direct correlation with 1000 mg/l Cl⁻. However, petitioners' argument has merit since there is inconsistency between the two figures.

The evidence shows that the proper correlation is 3.6 millimhos and the Board orders that this modification in section 2.A.1. of the State Delta Standards be made.

7. (a) Term 6 of the order in Decision 1379 should provide that adjustments in the monitoring program can be made by a task force composed of staff level representatives of the Board, the Department of Water Resources, and the Bureau of Reclamation. (DWR)

(b) A staff task force should be established to implement the technical aspects of the decision's monitoring program in cooperation with the California Departments of Water Resources and Fish and Game, the United States Bureaus of Reclamation and Sports Fisheries and other affected agencies, and to tailor the monitoring program so as to make the best use of available resources and funds. (MWD)

The Board recognizes that there will be changes in the monitoring program and therefore provided adequate flexibility in term 6 of its order. However, term 6 should be rewritten to clarify the Board's intent as follows:

"6. The Delta monitoring program as set forth in Tables 2, 3, and 4 will be subject to continuing review. Any

party to this proceeding may for good cause at any time, either before or after the program is initiated, petition the Board to adjust the program, or the Board on its own motion, after evaluation of the results of the required monitoring, may adjust the program. Such action may be taken only after notice to all parties and allowance of opportunity for objection."

8. The Board should re-examine the technical calculations as to the outflows required by the decision. (USBR, SCCFCWD)

The outflow figures provided by petitioners are greatly in excess of the outflow figures which can be derived from the evidence presented in the hearing. The figures provided by petitioners are based on information not in evidence and the Board has no means of verifying them. It appears that actual operating experience will be necessary in order to obtain reliable data. Any substantive information which will enable more accurate computations of Delta outflows and

impact upon the projects should be presented to the Board at a later hearing involving the Delta water rights.

9. (a) Do uses protected by the decision include all quantities of water to be delivered to Contra Costa County Water District by the U. S. Bureau of Reclamation pursuant to its water supply contract with said District? (CCCWD)

(b) Must the State Delta Standard for the intake of the Contra Costa Canal be maintained by the permittees for the period specified in Decision 1379 irrespective of the quantities diverted for municipal and industrial use on lands within the Sacramento-San Joaquin Delta pursuant to prior vested rights, valid appropriative rights, or repayment contracts with the U. S. Bureau of Reclamation or the Department of Water Resources, and irrespective of the time of said diversions and irrespective of the points of said diversions? (CCCWD)

Yes. These matters were fully considered in reaching Decision 1379. The decision carries implicit recognition of vested rights and provides that uses in the Delta shall have priority over export. Therefore, as uses in the Delta build up, it is clear that they will enjoy preference over export of water.

10. The Board did not set criteria at a sufficient number of stations to protect the central and southern Delta and the standards for protection of agricultural uses established by the Board are not as high as those recommended by the Delta Water Agency either in terms of chlorides or electrical conductance. (DWA)

The Board fully considered these matters in arriving at its decision. No changes are needed.

11. The decision does not make reference to the problem of water levels in the channels of the Delta. (DWA)

This is a subject which merits further study and the Board orders that study of water levels in the southerly and southeasterly channels of the Delta be included in term 7 of the Board's order.

12. The Board should reconsider Decision 1379 for the purpose of modifying the Delta standards to conform with the recommendations contained in the Department's joint Opening Brief and the joint Reply Brief. (DWR)

No cause for modifying the standards has been shown.

Other issues, including questions raised by the Bureau regarding the Board's jurisdiction, have been considered and are judged to have no merit except to the extent included in the errata section below.

The Board further orders the following corrections be entered in Decision 1379:

- Page 54 - State Delta Standard B.2. - change "Cl" to "TDS". Except as otherwise noted, computations as indicated below are based on this change.
- Page 24 - third line from bottom - change "2,383,000" to "2,893,000"
- Page 25 - Line 1 - change "4500" to "6200" and "1,350,000" to "1,860,000"
- Line 5 - change "2,383,000" to "2,893,000"
- Line 11 - change "4,112,000" to "4,622,000"
- Line 16 - change "2,383,000" to "2,893,000"
- Line 17 - change "4,112,000" to "4,622,000"
- Line 21 - change "4500" to "6200" and "900,000" to "1,240,000"
- Line 23 - change "105" to "230" and "378,000" to "828,000" (see correction for page 31)
- Line 24 - delete entire line
- Line 25 - change "1,906,000" to "2,376,000"
- Page 26 - Line 1 - change "477,000" to "517,000"
- 11 lines from bottom of page, change "30 c" to "30 e"
- 5 lines from bottom of page, delete "the exhibit" and insert "CCCWA 30 e and 30 f"

Page 27 - The figures in "State Delta Standards" column which are listed as "70" should be changed to "*"

Footnote /2, add at end of footnote, "in a normal year"

Page 31 - Last line of last full paragraph, add "according to plate 15 but in the neighborhood of 1800 cfs, based on testimony"

Page 42 - 4th line from the bottom, insert "the Department intends to" before the word "abide"

Page 43 - Line 10 - change "2.4" to "2.9"

Line 12 - change "1.1" to "1.6"

Line 13 - change "400,000" to "500,000"

Page 44 - Line 1 - change "almost doubling that outflow" to "multiplying the outflow by 2.2"

Line 2 - change "double" to "2.2 times" and change "100,000" to "about 120,000"

Line 4 - change "2.4" to "2.9"

Line 6 - change "100,000" to "120,000" and change "1" to "1.2"

Line 12 - change "1.9" to "2.4"

Line 16 - change "0.9" to "1.4"

Line 18 - change "0.8" to "1.4"

Line 25 - change "double" to "triple"

Page 45 - Line 1 - change "200,000" to "300,000"

Line 3 - change "\$2" to "\$3"

Adopted as the order of the State Water Resources
Control Board at a meeting duly called and held at Los Angeles,
California.

Dated: September 16, 1971

KERRY W. MULLIGAN
Kerry W. Mulligan, Chairman

ABSENT
E. F. Dibble, Vice Chairman

NORMAN B. HUME
Norman B. Hume, Member

RONALD B. ROBIE
Ronald B. Robie, Member

W. W. ADAMS
W. W. Adams, Member