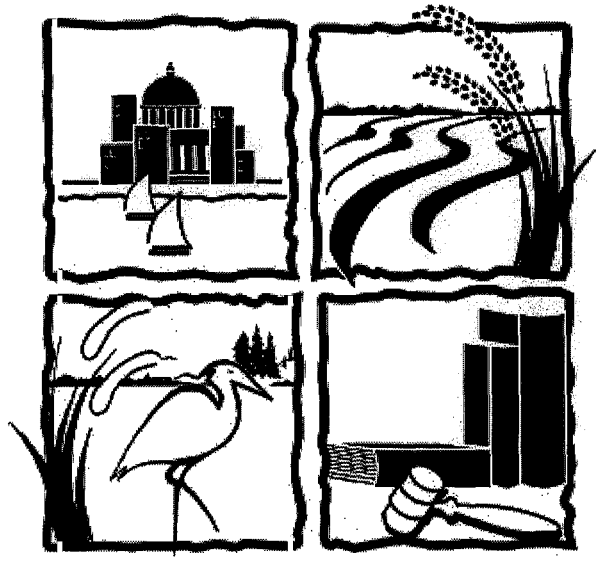

REVISED
Water Right Decision 1641

In the Matter of:

Implementation of Water Quality Objectives for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary;

A Petition to Change Points of Diversion of the Central Valley Project and the State Water Project in the Southern Delta; and

A Petition to Change Places of Use and Purposes of Use of the Central Valley Project

December 29, 1999

Revised in Accordance with Order WR 2000-02

March 15, 2000

STATE WATER RESOURCES CONTROL BOARD
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

is diverted and used within the constraints of California Constitution, Article X, section 2 (the reasonable use doctrine) and the public trust doctrine?

The hearing issues noticed for Phase 2B were:

a. Would the petitioned changes unreasonably affect any legal user of water or result in substantial injury to any legal user of water?

b. Would the petitioned changes unreasonably affect fish, wildlife, or other instream beneficial uses of water?

c. Are the purposes of the petitioned changes to preserve or enhance wetlands habitat, fish and wildlife resources, or recreation in, or on, the water?

d. If the SWRCB approves the petitioned changes, what terms and conditions will best develop, conserve and utilize, in the public interest, the water proposed to be used as part of the change?

e. Would the petitioned changes increase the amount of water each of the petitioners is entitled to use?

f. Will the petitioned changes otherwise meet the requirements of Division 2 of the Water Code?

g. Would efforts to facilitate the petitioned changes or mitigate the water supply effects of the petitioned changes result in changes in ground water pumping rates and quantities, implementation of water conservation measures, operation of reservoirs, and deliveries of water? If so, what changes would occur?

h. What are the projected amounts of water to be transferred and times of transfer by each of the petitioners during each potential year type during the proposed long-term change?

4.2 Parties

The parties in the Bay-Delta Water Rights Hearing are the water right holders whose exercise of their water rights could be modified as a result of the proceeding[6] and the other interested persons and entities who stated an intent to present evidence. Each party who participated was required to file a Notice of Intent to Appear in the hearing.

5.0 EFFECTS OF PROPOSED SOUTHERN DELTA CHANNEL BARRIERS

A common feature of several of the proposals before the SWRCB in the Bay-Delta Water Rights Hearing is the construction of one or more barriers in the southern Delta channels. A principal

[6] The water rights and water right holders whose exercise of their water rights could be modified as a result of the hearing are listed in Enclosure 2 of the Revised Notice of Public Hearing.

purpose of the head of Old River barrier is to reduce entrainment of emigrating juvenile San Joaquin fall-run chinook salmon in the southern Delta.[7] The purpose of other barriers is to improve water levels and circulation in the southern Delta channels. (DWR 37, pp. 4-6.) The decision to construct the permanent barriers will be made by the DWR and the USBR. The DWR and the USBR have prepared draft environmental documentation regarding the permanent barriers. (SWRCB 87.)

The alternatives in the DEIR to implement the southern Delta salinity objectives are (1) installation of the existing temporary barriers[8] or (2) installation and operation by the SWP and CVP of the permanent barriers proposed in the draft EIR for the Interim South Delta Program[9] (ISDP) as the preferred alternative.[10] Under the latter alternative, the permanent barriers would be operated to meet the water quality objectives at three stations in the southern Delta to the extent possible. The permanent barrier alternative in the SWRCB EIR does not include elements of the ISDP not necessary to support barrier operation, and the SWRCB alternative adds operation in September, which is not in the ISDP DEIR. (SWRCB 7.)

The permanent barriers will offer operational flexibility that the temporary barriers do not. The permanent barriers will include radial gates. The radial gates will be easily opened on the flood portion of the tide and closed on the ebb tide. Consequently, the operators will be able to respond quickly to real-time monitoring results regarding fish, water levels, and water quality. The permanent barriers will not require annual installation. Lastly, the permanent barriers will be able to withstand higher flows than the temporary barriers. (DWR 37.)

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[7] The head of Old River barrier keeps emigrating San Joaquin River salmon smolts in the mainstem of the river and eliminates the Old River migratory corridor. Smolts are more susceptible to entrainment at the export pumps if they are diverted into Old River. The head of Old River barrier is also used in the fall to improve flows in the San Joaquin River near Stockton in order to improve low dissolved oxygen conditions. In the southern Delta salmon survival is lower than in other parts of the Delta due to increased predation and vulnerability to entrainment.

[8] The existing temporary barriers would be installed regularly under Southern Delta Salinity Alternatives 1 (D-1485 flow requirements) and 2 (1995 Bay-Delta Plan objectives).

[9] The ISDP includes the construction and operation of permanent barriers in the southern Delta and several other components.

[10] The permanent barriers alternative is Southern Delta Salinity Alternative 3.

Although this decision does not order that the barriers be constructed, the benefits of the barriers are integral to the implementation of several of the actions approved in this decision. The benefits of the barriers could be achieved by other means, such as increased flows through the southern Delta and export restrictions, but these measures could result in an unreasonable use of water and a significant reduction in water supplies south and west of the Delta. In addition to having benefits, the barriers will have some adverse effects, which are discussed below.

In Phase 5 of the hearing, the SWRCB received evidence on the effects of the South Delta Temporary Barrier Project and the ISDP on delta smelt and its critical habitat, and on Sacramento splittail.

A USFWS witness testified that the ISDP and temporary barrier programs may have significant adverse impacts on delta smelt and its critical habitat, and on Sacramento splittail. (USDI 16; R.T. pp. 5461-5465.) Much of the testimony, however, addressed impacts from components of the ISDP program other than the permanent barriers and impacts resulting from the annual construction of the temporary barriers. The USFWS identified the following potential impacts of the temporary barriers: increased entrainment at agricultural diversions and at the CVP/SWP facilities in the southern Delta, loss of shallow water habitat, blockage or interference with up and downstream migration, changes in fish distribution, changes in hydrology in the central and southern Delta, increases in water velocities in some channels, shifts in the position of X2,[11] degradation of water quality, and slight changes in temperature and dissolved oxygen in the vicinity of the barriers. (USDI 16, p.2.) Based on the USFWS responses to cross-examination, however, some of the potential impacts identified above are not fully supported by the evidence. (R.T. pp. 5512-5674.) Nevertheless, the biological opinion issued by the USFWS for the temporary barriers project includes several measures to minimize the incidental take of delta smelt and Sacramento splittail. (USDI 16b, pp.18-21.) The DWR and the USBR will be responsible for developing appropriate measures to reduce or avoid impacts on these species from construction and operation of the permanent barriers.

[11] X2 is the location of the 2 parts per thousand salinity contour (isohaline), one meter off the bottom of the estuary, as measured in kilometers upstream from the Golden Gate Bridge. The abundance of several estuarine species has been correlated with X2. In the 1995 Bay-Delta Plan, an electrical conductivity value of 2.64 mmhos/cm is used to represent the X2 location. The SWRCB does not expect changes in the location of X2 as a result of the barriers.

The USFWS also presented testimony that construction of the permanent barriers could temporarily reduce physical habitat for spawning and rearing due to dredging and construction of additional levees. (USDI 16, pp.1-2; R.T. p. 5463.) Except for San Joaquin fall-run chinook salmon, construction and operation of the permanent barrier project would have potentially significant adverse impacts to fish, including Sacramento fall, late fall, winter, and spring-run chinook salmon, steelhead, striped bass, American shad, white and green sturgeon, delta smelt, longfin smelt, and Sacramento splittail. (USDI 16; R.T. pp. 5461-5465; SWRCB 87; SWRCB 1e, pp. [IX-14]-[IX-18] and [IX-41]-[IX-44].) Because the permanent barriers will be operable at higher flows than the temporary barriers, they will be operable over a longer period each year. This should improve protection to San Joaquin fall-run chinook salmon, but could extend the period of potential impacts to other species.

CCWD argues that the flow barriers will degrade water quality at CCWD's intakes and adversely impact the Los Vaqueros Project. The water quality at CCWD's intakes can be affected by the difference in water quality of the Sacramento and San Joaquin rivers, the hydrology of the Delta,[12] and the design and operation of the barriers. The permanent barriers would reduce the percentage of high quality Sacramento River water at CCWD's intakes and increase the percentage of lower quality San Joaquin River water. (R.T. pp. 3918-3925; CCWD 2.) CCWD estimates that typical summer operation of the three agricultural barriers in dry years would add 3 ppm of chloride at CCWD's Rock Slough intake and 9 ppm at the Los Vaqueros intake. (R.T. pp. 4230-4231; CCWD 2, p. 9.) The estimates are based on modeling simulations performed using the Fischer Delta Model for August 1988. (CCWD 2, pp. 6-7.) The expected reduction in water quality at Los Vaqueros may lead to a reduction in the water quality benefits of the project. CCWD argues that this is an injury that must be mitigated. CCWD proposes several measures it believes will mitigate for any reduction in water quality at its intakes, but provides no evidence regarding the appropriateness of the measures. This decision does not require that the measures be implemented since it does not require that the barriers be installed.

[12] Delta hydrology affecting CCWD's water quality is primarily controlled by the percentage of San Joaquin River flow at CCWD's pumps and SWP/CVP exports.

The DWR and USBR currently are modifying the ISDP into a new program for the southern Delta. Consultation is continuing among the DWR and USBR and the USFWS, NMFS, and DFG concerning the effects of the barriers and other components of the program on aquatic resources in the Delta. In the absence of a final EIR for the barriers, the SWRCB cannot order their installation. Also, due to the evolving program status and potential for significant adverse impacts, SWRCB action regarding the installation or operation of the temporary or permanent barriers in the southern Delta is not ripe at this time. The SWRCB does, however, encourage the parties developing the program to find ways to attain the benefits of the barriers while avoiding or mitigating the adverse effects. The benefits of the barriers appear to outweigh the potential impacts.

6.0 RESPONSIBILITY OF PARTIES PROPOSING THE SAN JOAQUIN RIVER AGREEMENT, AND ALTERNATIVES TO THE AGREEMENT

As provided above, the primary purpose of the Bay-Delta Water Rights Hearing is to determine the responsibilities of water right holders to implement the flow-dependent objectives in the 1995 Bay-Delta Plan. Ultimately, the process will result in water right changes that will supersede D-1485 and Order WR 98-09 as the regulatory mechanism for water rights implementation of the flow-dependent water quality objectives for the Bay-Delta Estuary.

As an alternative approach to deciding the responsibilities of the water right holders, the SWRCB gave the water right holders an opportunity to reach settlement agreements with other water right holders and interested parties proposing allocations of responsibility to meet the flow-dependent objectives in the 1995 Bay-Delta Plan. In the Revised Notice of Public Hearing, the SWRCB notified the parties that it would receive evidence during the hearing on any agreements presented to it, and would consider adopting water right terms and conditions consistent with the agreements.[13] The SJRA was presented to the SWRCB as a settlement agreement proposing an allocation of responsibility for meeting the April-May objective for pulse flows from the San Joaquin River. (SJRGA 2) The SJRA also provides for some water for the October objective for

[13] In the absence of an agreement, the SWRCB's approach to allocating responsibility would be to fashion an allocation that it believes mitigates the water right holders' impacts on salinity and flow related impacts on the Bay-Delta Estuary. Such an approach would include consideration of the factors discussed in California Constitution, Article X, section 2, the public trust doctrine, and applicable statutes, in addition to providing a reasonable method of calculating the responsibilities of the water right holders.

Public Law 86-488 required assurance that the San Luis Drain would be constructed. (SJREC 4c.)[52] In 1963 and 1967, the SJREC filed suit against the USBR. The USBR assured the judge that a drain would be constructed. (SJREC 4e.) Nevertheless, the USBR continues to delay making progress on an out-of-valley drain. (R.T. pp. 6452-6467.) A USBR witness testified that USBR has no specific plans to improve quality of the river upstream of Vernalis. (R.T. pp. 6466, 6554.) The USBR has been directed by the court to initiate activities to resolve the drainage problems in the San Joaquin Valley. It should proceed promptly to initiate such activities and file any necessary applications.

The USBR's actions have caused reduced water quality of the San Joaquin River at Vernalis. Therefore, this order amends the CVP permits under which the USBR delivers water to the San Joaquin basin to require that the USBR meet the 1995 Bay-Delta Plan salinity objectives at Vernalis. The USBR has wide latitude in developing a program to achieve this result. The USBR could consider sources of dilution water other than New Melones Reservoir and other means of reducing the salinity concentration in the southern Delta. This decision conforms Condition 5 of D-1422 to the southern Delta salinity objectives in the 1995 Bay-Delta Plan and to the current Basin Plan.

If, in five years, modeling and planning studies indicate that salinity objectives will not be consistently achieved, the USBR shall report to the Chief of the Division of Water Rights all activities that were taken in attempting to meet the objectives, including out-of-valley alternatives.

10.3 Responsibility for Southern Delta Salinity Objectives Downstream of Vernalis

10.3.1 Causes of Salinity Concentrations Downstream of Vernalis

Water quality in the southern Delta downstream of Vernalis is influenced by San Joaquin River inflow; tidal action; diversions of water by the SWP, CVP, and local water users; agricultural return flows; and channel capacity. (R.T. p. 3668; DWR 37, p. 8.) The salinity objectives for the

[52] In *Firebaugh Canal Co., et al.* v. *United States of America, et al.*, United States Court of Appeals, Ninth Circuit, Nos. 95-15300 and 95-16641 (opinion filed February 4, 2000), the federal Court of Appeals construed this statute in light of subsequent legislation, holding that the USBR still has an obligation under the San Luis Act to provide drainage service, but has discretion as to how it satisfies this requirement.

interior southern Delta can by implemented by providing dilution flows, controlling in-Delta discharges of salts, or by using measures that affect circulation in the Delta.

Diversions in the Delta can cause hydrodynamic changes that affect water quality. During periods of high exports and peak irrigation, higher quality water is drawn into the southern Delta from the Delta cross-channel, the Mokelumne River, and Georgiana Slough. These waters mix with and improve the quality of San Joaquin flow. (DWR 37, p. 8.) However, export pumping by the SWP and the CVP and in-Delta diversions in the southern Delta also cause null zones, areas with little or no circulation. These zones have little assimilative capacity for locally discharged salts. The lack of circulation prevents better quality water that is otherwise available from the main channels from freshening the water in these channels. (R.T. pp. 3816-3818; DWR 37, p. 9; SDWA 48; SDWA 34A; SDWA 27; SDWA39; SDWA 51.)

Even when salinity objectives are met at Vernalis, the interior Delta objectives are sometimes exceeded. (R.T. p. 3677; SWRCB 1e, Figures [IX-19]-[IX-26]; SWRCB 76.) Exceedance of the objectives in the interior Delta is in part due to water quality impacts within the Delta from in-Delta irrigation activities. (R.T. p. 7794.) SDWA argues that it does not add to the salt load; however, agricultural activity does increase the salinity of the water in the Delta channels. (R.T. pp. 3836-3847.) Irrigators within the Delta could implement water management measures as a means of controlling salt impacts within the Delta channels. (RT pp. 7869, 7870.)

10.3.2 Actions to Meet Interior Delta Salinity Objectives

Since 1985, DWR has been working to improve conditions in the southern Delta. In 1987, DWR and SDWA identified flow barriers that could be constructed in the southern Delta to enhance water levels and circulation. The DWR, the USBR and the SDWA have agreed that the salinity problems in the southern Delta can be mitigated using the barrier program. (R.T. pp. 3670, 6339; DWR 37, Attachment 1.) The barrier program is discussed in Part 5 of this decision. Since 1991, DWR has been installing and operating temporary barriers to assist SDWA diversions. Permanent barriers are proposed as components of the preferred alternative for the ISDP. (DWR 37.) Although the three agencies have reached an agreement regarding the barriers, the agreement has not been signed. (R.T. p. 3758.)

DWR, SDWA, Stockton, and the USDI presented evidence regarding the barriers. The main benefit of the barriers is improved water levels in the southern Delta. (SWRCB 87, p. S1.) The barriers also benefit water quality by improving circulation in the southern Delta. (R.T. p. 7525.) The barriers generally improve water quality in the southern Delta because salts otherwise trapped in the channels are transported out of the area due to the enhanced circulation. (DWR 37, pp. 12-13.) The barriers reduce the amount of salt imported by way of the Delta-Mendota Canal, which should result in some long-term improvement in the quality of the San Joaquin River. (R.T. p. 3905.) The improved quality of water delivered through the Delta-Mendota Canal should result in improvements to the salinity of drainage water that returns to the river. (R.T. p. 3731.)

The construction of permanent barriers alone is not expected to result in attainment of the water quality objectives. (R.T. pp. 3672, 3710, 3787-3788; DWR 37, p. 15; SWRCB 1e, pp. [IX 30]-[IX-41].) The objectives can be met consistently only by providing more dilution or by treatment. (R.T. p. 3737.) The modeling studies indicate that even when the barriers do not result in attainment of the standards, water quality generally improves as a result of the permanent barriers. The exception is at Brandt Bridge where water quality may worsen slightly at times due to barrier operation. (R.T. p. 3677; DWR 37, p. 18; SWRCB 1e, Figures [IX-19]-[IX-26].) Barriers may result in slightly worse water quality in the mainstem of the San Joaquin River in the Delta, but the more saline water is quickly diluted. (DWR 37.) Modeling shows that construction and operation of the temporary barriers should achieve water quality of 1.0 mmhos/cm at the interior stations under most hydrologic conditions.

The DWR and the USBR are partially responsible for salinity problems in the southern Delta because of hydrologic changes that are caused by export pumping. Therefore, this order amends the export permits of the DWR and of the USBR to require the projects to take actions that will achieve the benefits of the permanent barriers in the southern Delta to help meet the 1995 Bay-Delta Plan's interior Delta salinity objectives by April 1, 2005. Until then, the DWR and the USBR will be required to meet a salinity requirement of 1.0 mmhos/cm. If, after actions are taken to achieve the benefits of barriers, it is determined that it is not feasible to fully implement the objectives, the SWRCB will consider revising the interior Delta salinity objectives when it reviews the 1995 Bay-Delta Plan. The USBR and the DWR will be responsible to take any actions required by CEQA, NEPA, and the federal and State ESA prior to constructing the barriers.

10.4 Summary

The 1995 Bay-Delta Plan includes salinity objectives at Vernalis on the San Joaquin River and at three locations in the interior of the southern Delta. Currently, the USBR is the only water right holder with responsibility for meeting salinity objectives at Vernalis under its water rights. Prior to this decision, no water right holder has had responsibility under a water right permit for meeting the three interior southern Delta salinity objectives.

Salinity problems in the southern Delta result from low flows in the San Joaquin River and discharges of saline drainage water to the river. The actions of the CVP are the principal causes of the salinity concentrations exceeding the objectives at Vernalis. Downstream of Vernalis, salinity is influenced by San Joaquin River inflow, tidal action, diversions of water by the SWP, CVP, and local water users, agricultural return flows, and channel capacity. Measures that affect circulation in the Delta, such as barriers, can help improve the salinity concentrations.

This decision requires the USBR to meet the Vernalis objective using any measures available to it. This decision also requires the DWR and the USBR to meet a salinity requirement of 1.0 mmhos/cm at the interior southern Delta stations. Although the salinity requirement is applicable to all SWP and CVP water rights, it should not be construed as requiring that the SWP or the CVP must use water from a particular source if it has another way to meet the requirement. For example, including the salinity control requirement in the Friant permits should not be construed as directing the USBR to use Friant water.

11.0 THE PETITION TO AUTHORIZE JOINT POINTS OF DIVERSION BY THE CVP AND THE SWP

11.1 Background

On February 28, 1995, the DWR and the USBR filed a petition requesting, among other things, that their water right permits authorizing diversion or rediversion of water in the southern Delta[53] be amended to add the SWP's Harvey O. Banks Pumping Plant as a point of diversion and

[53] The permits subject to the petition are 16478, 16479, 16481, and 16482 (Applications 5630, 14443, 14445A, and 17512) of the DWR and 12721, 11967, 12722, 12723, 12727, 11315, 11316, 11968, 11969, 11970, 12860, 11971, 11972, 11973, and 12364 (Applications 5626, 5628, 9363, 9364, 9368, 13370, 13371, 15374, 15375, 15376, 15764, 16767, 16768, 17374, and 17376) of the USBR.

considerations of the greater public interest requires this action. Implementing the objectives is in the greater public interest. The environmental, economic, and social benefits of implementing the 1995 Bay-Delta Plan outweigh the potential adverse environmental effects that are not avoided or fully mitigated.

ORDER

IT IS HEREBY ORDERED that License 1986 (Application 23) and Permits 11315, 11316, 11885, 11886, 11887, 11967, 11968, 11969, 11970, 11971, 11972, 11973, 12364, 12721, 12722, 12723, 12725, 12726, 12727, 12860, 15735, 16597, 16600 and 20245 (Applications 13370, 13371, 234, 1465, 5638, 5628, 15374, 15375, 15376, 16767, 16768, 17374, 17376, 5626, 9363, 9364, 9366, 9367, 9368, 15764, 22316, 14858A, 19304, and 14858B, respectively) of the U.S. Bureau of Reclamation (USBR) and Permits 16478, 16479, 16481, 16482, and 16483 (Applications 5630, 14443, 14445A, 17512, and 17514A, respectively) of the California Department of Water Resources (DWR) shall be amended by adding the following terms and conditions.* These Permits (CVP and SWP licenses and permits) are hereby ordered replaced with new updated and amended permits that will contain the terms and conditions specified herein and all current terms and conditions set forth in the original permits and subsequent decisions and orders.

1. Licensee/Permittee shall ensure that the water quality objectives for municipal and industrial beneficial uses and agricultural beneficial uses for the western Delta, interior Delta and export area as set forth in Tables 1 and 2, attached, are met on an interim basis, not later than November 30, 2001, until the Board adopts a further decision in the Bay-Delta Water Rights Hearing assigning responsibility for meeting these objectives.[77]

2. Licensee/Permittee shall ensure that the water quality objectives for Delta outflow and for Sacramento River flow at Rio Vista for fish and wildlife beneficial uses as set forth in Table 3, attached, are met on an interim basis, not later than November 30, 2001, until the Board adopts a further decision in the Bay-Delta Water Rights Hearing assigning responsibility for meeting these objectives.[78]

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* Table 1 on page 4 of this decision lists the projects associated with these water rights.

[77] This condition does not mandate that the Licensee/Permittee use water under this license/permit if it uses other sources of water or other means to meet this condition.

[78] This condition does not mandate that the Licensee/Permittee use water under this license/permit if it uses other sources of water or other means to meet this condition.

3. Licensee/Permittee shall implement the water quality compliance and baseline monitoring plan set forth in Table 5 on an interim basis, including construction, maintenance and operation of all necessary devices, until the Board adopts a further decision in the Bay-Delta Water Rights Hearing assigning responsibility for meeting the requirements in Table 5.

4. Licensee/Permittee shall:

   a. In consultation with the U.S. Fish and Wildlife Service (USFWS), Department of Fish and Game (DFG), San Joaquin River Group Authority (SJRGA), City and County of San Francisco (CCSF), and CVP/SWP Export Interests, prepare a fishery monitoring plan for the Vernalis Adaptive Management Plan (VAMP) experiment consistent with the SJRA and with the findings in this decision. The plan shall specify study objectives, sampling locations, methodology, and sampling periods. The monitoring plan shall be submitted to the Executive Director of the SWRCB for approval within 60 days after the date of this order.

   b. Conduct the fishery monitoring studies according to the monitoring plan for the duration of the VAMP/SJRA study period, and submit results to the Executive Director of the SWRCB on an annual basis. A monitoring report summarizing the study methodology and results from each year's experiment shall be submitted to the Executive Director of the SWRCB by December 31 of each year. A final report shall be submitted to the Executive Director of the SWRCB no later than eight months following completion of the VAMP experiment.

5. The continuing authority condition shall be updated to read as follows:

   Pursuant to California Water Code Sections 100 and 275 and the common law public trust doctrine, all rights and privileges under this permit, including method of diversion, method of use, and quantity of water diverted, are subject to the continuing authority of the Board in accordance with law and in the interest of the public welfare to protect public trust uses and to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of said water.

   The continuing authority of the Board may be exercised by imposing specific requirements over and above those contained in this permit with a view to eliminating waste of water and to meeting the reasonable water requirements of permittee/licensee without unreasonable draft on the source. Permittee may be required to implement a water conservation plan, features of which may include but not necessarily be limited to: (1) reusing or reclaiming the water allocated; (2) using water reclaimed by another entity instead of all or part of the water allocated; (3) restricting diversions so as to eliminate agricultural tailwater or to reduce return flow; (4) suppressing evaporation losses from water surfaces; (5) controlling phreatophytic growth; and (6) installing, maintaining, and operating efficient water measuring devices to assure compliance with the quantity limitations of this permit and to determine accurately water use as against reasonable water requirement for the authorized project. No action will be taken pursuant to this paragraph unless the Board determines, after notice to affected parties and opportunity for hearing, that

such specific requirements are physically and financially feasible and are appropriate to the particular situation.

The continuing authority of the Board also may be exercised by imposing further limitations on the diversion and use of water by the permittee in order to protect public trust uses. No action will be taken pursuant to this paragraph unless the Board determines, after notice to affected parties and opportunity for hearing, that such action is consistent with California Constitution Article X, Section 2; is consistent with the public interest; and is necessary to preserve or restore the uses protected by the public trust.

(0000012)

6. The water quality objectives condition shall be updated to read as follows:

The quantity of water diverted under this permit is subject to modification by the Board if, after notice to the permittee/licensee and an opportunity for hearing, the Board finds that such modification is necessary to meet water quality objectives in water quality control plans which have been or hereafter may be established or modified pursuant to Division 7 of the Water Code. No action will be taken pursuant to this paragraph unless the Board finds that: (1) adequate waste discharge requirements have been prescribed and are in effect with respect to all waste discharges which have any substantial effect upon water quality in the area involved, and (2) the water quality objectives cannot be achieved solely through the control of waste discharges.

(0000013)

7. Said permits/licenses are amended to include the following Endangered Species condition:

This permit does not authorize any act which results in the taking of a threatened or endangered species or any act which is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). If a "take" will result from any act authorized under this water right, the permittee/licensee shall obtain authorization for an incidental take prior to construction or operation of the project. Permittee/Licensee shall be responsible for meeting all requirements of the applicable Endangered Species Act for the project authorized under this permit/license.

8. SWRCB Decision 1485 (D-1485) ordered that certain terms and conditions in this license/permit be added or amended. Except as amended or deleted herein, the terms and conditions set forth in D-1485 remain in this license/permit. The terms and conditions in D-1485 numbered 2, 3, 4, 5, and 8 are rescinded.

9. Condition 6 of D-1485 is amended to read:

Upon request to and approval of the Executive Director of the SWRCB, variations in flow for experimental purposes for protection and enhancement of fish and wildlife may be allowed; provided that such variations in flow shall not cause violations of municipal, industrial and agricultural objectives in Tables 1 and 2.

10. Condition 7 of D-1485 is amended to read:

For the protection of Suisun Marsh, Licensee/Permittee shall report to the Board by September 30 of each year on progress toward implementation of mitigation facilities and on water quality conditions in the Suisun Marsh during the previous salinity control season.

11. To ensure compliance with the water quality objectives, to identify meaningful changes in any significant water quality parameters potentially related to operation of the SWP or the CVP, and to reveal trends in ecological changes potentially related to project operations, Licensee/Permittee shall, independently or in cooperation with other agencies or individuals:

a. Perform the Water Quality and Baseline Monitoring program described in Table 5 and in Figure 4 of this Order.

b. Conduct ongoing and future monitoring surveys as recommended by the DFG, the USFWS or the National Marine Fisheries Service (NMFS), and acceptable to the Executive Director of the SWRCB concerning food chain relationships, fisheries impacts, or impacts to brackish tidal marshes, as they are affected by operations of the SWP or the CVP in the Delta and Suisun Marsh.

c. Licensee/Permittee shall make available to the Board and others interested parties the results of the above monitoring as soon as practicable. Timely posting of this information on the Internet will satisfy this requirement. Licensee/Permittee shall submit to the Executive Director of the SWRCB, by December 1 of each year, annual reports summarizing the previous calendar year's findings and detailing future study plans.

d. If Licensee/Permittee anticipates violations of the water quality objectives or if such violations have occurred, Licensee/Permittee shall provide immediate written notification to the Executive Director of the SWRCB.

e. Licensee/Permittee shall evaluate the Water Quality Compliance and Baseline Monitoring once every three years to ensure that the goals of the monitoring program are attained. Licensee/Permittee shall report to the Executive Director of the SWRCB the conclusions based upon this evaluation. Licensee/Permittee may propose appropriate modifications of the program for concurrence of the Executive Director of the SWRCB.

IT IS FURTHER ORDERED that Permits 11315, 11316, 11967, 11968, 11969, 11970, 11971, 11972, 11973, 12364, 12721, 12722, 12723, 12727, and 12860 (Applications 13370, 13371, 5628, 15374, 15375, 15376, 16767, 16768, 17374, 17376, 5626, 9363, 9364, 9368, and 15764, respectively)* of the USBR (CVP except New Melones and Friant) shall be amended by adding the following terms and conditions:

IT IS FURTHER ORDERED that Permits 16478, 16479, 16481, and 16482 (Applications 5630, 14443, 14445A, and 17512, respectively) * of the DWR (SWP permits) are amended by adding the following terms and conditions:

1. In addition to all other points of diversion and rediversion authorized by this permit, Clifton Court Forebay, located within the NW ¼ of the SE ¼ of Projected Section 20, T1S, R4E, MDB&M is added as a point of diversion and point of rediversion.

2. In addition to all other points of diversion and rediversion authorized by this permit, Permittee may divert or redivert water up to 4,600 cfs at the Tracy Pumping Plant, located within the SW ¼ of the SW ¼ of Projected Section 31, T1S, R4E, MDB&M subject to the permission of the USBR. This authorization has three stages corresponding to export rates and limitations on the purposes for which Permittee is authorized to divert or redivert water at the Tracy Pumping Plant.

   a. All stages of this authorization are subject to the following terms and conditions:

      (1) Diversion by the DWR at Tracy Pumping Plant is not authorized when the Delta is in excess conditions[83] and such diversion causes the location of X2[84] to shift upstream so far that:

         (a) It is east of Chipps Island (75 river kilometers upstream of the Golden Gate Bridge) during the months of February through May, or

         (b) It is east of Collinsville (81 river kilometers upstream of the Golden Gate Bridge) during the months of January, June, July, and August, or

         (c) During December it is east of Collinsville and Delta smelt are present at CCWD's point of diversion under Permits 20749 and 20750 (Application 20245).

      (2) Any diversion by Permittee at the Tracy Pumping Plant that causes the Delta to change from excess to balanced conditions[85] shall be junior in priority to Permits 20749 and 20750 of the Contra Costa Water District.

      (3) Permittee may divert or redivert water at Tracy Pumping Plant only if a response plan to ensure that water levels in the southern Delta will not be

[83] Excess conditions exist when upstream reservoir releases plus unregulated natural flow exceed Sacramento Valley inbasin uses, plus exports.

[84] For the purposes of this term, X2 is the most downstream location of either the maximum daily average or the 14-day running average of the 2.64 mmhos/cm isohaline.

[85] Balanced conditions exist when it is agreed by the SWP and the CVP that releases from upstream reservoirs plus unregulated flow approximately equal the water supply needed to meet Sacramento Valley inbasin uses, plus exports.

lowered to the injury of water users in the southern Delta has been approved by the Executive Director of the SWRCB. Permittee shall prepare the response plan with input from the designated representative of the SDWA.

(4) All other provisions of the above permits are met.

(5) Permittee shall develop a response plan to ensure that the water quality in the southern and central Delta will not be significantly degraded through operations of the Joint Points of Diversion to the injury of water users in the southern and central Delta. Such a plan shall be prepared with input from the designated representative of the Contra Costa Water District and approved by the Chief, Division of Water Rights.

b. In Stage 1, Permittee is authorized to divert or redivert water at the Tracy Pumping Plant to recover export reductions taken to benefit fish, if exports by the Permittee at the Banks Pumping Plant are reduced below the applicable export limits set forth in Table 3, attached.

(1) The authorization to divert or redivert water at the Tracy Pumping Plant under Stage 1 is subject to the following provisions:

(a) Recovery of export reductions shall not cause an increase in annual exports above that which would have been exported without use of the Tracy Pumping Plant.

(b) Recovery of export reductions using the Tracy Pumping Plant shall occur within twelve months of the time the exports are reduced.

(c) Before Permittee diverts or rediverts water at Tracy Pumping Plant, Permittee shall consult with DFG, USFWS, and NMFS. Consultation with the CALFED Operations Group established under the Framework Agreement will satisfy this requirement. Permittee shall submit agreements on coordinated operations under this authorization to the Executive Director of the SWRCB for approval and shall also submit complete documentation showing that no additional water will be exported because of the use of the Tracy Pumping Plant, including the method used to make this determination. Authority is delegated to the Executive Director of the SWRCB to act on the proposal if the conditions set forth above are met.

(2) The Executive Director of the SWRCB is authorized to grant short-term exemptions to the export limits in Stage 1, for purposes as the Executive Director of the SWRCB deems appropriate, provided that such exemptions will not have a significant adverse effect on the environment and will not cause injury to other legal users of water.

c. In Stage 2, Permittee will be authorized to divert or redivert water at the Tracy Pumping Plant for any purpose authorized under the above permits, subject to the following.

(1) Permittee shall develop in consultation with the USBR, the DFG, the USFWS and the NMFS an operations plan to protect fish and wildlife and other legal users of water. The operations plan shall be submitted to the Executive Director of the SWRCB for approval at least 30 days prior to use by the DWR of Tracy Pumping Plant. The plan shall include, but not be limited to, the following elements:

(a) The plan shall include specific measures to avoid or minimize the effects of the export operations at Tracy Pumping Plant on entrainment and through-Delta survival of chinook salmon. The plan shall include monitoring of environmental conditions and fish abundance at upstream locations, as appropriate, to determine vulnerability of chinook salmon to entrainment at Tracy Pumping Plant. The plan shall include monitoring of entrainment at Tracy Pumping Plant. The plan shall include the frequency and method of data collection.

(b) The plan shall include minimum survival levels of protection for chinook salmon. The minimum survival levels shall be used to trigger consultation with fishery agencies regarding data evaluation and decision making to minimize or avoid the impact of pumping at Tracy Pumping Plant. The plan shall identify the consultation process that will be used including identifying the parties who will consult, how they will be notified, and a time schedule for decision making.

(c) The plan shall include specific measures at Oroville Reservoir, to avoid or minimize any adverse effects to chinook salmon when Permittee is using Tracy Pumping Plant, if upstream or Delta monitoring indicates that such impacts are occurring. Measures may include the reoperation of the Delta Cross Channel Gates, increasing Delta outflow, or reducing exports at Tracy Pumping Plant.

(d) The plan shall include operating criteria to ensure that use of the JPOD does not significantly impact aquatic resources in upstream areas due to changes in flow, water temperature, and reservoir water levels.

(e) The plan shall include specific measures to protect other legal users of water.

(f) The Plan shall include specific measures to mitigate significant effects on recreation and cultural resources at affected reservoirs.

(2) The Executive Director of the SWRCB is authorized to grant short-term exemptions to the export limits in Stage 2, for purposes as the Executive Director of the SWRCB deems appropriate, provided that such exemptions will not have a significant adverse effect on the environment and will not cause injury to other legal users of water.

d. In Stage 3, Permittee will be authorized to divert or redivert water at the Tracy Pumping Plant for any authorized purpose under the above permits, up to the physical capacity of the Tracy Pumping Plant, subject to completion of the following measures.

(1) Permittee shall prepare an operations plan acceptable to the Executive Director of the SWRCB that will protect aquatic resources and their habitat and will protect other legal users of water. The operations plan shall include the same elements required for Stage 2. Permittee shall prepare the operations plan in consultation with the USBR, USFWS, NMFS, and DFG.

(2) Permittee shall protect water levels in the southern Delta through measures to maintain water levels at elevations adequate for diversion of water for agricultural uses. This requirement can be satisfied through construction and operation of three permanent tidal barriers in the southern Delta or through other measures that protect water quality in the southern and central Delta and protect water levels at elevations adequate to maintain agricultural diversions. If construction and operation of tidal barriers is used as a basis for Stage 3 operation, such construction and operation shall be subject to certification of a project-level Environmental Impact Report by Permittee that discloses the impacts of the tidal barriers.

3. Licensee/Permittee shall ensure that the San Joaquin River salinity; eastern Suisun Marsh salinity; western Suisun Marsh salinity at Chadbourne Slough, at Sunrise Duck Club (station S-21), and Suisun Slough near Volanti Slough (station S-42); and export limits for fish and wildlife beneficial uses as set forth in Table 3, attached, are met.

If any Suisun Marsh salinity objectives at the above locations are exceeded at a time when the Suisun Marsh Salinity Control Gates are being operated to the maximum extent, then such exceedances shall not be considered violations of this permit/license. A detailed operations report acceptable to the Executive Director of the SWRCB regarding Suisun Marsh Salinity Control Gate operation and a certification from the parties that the gates were operated to the extent possible must be submitted to receive the benefit of this exception.

4. Permittee is jointly responsible with the USBR for providing Delta flows that otherwise might be allocated to Mokelumne River water right holders.

5. Permittee shall provide water to meet any responsibility of water right holders within the North Delta Water Agency to provide flows to help meet the 1995 Bay-Delta Water Quality Control Plan objectives as long as the 1981 contract between North Delta Water Agency and the DWR is in effect.

6. This permit is conditioned upon implementation of the water quality objectives for agricultural beneficial uses in the southern Delta, as specified in Table 2, attached, at the following locations in the southern Delta:

   a. San Joaquin River at Brandt Bridge (Interagency Station No. C-6);

   b. Old River near Middle River (Interagency Station No. C-8; and

   c. Old River at Tracy Road Bridge (Interagency Station No. P-12).

   Permittee has latitude in its method for implementing the water quality objectives at Stations C-6, C-8, and P-12, above; however, a barrier program in the southern Delta may help to ensure that the objectives are met at these locations. If Permittee exceeds the objectives at stations C-6, C-8, or P-12, Permittee shall prepare a report for the Executive Director. The Executive Director will evaluate the report and make a recommendation to the SWRCB as to whether enforcement action is appropriate or the noncompliance is the result of actions beyond the control of the Permittee.

IT IS FURTHER ORDERED that Permit 12860 (Application 15764) * of the USBR shall be amended by deleting Permit Term 2, which corresponds to Term 2 in SWRCB Decision 1020.

IT IS FURTHER ORDERED that License 1986 (Application 23) and Permits 11315, 11316, 11885, 11886, 11887, 11967, 11968, 11969, 11970, 11971, 11972, 11973, 12364, 12721, 12722, 12723, 12725, 12726, 12727, 12860, and 15735 (Applications 13370, 13371, 234, 1465, 5638, 5628, 15374, 15375, 15376, 16767, 16768, 17374, 17376, 5626, 9363, 9364, 9366, 9367, 9368, 15764, and 22316, respectively) of the USBR (CVP except New Melones) are amended by adding the following permit condition:

1. This permit is conditioned upon implementation[86] of the water quality objectives for agricultural beneficial uses in the southern Delta, as specified in Table 2, attached, at the following locations in the southern Delta:

   a. San Joaquin River at Airport Way Bridge, Vernalis (Interagency Station No. C-10);

   b. San Joaquin River at Brandt Bridge (Interagency Station No. C-6);

   c. Old River near Middle River (Interagency Station No. C-8); and

[86] This condition does not mandate that the Licensee/Permittee use water under this license/permit to meet this condition if it uses other sources of water or other means to meet this condition.

d. Old River at Tracy Road Bridge (Interagency Station No. P-12).

Licensee/Permittee has latitude in its method for implementing the water quality objectives at Stations C-6, C-8, and P-12, above; however, a barrier program in the southern Delta may help to ensure that the objectives are met at these locations. If Licensee/Permittee exceeds the objectives at stations C-6, C-8, or P-12, Licensee/Permittee shall prepare a report for the Executive Director. The Executive Director will evaluate the report and make a recommendation to the SWRCB as to whether enforcement action is appropriate or the noncompliance is the result of actions beyond the control of the Licensee/Permittee.

Licensee/Permittee shall, at all times, meet the Vernalis water quality objectives for agricultural beneficial uses at Vernalis. Licensee/Permittee may meet these objectives through flows or other measures. Licensee/Permittee shall develop a program under which it will meet these objectives consistently. Licensee/Permittee shall conduct modeling and planning studies to evaluate the effectiveness of its program to meet the Vernalis water quality objectives. If, within five years, Licensee/Permittee has not developed a program under which it will consistently achieve the Vernalis objectives, Licensee/Permittee shall report to the Executive Director of the SWRCB all actions it has taken in attempting to meet the objectives, including drainage and management alternatives. The Executive Director of the SWRCB will evaluate the report and will decide whether further action should be taken by the SWRCB to ensure that the objectives are met.

Licensee/Permittee also shall report any expected noncompliance as soon as possible. The report of actions taken shall be submitted within three months following the period in which the requirements are not met.

IT IS FURTHER ORDERED that Permits 16597 and 16600 (Applications 14858A and 19304, respectively) * of the USBR (New Melones storage) are amended as follows:[87]

1. Term 19[88] of these permits is replaced with the following term:

In conjunction with other measures to control salinity, Permittee shall release water from New Melones Reservoir to maintain the Vernalis agricultural salinity objective specified in Table 2, attached.

Permittee shall release water from New Melones Reservoir for water quality purposes so as to maintain a dissolved oxygen concentration in the Stanislaus River as specified in the Water Quality Control Plan for the Sacramento and San Joaquin river basins.

[87] Conditions 1, 2, and 3 below do not mandate that the Permittee use water under these permits to meet these conditions if it uses other sources of water or other means to meet these conditions.

[88] Term 19 in these permits corresponds to Condition 5 of Water Right Decision 1422.

Licensee/Permittee shall, at all times, meet the Vernalis water quality objectives for agricultural beneficial uses at Vernalis. Licensee/Permittee may meet these objectives through flows or other measures. Licensee/Permittee shall develop a program under which it will meet these objectives consistently. Licensee/Permittee shall conduct modeling and planning studies to evaluate the effectiveness of its program to meet the Vernalis water quality objectives. If, within five years, Licensee/Permittee has not developed a program under which it will consistently achieve the Vernalis objectives, Licensee/Permittee shall report to the Executive Director of the SWRCB all actions it has taken in attempting to meet the objectives, including drainage and management alternatives. The Executive Director of the SWRCB will evaluate the report and will decide whether further action should be taken by the SWRCB to ensure that the objectives are met.

Permittee also shall report any expected noncompliance as soon as possible. The report of actions taken shall be submitted within three months following the period in which the requirements are not met.

In addition, Permittee shall ensure that the water quality objectives for agricultural beneficial uses in the southern Delta, as specified in Table 2, attached, are met at the following locations:

a. San Joaquin River at Brandt Bridge (Interagency Station No. C-6);

b. Old River near Middle River (Interagency Station No. C-8); and

c. Old River at Tracy Road Bridge (Interagency Station No. P-12).

Permittee has latitude in its method for implementing the water quality objectives at Stations C-6, C-8, and P-12, above; however, a barrier program in the southern Delta may help to ensure that the objectives are met at these locations. If Permittee exceeds the objectives at stations C-6, C-8, or P-12, Permittee shall prepare a report for the Executive Director. The Executive Director will evaluate the report and make a recommendation to the SWRCB as to whether enforcement action is appropriate or the noncompliance is the result of actions beyond the control of the Permittee.

2. Permittee shall, on an interim basis until the Board adopts a decision assigning permanent responsibility for meeting the water quality objectives:

a. Ensure that the water quality objective for fish and wildlife beneficial uses for San Joaquin River flow at Airport Way Bridge, Vernalis set forth in Table 3 is met, with the exception that during the April-May pulse flow period while the SJRA is in effect, experimental target flows set forth in (b) below may be provided in lieu of meeting this objective.

b. During the April-May pulse flow period while the SJRA is in effect, maintain San Joaquin River flows at Airport Way Bridge, Vernalis, as follows, in lieu of meeting said river flow objective:

Existing Flow (cfs)	Target Flow (cfs)
0-1,999	2,000
2,000-3,199	3,200
3,200-4,449	4,450
4,450-5,699	5,700
5,700-6,999	7,000
7,000 or greater	Existing Flow

During years when the sum of the current year's 60-20-20 indicator and the previous year's 60-20-20 indicator is seven (7) or greater, target flows shall be one step higher than those required by the above table. The Permittee is not required to meet the target flow during years when the sum of the current year's 60-20-20 indicator and the previous two years' 60-20-20 indicator is four (4) or less, using the following table.

SJR Basin 60-20-20 Classification	60-20-20 Indicator
Wet	5
Above normal	4
Below normal	3
Dry	2
Critical	1

3. If the San Joaquin River Agreement (SJRA) is dissolved by the signatory parties before it expires, then Permittee shall meet the San Joaquin River flow objective set forth in Table 3 until the Board establishes alternative implementation of the San Joaquin River flow objective.

IT IS FURTHER ORDERED that Permit 20245 (Application 14858B) * of the USBR (New Melones direct diversion) is amended by replacing Condition 21[89] of that permit as follows:

1. For the protection of water quality, no diversion is authorized for consumptive uses under this permit unless the San Joaquin River at Airport Way Bridge, Vernalis, salinity objective for agricultural beneficial uses, as specified in Table 2, attached, is met and the dissolved oxygen objectives in the Stanislaus River are met as specified in the Water Quality Control Plan for the Sacramento and San Joaquin River basins.

   Licensee/Permittee shall, at all times, meet the Vernalis water quality objectives for agricultural beneficial uses at Vernalis. Licensee/Permittee may meet these objectives

[89] Term 21 in this permit corresponds to Condition 12 of Water Right Decision 1616.

through flows or other measures. Licensee/Permittee shall develop a program under which it will meet these objectives consistently. Licensee/Permittee shall conduct modeling and planning studies to evaluate the effectiveness of its program to meet the Vernalis water quality objectives. If, within five years, Licensee/Permittee has not developed a program under which it will consistently achieve the Vernalis objectives, Licensee/Permittee shall report to the Executive Director of the SWRCB all actions it has taken in attempting to meet the objectives, including drainage and management alternatives. The Executive Director of the SWRCB will evaluate the report and will decide whether further action should be taken by the SWRCB to ensure that the objectives are met.

Permittee also shall report any expected noncompliance as soon as possible. The report of actions taken shall be submitted within three months following the period in which the requirements are not met.

In addition, Permittee shall ensure that the water quality objectives for agricultural beneficial uses in the southern Delta, as specified in Table 2, attached, are met at the following locations:

a. San Joaquin River at Brandt Bridge (Interagency Station No. C-6);

b. Old River near Middle River (Interagency Station No. C-8); and

c. Old River at Tracy Road Bridge (Interagency Station No. P-12).

Permittee has latitude in its method for implementing the water quality objectives at Stations C-6, C-8, and P-12, above; however, a barrier program in the southern Delta may help to ensure that the objectives are met at these locations. If Permittee exceeds the objectives at stations C-6, C-8, or P-12, Permittee shall prepare a report for the Executive Director. The Executive Director will evaluate the report and make a recommendation to the SWRCB as to whether enforcement action is appropriate or the noncompliance is the result of actions beyond the control of the Permittee.

IT IS FURTHER ORDERED that Permits 12721, 11967, 12722, 12723, 12725, 12726, 12727, 11315, 11316, 11968, 11969, 12860, 11971, 11973, 12364, 15735, (Applications 5626, 5628, 9363, 9364, 9366, 9367, 9368, 13370, 13371, 15374, 15375, 15764, 16767, 17374, 17376, and 22316, respectively) of the USBR involved in the petitioned changes of place and purposes of use shall be amended as follows:

1. The purpose of use is identified as: Irrigation, Domestic, Municipal, Industrial, Fish and Wildlife Enhancement, Salinity Control, Water Quality Control, Stockwatering and Recreation.

2. The place of use is situated within portions of the following counties, as shown on USBR Map No. 214-208-12581 on file with the Board, and as further delineated in the GIS maps on file with the Board and attached to this Order.

Table 5. Water Quality Compliance and Baseline Monitoring

Station Number		Station Description	Cont. Rec.[1]	Physical/ Chemical[2]	Multi-parameter[3]	Phyto-plankton[4]	Zoo-plankton[4]	Benthos[4]
C2	■	Sacramento River @ Collinsville	*					
C3	▲	Sacramento River @ Greens Landing		*	*	*		
C4	■	San Joaquin River @ San Andreas Ldg.	*					
C5	■	Contra Costa Canal @ Pumping Plant #1	*					
C6	■	San Joaquin River @ Brandt Bridge site	*					
C7	▲	San Joaquin River @ Mossdale Bridge			*			
C8	■	Old River near Middle River	*					
C9	•	West Canal at mouth of CCForebay Intake				*		*
C10	•	San Joaquin River near Vernalis		*		*		
C13	■	Mokelumne River @ Terminous	*					
C14	■	Sacramento River @ Port Chicago	*					
C19	■	Cache Slough @ City of Vallejo Intake	*					
D4	▲	Sacramento River above Point Sacramento		*		*	*	*
D6	▲	Suisun Bay @ Bulls Head Pt. nr. Martinez		*	*	*	*	*
D7	▲	Grizzly Bay @ Dolphin nr. Suisun Slough		*		*	*	*
D8	▲	Suisun Bay off Middle Point near Nichols		*		*	*	
D10	•	Sacramento River @ Chipps Island			*		*	
D12	•	San Joaquin River @ Antioch Ship Canal			*		*	
D15	■	San Joaquin River @ Jersey Point	*					
D16	▲	San Joaquin River @ Twitchell Island					*	*
D22	•	Sacramento River @ Emmaton					*	
D24	•	Sacramento River below Rio VistaBridge			*			*
D26	▲	San Joaquin River @ Potato Point		*		*	*	
D28A	▲	Old River near Rancho Del Rio		*	*	*	*	*
D29	■	San Joaquin River @ Prisoners Point	*					
D41	▲	San Pablo Bay near Pinole Point		*		*		*
D41A	▲	San Pablo Bay nr. mouth of Petaluma R.						*
DMC1	•	Delta-Mendota Canal at Tracy Pump. Plt.			*			
P8	▲	San Joaquin River @ Buckley Cove		*	*	*	*	*
P12	■	Old River @ Tracy Road Bridge	*					
MD10	▲	Disappointment Slough near Bishop Cut		*		*	*	
S21	■	Chadbourne Slough @ Sunrise Duck Club	*					
S35	▲	Goodyear Sl. @ Morrow Is. Clubhouse	*					
S42	•	Suisun Slough 300' so. of Volanti Slough	*				*	
S49	■	Montezuma Slough near Beldon Landing	*					
S64	■	Montezuma Slough @ National Steel	*					
S97	▲	Cordelia Slough @ Ibis Club	*					
NZ032	▲	Montezuma Slough, 2nd bend from mouth					*	

(continued)

■ Compliance monitoring station ▲ Baseline monitoring station • Compliance and baseline monitoring station

Table 5. Water Quality Compliance and Baseline Monitoring (continued)

Station Number	Station Description	Cont. Rec.[1]	Physical/ Chemical[2]	Multi-parameter[3]	Phyto-plankton[4]	Zoo-plankton[4]	Benthos[4]
--- ■	Sacramento R. (I St. Bridge to Freeport) (RSAC155)	*					
--- ▲	San Joaquin R. (Turner Cut to Stockton) (RSAN050-RSAN061)	*					
--- ■	Barker Sl. at No. Bay Aqueduct (SLBAR3)	*					
--- ▲	Water supply intakes for waterfowl management areas on Van Sickle Island and Chipps Island	*					

■ Compliance monitoring station ▲ Baseline monitoring station • Compliance and baseline monitoring station

1 Continuous recorder only (EC, dissolved oxygen, and/or temperature). For municipal and industrial intake chlorides objectives, EC can be monitored and converted to chlorides.

2 Physical/chemical monitoring is conducted monthly at discrete sites and includes the following parameters: water column depth, secchi, nutrient series (inorganic and organic N-P), water temperature, dissolved oxygen, electrical conductivity, turbidity, and chlorophyll *a*. In addition, on-board recording for vertical and horizontal profiles is conducted intermittently for the following parameters: water temperature, dissolved oxygen, electrical conductivity, turbidity, and chlorophyll *a*.

3 Multi-parameter monitoring is conducted continuously and provides telemetered data on the following parameters: water temperature, pH, dissolved oxygen, electrical conductivity, turbidity, chlorophyll *a*, wind speed and direction, solar radiation, air temperature, and tidal elevation.

4 Sampling occurs monthly at discrete sites.