

## CHAPTER II. PROJECT DESCRIPTION

### A. PROJECT DEFINITION

The project is the review, and amendment where appropriate, of both the SWRCB's objectives for protection of fish and wildlife in the Bay-Delta Estuary and the program of implementation for achieving the objectives and protecting the beneficial uses. The program of implementation includes actions the SWRCB will undertake to achieve the objectives and recommendations to other entities for actions that will contribute to achieving the objectives and improve habitat conditions for fish and wildlife.

### B. STATEMENT OF GOALS

The SWRCB's goals for this project are to:

1. Provide comprehensive, multi-species, ecosystem protection for the Bay-Delta Estuary;
2. Stabilize and enhance fish and wildlife resources in the Bay-Delta Estuary;
3. Minimize the impact of new standards on water supply reliability throughout the Bay-Delta watershed and export areas; and
4. Provide meaningful regulatory stability by adopting standards that meet all foreseeable State and federal requirements, including the Porter-Cologne Act, the Clean Water Act, and the State and federal ESAs.

### C. PREFERRED ALTERNATIVE

The water quality objectives of the preferred alternative, in conjunction with the water quality objectives for the Bay-Delta Estuary that are included in other SWRCB-adopted water quality control plans and in the water quality control plans for the Central Valley and San Francisco Bay basins, when implemented, will: (1) provide reasonable protection of municipal, industrial, and agricultural beneficial uses; (2) provide reasonable protection of fish and wildlife beneficial uses at a level which stabilizes or enhances the conditions of aquatic resources; and (3) prevent nuisance. A list and brief descriptions of the beneficial uses established for the Bay-Delta Estuary, which are to be protected by the plan, follow. These uses are unchanged from the 1991 Bay-Delta Plan; however, nonsubstantive changes to the definitions of the uses have been made to ensure consistency with the SWRCB's current policy and uniform direction to the RWQCBs.

Municipal and Domestic Supply (MUN) - Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.

Industrial Service Supply (IND) - Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, and oil well repressurization.

Industrial Process Supply (PROC) - Uses of water for industrial activities that depend primarily on water quality.

Agricultural Supply (AGR) - Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.

Ground Water Recharge (GWR) - Uses of water for natural or artificial recharge of ground water for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.

Navigation (NAV) - Uses of water for shipping, travel, or other transportation by private, military, or commercial vessels.

Water Contact Recreation (REC-1) - Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.

Non-Contact Water Recreation (REC-2) - Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

Shellfish Harvesting (SHELL) - Uses of water that support habitats suitable for the collection of filter-feeding shellfish (e.g., clams, oysters, and mussels) for human consumption, commercial, or sports purposes.

Commercial and Sport Fishing (COMM) - Uses of water for commercial or recreational collection of fish, shellfish, or other organisms including, but not limited to, uses involving organisms intended for human consumption or bait purposes.

Warm Freshwater Habitat (WARM) - Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Cold Freshwater Habitat (COLD) - Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Migration of Aquatic Organisms (MIGR) - Uses of water that support habitats necessary for migration or other temporary activities by aquatic organisms, such as anadromous fish.

Spawning, Reproduction, and/or Early Development (SPWN) - Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.

Estuarine Habitat (EST) - Uses of water that support estuarine ecosystems including, but not limited to, preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g., estuarine mammals, waterfowl, shorebirds).

Wildlife Habitat (WILD) - Uses of water that support estuarine ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

Rare, Threatened, or Endangered Species (RARE) - Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as being rare, threatened, or endangered.

The water quality objectives of the preferred alternative for the protection of municipal and industrial, agricultural, and fish and wildlife beneficial uses are presented in Tables II-1, II-2, and II-3, respectively.

The water quality objectives in Table II-1 are included for the reasonable protection of the beneficial uses, MUN, IND, and PROC, from the effects of salinity intrusion. These municipal and industrial objectives also provide protection for the beneficial uses of REC-1, REC-2, and GWR. These objectives are unchanged from the 1991 Bay-Delta Plan.

Table II-1

**WATER QUALITY OBJECTIVES FOR  
MUNICIPAL AND INDUSTRIAL BENEFICIAL USES**

| COMPLIANCE LOCATION                             | INTERAGENCY STATION NUMBER (RKI [1]) | PARAMETER                   | DESCRIPTION (UNIT)   | WATER YEAR TYPE [2]     | TIME PERIOD   | VALUE   |     |
|---|--------------------------------------|-----------------------------|--|-------------------------|---|---|-----|
| Contra Cosfa Canal at Pumping Plant #1          | C-5 (CHCCC06)                        | Chloride (Cl <sup>-</sup> ) | Maximum mean daily 150 mg/l Cl <sup>-</sup> for at least the number of days shown during   |                         | No. of days each Calendar Year ≤ 150 mg/l Cl <sup>-</sup> |   |     |
| -or-  |                                      |                             |  |                         |   |   |     |
| San Joaquin River at Antioch Water Works Intake | D-12 (near) (RSAN007)                |                             | the Calendar Year. Must be provided in intervals of not less than two weeks duration. (Percentage of Calendar Year shown in parenthesis) | W<br>AN<br>BN<br>D<br>C |   | 240 (66%)<br>190 (52%)<br>175 (48%)<br>165 (45%)<br>155 (42%) |     |
| Contra Costa Canal at Pumping Plant #1          | C-5 (CHCCC06)                        | Chloride (Cl <sup>-</sup> ) | Maximum mean daily (mg/l)  | All                     |   | Oct-Sep   | 250 |
| -and-   |                                      |                             |  |                         |   |   |     |
| West Canal at mouth of Clifton Court Forebay    | C-9 (CHWST0)                         |                             |  |                         |   |   |     |
| -and-   |                                      |                             |  |                         |   |   |     |
| Delta-Mendota Canal at Tracy Pumping Plant      | DMC-1 (CHDMC004)                     |                             |  |                         |   |   |     |
| -and-   |                                      |                             |  |                         |   |   |     |
| Barker Sbugh at North Bay Aqueduct Intake       | ----- (SLSAR3)                       |                             |  |                         |   |   |     |
| -and-   |                                      |                             |  |                         |   |   |     |
| Cache Slough at City of Vallejo Intake [3]      | C-19 (SLCCH16)                       |                             |  |                         |   |   |     |

[1] River Kilometer Index station number.

[2] The Sacramento Valley 40-30-30 water year hydrologic classification index (see page II-2) applies for determinations of water year type.

[3] The Cache Slough objective to be effective only when water is being diverted from this location.

The water quality objectives in Table II-2 are included for the reasonable protection of the beneficial use, AGR, from the effects of salinity intrusion and agricultural drainage in the western, interior, and southern Delta. With the exception of the effective date of the salinity objectives for the southern Delta stations on Old River, these objectives are unchanged from the 1991 Bay-Delta Plan.

The water quality objectives in Table II-3 are included for the reasonable protection of the following beneficial uses: EST, COLD, WARM, MIGR, SPWN, WILD, and RARE. These fish and wildlife beneficial uses also provide protection for the beneficial uses of SHELL, COMM, and NAV. The objectives in Table II-3, together with the program of implementation and the requirements of other water quality control plans and policies, provide comprehensive protection for the fish and wildlife beneficial uses in the Estuary. These objectives replace the objectives for fish and wildlife in the 1978 Delta Plan and the 1991 Bay-Delta Plan.

A dissolved oxygen objective is included to protect fall-run salmon migration in the lower San Joaquin River. This objective is unchanged, with the exception of including a provision for a compliance schedule, from the 1991 Bay-Delta Plan.

Salinity objectives for the lower San Joaquin River are included to protect striped bass spawning habitat. Salinity objectives for the managed portions of the Suisun Marsh are included for the protection of channel and soil water salinities which affect the vegetative composition of the marshlands. These objectives are based on standards in D-1485 and the Suisun Marsh Preservation Agreement (SMPA) among the DWR, USBR, DFG, and Suisun Resource Conservation District (SRCD). A narrative objective for the brackish tidal marshes of Suisun Bay is included to protect the remnant tidal marshes.

Delta outflow objectives are included for the protection of estuarine habitat for anadromous fish and other estuarine-dependent species. Sacramento and San Joaquin river flow objectives are included to provide attraction and transport flows and suitable habitat for various life stages of aquatic organisms, including Delta smelt and chinook salmon. A narrative objective for salmon protection is included to ensure increased natural production of salmon.

Objectives for export limits are included to protect the habitat of estuarine-dependent species by reducing the entrainment of various life stages by the major export pumps in the southern Delta. An objective for closure of the Delta Cross Channel gates is included to reduce the diversion of aquatic organisms into the interior Delta where they are more vulnerable to entrainment by the major export pumps and local agricultural diversions.

Table II-2

**WATER QUALITY OBJECTIVES FOR  
AGRICULTURAL BENEFICIAL USES**

| COMPLIANCE LOCATION   | INTERAGENCY STATION NUMBER (RKI [1]) | PARAMETER                    | DESCRIPTION (UNIT) [2]                                     | WATER YEAR TYPE [3] | TIME PERIOD           | & VALUE                          |
|---|--------------------------------------|------------------------------|--|---------------------|-----------------------|----------------------------------|
| <b>WESTERN DELTA</b>  |                                      |                              |  |                     |                       |                                  |
| Sacramento River at Emmaton   | D-22 (RSAC092)                       | Electrical Conductivity (EC) | Maximum 14-day running average of mean daily EC (mmhos/cm) |                     | 0.45 EC               | EC from date shown to Aug 15 [4] |
|   |                                      |                              |  |                     | April 1 to date shown | Aug 15 [4]                       |
|   |                                      |                              |  | W                   | Aug 15                | ----                             |
|   |                                      |                              |  | AN                  | Jul 1                 | 0.63                             |
|   |                                      |                              |  | BN                  | Jun 20                | 1.14                             |
|   |                                      |                              |  | D                   | Jun 15                | 1.67                             |
|   |                                      |                              |  | C                   | ----                  | 2.78                             |
| San Joaquin River at Jersey Point   | D-15 (RSAN018)                       | Electrical Conductivity (EC) | Maximum 14-day running average of mean daily EC (mmhos/cm) |                     | 0.45 EC               | EC from date shown to Aug 15 [4] |
|   |                                      |                              |  |                     | April 1 to date shown | Aug 15 [4]                       |
|   |                                      |                              |  | W                   | Aug 15                | ----                             |
|   |                                      |                              |  | AN                  | Aug 15                | ----                             |
|   |                                      |                              |  | BN                  | Jun 20                | 0.74                             |
|   |                                      |                              |  | D                   | Jun 15                | 1.35                             |
|   |                                      |                              |  | C                   | ----                  | 2.20                             |
| <b>INTERIOR DELTA</b>   |                                      |                              |  |                     |                       |                                  |
| South Fork Mokelumne River at Terminus  | C-13 (RSMKL08)                       | Electrical Conductivity (EC) | Maximum 14-day running average of mean daily EC (mmhos/cm) |                     | 0.45 EC               | EC from date shown to Aug 15 [4] |
|   |                                      |                              |  |                     | April 1 to date shown | Aug 15 [4]                       |
|   |                                      |                              |  | W                   | Aug 15                | ----                             |
|   |                                      |                              |  | AN                  | Aug 15                | ----                             |
|   |                                      |                              |  | BN                  | Aug 15                | ----                             |
|   |                                      |                              |  | D                   | Aug 15                | ----                             |
|   |                                      |                              |  | C                   | ----                  | 0.54                             |
| San Joaquin River at San Andreas Landing  | C-4 (RSAN032)                        | Electrical Conductivity (EC) | Maximum 14-day running average of mean daily EC (mmhos/cm) |                     | 0.45 EC               | EC from date shown to Aug 15 [4] |
|   |                                      |                              |  |                     | April 1 to date shown | Aug 15 [4]                       |
|   |                                      |                              |  | W                   | Aug 15                | ----                             |
|   |                                      |                              |  | AN                  | Aug 15                | ----                             |
|   |                                      |                              |  | BN                  | Aug 15                | ----                             |
|   |                                      |                              |  | D                   | Jun 25                | 0.58                             |
|   |                                      |                              |  | C                   | ----                  | 0.87                             |
| <b>SOUTHERN DELTA</b>   |                                      |                              |  |                     |                       |                                  |
| San Joaquin River at Airport Way Bridge, Vernalis   | C-10 (RSAN112)                       | Electrical Conductivity (EC) | Maximum 30-day running average of mean daily EC (mmhos/cm) | All                 | Apr-Aug               | 0.7                              |
|   |                                      |                              |  |                     | Sep-Mar               | 1.0                              |
| -and-   |                                      |                              |  |                     | -or-                  |                                  |
| San Joaquin River at Brandt Bridge site   | C-6 (RSAN073)                        |                              |  |                     |                       |                                  |
|   |                                      |                              |  |                     |                       |                                  |
| -and-   |                                      |                              |  |                     |                       |                                  |
| Old River near Middle River [5]   | C-8 (ROLD69)                         |                              |  |                     |                       |                                  |
|   |                                      |                              |  |                     |                       |                                  |
| -and-   |                                      |                              |  |                     |                       |                                  |
| Old River at Tracy Road Bridge [5]  | P-12 (ROLD59)                        |                              |  |                     |                       |                                  |
|   |                                      |                              |  |                     |                       |                                  |
| If a three-party contract has been implemented among the DWR, USBR, and SDWA, that contract will be reviewed prior to implementation of the above and, after also considering the needs of other beneficial uses, revisions will be made to the objectives and compliance/monitoring locations noted, as appropriate. |                                      |                              |  |                     |                       |                                  |
| <b>EXPORT AREA</b>  |                                      |                              |  |                     |                       |                                  |
| West Canal at mouth of Clifton Court Forebay  | C-9 (CHWST0)                         | Electrical Conductivity (EC) | Maximum monthly average of mean daily EC (mmhos/cm)        | All                 | Oct-Sep               | 1.0                              |
|   |                                      |                              |  |                     |                       |                                  |
| -and-   |                                      |                              |  |                     |                       |                                  |
| Delta-Mendota Canal at Tracy Pumping Plant  | DMC-1 (CHDMC004)                     |                              |  |                     |                       |                                  |
|   |                                      |                              |  |                     |                       |                                  |

[1] River Kilometer Index station number.

[2] Determination of compliance with an objective expressed as a running average begins on the last day of the averaging period. If the objective is not met on the last day of the averaging period, all days in the averaging period are considered out of compliance.

[3] The Sacramento Valley 40-30-30 water year hydrologic classification index (see page II-12) applies for determinations of water year type.

[4] When no date is shown, EC limit continues from April 1.

[5] The EC objectives shall be implemented at this location by December 31, 1997.

Table II-3

## WATER QUALITY OBJECTIVES FOR FISH AND WILDLIFE BENEFICIAL USES

| COMPLIANCE LOCATION   | INTERAGENCY STATION NUMBER(RKI 1[1])      | PARAMETER                    | DESCRIPTION (UNIT) [2]   | WATER YEAR TYPE [3]       | TIME PERIOD  | VALUE    |
|---|---|------------------------------|--|---------------------------|--|----------|
| <b>DISSOLVED OXYGEN</b>   |   |                              |  |                           |  |          |
| San Joaquin River between Turner Cut & Stockton   | (RSAN050-RSAN061)                         | Dissolved Oxygen (DO)        | Minimum DO (mg/l)  | All                       | Sep-Nov  | 6.0 [4]  |
| <b>SALMON PROTECTION</b>  |   |                              |  |                           |  |          |
|   |   |                              | narrative  |                           | Water quality conditions shall be maintained, together with other measures in the watershed, sufficient to achieve a doubling of natural production of chinook salmon from the average production of 1967-1991, consistent with the provisions of State and federal law. |          |
| <b>SAN JOAQUIN RIVER SALINITY</b>   |   |                              |  |                           |  |          |
| San Joaquin River at and between Jersey Point and Prisoners Point [5]                         | D-15 (RSAN018)<br>-and-<br>D-29 (RSAN038) | Electrical Conductivity (EC) | Maximum 14-day running average of mean daily EC(mmhos/cm)  | W,AN,BN,D                 | Apr-May  | 0.44 [6] |
| <b>EASTERN SUISUN MARSH SALINITY</b>  |   |                              |  |                           |  |          |
| Sacramento River at Collinsville  | C-2 (RSAC081)                             | Electrical Conductivity (EC) | Maximum monthly average of both daily high tide EC values (mmhos/cm), or demonstrate that equivalent or better protection will be provided at the location | All                       | Oct  | 19.0     |
| -and-<br>Montezuma Slough at National Steel   | S-64 (SLMZU25)                            |                              |  |                           | Nov-Dec  | 15.5     |
| -and-<br>Montezuma Slough near Beldon Landing   | S-49 (SLMZU11)                            |                              |  |                           | Jan  | 12.5     |
|   |   |                              |  |                           | Feb-Mar  | 8.0      |
|   |   |                              |  |                           | Apr-May  | 11.0     |
| <b>WESTERN SUISUN MARSH SALINITY</b>  |   |                              |  |                           |  |          |
| Chadbourne Slough at Sunrise Duck Club  | S-21 [7]<br>(SLCBN1)                      | Electrical Conductivity (EC) | Maximum monthly average of both daily high tide EC values (mmhos/cm), or demonstrate that equivalent or better protection will be provided at the location | All but deficiency period | Oct  | 19.0     |
| -and-<br>Suisun Slough, 300 feet south of Volanti Slough                                      | S-42 [8]<br>(SLSUS12)                     |                              |  |                           | Nov  | 16.5     |
| -and-<br>Cordelia Slough at Ibis Club   | S-97 [8]<br>(SLCRD06)                     |                              |  |                           | Dec  | 15.5     |
| -and-<br>Goodyear Slough at Morrow Island Clubhouse   | S-35 [8]<br>(SLGYR03)                     |                              |  |                           | Jan  | 12.5     |
| -and-<br>Water supply intakes for waterfowl management areas on Van Sickle and Chipps islands | No locations specified                    |                              |  | Deficiency period [9]     | Feb-Mar  | 8.0      |
|   |   |                              |  |                           | Apr-May  | 11.0     |
|   |   |                              |  |                           | Oct  | 19.0     |
|   |   |                              |  |                           | Nov  | 16.5     |
|   |   |                              |  |                           | Dec-Mar  | 15.6     |
|   |   |                              |  |                           | Apr  | 14.0     |
|   |   |                              |  |                           | May  | 12.5     |
| <b>BRACKISH TIDAL MARSHES OF SUISUN BAY</b>   |   |                              |  |                           |  |          |
|   |   |                              | narrative  |                           |  | [10]     |

**Table II-3 WATER QUALITY OBJECTIVES FOR FISH AND WILDLIFE BENEFICIAL USES (continued)**

| COMPLIANCE LOCATION                               | INTERAGENCY STATION NUMBER(RK1 1[]) | PARAMETER                           | DESCRIPTION (UNIT) [2]                            | WATER YEAR TYPE [3] | TIME PERIOD                                | VALUE                 |
|---|-------------------------------------|-------------------------------------|---|---------------------|--|-----------------------|
| <b>DELTA OUTFLOW</b>                              |                                     |                                     |   |                     |  |                       |
|   |                                     | Net Delta Outflow Index (NDOI) (11) | Minimum monthly average (12) NDOI (cfs)           | All                 | Jan  | 4,500 [13]            |
|   |                                     |                                     |   | All                 | Feb-Jun                                    | [14]                  |
|   |                                     |                                     |   | W,AN                | Jul  | 8,000                 |
|   |                                     |                                     |   | BN                  |  | 6,500                 |
|   |                                     |                                     |   | D                   |  | 5,000                 |
|   |                                     |                                     |   | C                   |  | 4,000                 |
|   |                                     |                                     |   | W,AN,BN             | Aug  | 4,000                 |
|   |                                     |                                     |   | D                   |  | 3,500                 |
|   |                                     |                                     |   | C                   |  | 3,000                 |
|   |                                     |                                     |   | All                 | Sep  | 3,000                 |
|   |                                     |                                     |   | W,AN,BN,D           | Oct  | 4,000                 |
|   |                                     |                                     |   | C                   |  | 3,000                 |
|   |                                     |                                     |   | W,AN,BN,D           | Nov-Dec                                    | 4,500                 |
|   |                                     |                                     |   | C                   |  | 3,500                 |
| <b>RIVER FLOWS</b>                                |                                     |                                     |   |                     |  |                       |
| Sacramento River at Rio Vista                     | D-24 (RSAC101)                      | Flow rate                           | Minimum monthly average (15) flow rate (cfs)      | All                 | Sep  | 3,000                 |
|   |                                     |                                     |   | W,AN,BN,D           | Oct  | 4,000                 |
|   |                                     |                                     |   | C                   |  | 3,000                 |
|   |                                     |                                     |   | W,AN,BN,D           | Nov-Dec                                    | 4,500                 |
|   |                                     |                                     |   | C                   |  | 3,500                 |
| San Joaquin River at Airport Way Bridge, Vernalis | C-10 (RSAN112)                      | Flow rate                           | Minimum monthly average (16) flow rate (cfs) [17] | W,AN                | Feb-Apr 14                                 | 2,130 or 3,420        |
|   |                                     |                                     |   | BN,D                | and  | 1,420 or 2,280        |
|   |                                     |                                     |   | C                   | May 16-Jun                                 | 710 or 1,140          |
|   |                                     |                                     |   | W                   | Apr 15-                                    | 7,330 or 8,620        |
|   |                                     |                                     |   | AN                  | May 15 [18]                                | 5,730 or 7,020        |
|   |                                     |                                     |   | BN                  |  | 4,620 or 5,480        |
|   |                                     |                                     |   | D                   |  | 4,020 or 4,880        |
|   |                                     |                                     |   | C                   |  | 3,110 or 3,540        |
|   |                                     |                                     |   | All                 | Oct  | 1,000 [19]            |
| <b>EXPORT LIMITS</b>                              |                                     |                                     |   |                     |  |                       |
|   |                                     | Combined export rate [20]           | Maximum 3-day running average (cfs)               | All                 | Apr 15-<br>May 15 [21]                     | [22]                  |
|   |                                     |                                     | Maximum percent of Delta inflow diverted [23]     | All                 | Feb-Jun                                    | 35% Delta inflow [25] |
|   |                                     |                                     | [24]  | All                 | Jul-Jan                                    | 65% Delta inflow      |
| <b>DELTA CROSS CHANNEL GATES CLOSURE</b>          |                                     |                                     |   |                     |  |                       |
| Delta Cross Channel at Walnut Grove               | —                                   | Closure of gates                    | Closed gates                                      | All                 | Nov-Jan<br>Feb-May 20<br>May 21-<br>Jun 15 | [26]<br>----<br>[27]  |

### Table II-3 Footnotes

- [1] River Kilometer Index station number.
- [2] Determination of compliance with an objective expressed as a running average begins on the last day of the averaging period. If the objective is not met on the last day of the averaging period, all days in the averaging period are considered out of compliance.
- [3] The Sacramento Valley 40-30-30 Water Year Hydrologic Classification Index (see page 23) applies unless otherwise specified.
- [4] If it is infeasible for a waste discharger to meet this objective immediately, a time extension or schedule of compliance may be granted, but this objective must be met no later than September 1, 2005.
- [5] Compliance will be determined at Jersey Point (station D15) and Prisoners Point (station D29).
- [6] This standard does not apply in May when the best available May estimate of the Sacramento River Index for the water year is less than 8.1 MAF at the 90% exceedence level. [Note: The Sacramento River Index refers to the sum of the unimpaired runoff in the water year as published in the DWR Bulletin 120 for the following locations: Sacramento River above Bend Bridge, near Red Bluff; Feather River, total unimpaired inflow to Oroville Reservoir; Yuba River at Smartville; and American River, total unimpaired inflow to Folsom Reservoir.]
- [7] The effective date for objectives for this station is October 1, 1995.
- [8] The effective date for objectives for this station is October 1, 1997.
- [9] A deficiency period is: (1) the second consecutive dry water year following a critical year; (2) a dry water year following a year in which the Sacramento River Index (described in footnote 6) was less than 11.35; or (3) a critical water year following a dry or critical water year.
- [10] Water quality conditions sufficient to support a natural gradient in species composition and wildlife habitat characteristic of a brackish marsh throughout all elevations of the tidal marshes bordering Suisun Bay shall be maintained. Water quality conditions shall be maintained so that none of the following occurs: (a) loss of diversity; (b) conversion of brackish marsh to salt marsh; (c) for animals, decreased population abundance of those species vulnerable to increased mortality and loss of habitat from increased water salinity; or (d) for plants, significant reduction in stature or percent cover from increased water or soil salinity or other water quality parameters.
- [11] Net Delta Outflow Index (NDOI) is defined in on page 25.
- [12] For the May-January objectives, if the value is less than or equal to 5,000 cfs, the 7-day running average shall not be less than 1,000 cfs below the value; if the value is greater than 5,000 cfs, the 7-day running average shall not be less than 80% of the value.
- [13] The objective is increased to 6,000 cfs if the best available estimate of the Eight River Index for December is greater than 800 TAF. [Note: The Eight River Index refers to the sum of the unimpaired runoff as published in the DWR Bulletin 120 for the following locations: Sacramento River flow at Bend Bridge, near Red Bluff; Feather River, total inflow to Oroville Reservoir; Yuba River flow at Smartville; American River, total inflow to Folsom Reservoir; Stanislaus River, total inflow to New Melones Reservoir; Tuolumne River, total inflow to Don Pedro Reservoir; Merced River, total inflow to Exchequer Reservoir; and San Joaquin River, total inflow to Millerton Lake.]

- [14] The minimum daily Delta outflow shall be 7,100 cfs for this period, calculated as a 3-day running average. This requirement is also met if either the daily average or 14-day running average EC at the confluence of the Sacramento and the San Joaquin rivers is less than or equal to 2.64 mmhos/cm (Collinsville station C2). If the best available estimate of the Eight River Index (described in footnote 13) for January is more than 900 TAF, the daily average or 14-day running average EC at station C2 shall be less than or equal to 2.64 mmhos/cm for at least one day between February 1 and February 14; however, if the best available estimate of the Eight River Index for January is between 650 TAF and 900 TAF, the operations group established under the Framework Agreement shall decide whether this requirement will apply, with any disputes resolved by the CALFED policy group. If the best available estimate of the Eight River Index for February is less than 500 TAF, the standard may be further relaxed in March upon the recommendation of the operations group established under the Framework Agreement, with any disputes resolved by the CALFED policy group. The standard does not apply in May and June if the best available May estimate of the Sacramento River Index (described in footnote 6) for the water year is less than 8.1 MAF at the 90% exceedence level. Under this circumstance, a minimum 14-day running average flow of 4,000 cfs is required in May and June. Additional Delta outflow objectives are contained in Table A on page II-15.
- [15] The 7-day running average shall not be less than 1,000 cfs below the monthly objective.
- [16] Partial months are averaged for that period. For example, the flow rate for April 1-14 would be averaged over 14 days. The 7-day running average shall not be less than 20% below the flow rate objective, with the exception of the April 15-May 15 pulse flow period when this restriction does not apply.
- [17] The water year classification will be established using the best available estimate of the 60-20-20 San Joaquin Valley Water Year Hydrologic Classification (see page II-13) at the 75% exceedence level. The higher flow objective applies when the 2 ppt isohaline (measured as 2.64 mmhos/cm surface salinity) is required to be at or west of Chipps Island.
- [18] This time period may be varied based on real-time monitoring. One pulse, or two separate pulses of combined duration equal to the single pulse, should be scheduled to coincide with fish migration in San Joaquin River tributaries and the Delta. The time period for this 31-day flow requirement will be determined by the operations group established under the Framework Agreement.
- [19] Plus up to an additional 28 TAF pulse/attraction flow during all water year types. The amount of additional water will be limited to that amount necessary to provide a monthly average flow of 2,000 cfs. The additional 28 TAF is not required in a critical year following a critical year. The pulse flow will be scheduled by the operations group established under the Framework Agreement.
- [20] Combined export rate for this objective is defined as the Clifton Court Forebay inflow rate (minus actual Byron-Bethany Irrigation District diversions from Clifton Court Forebay) and the export rate of the Tracy pumping plant.
- [21] This time period may be varied based on real-time monitoring and will coincide with the San Joaquin River pulse flow described in footnote 18. The time period for this 31-day export limit will be determined by the operations group established under the Framework Agreement.
- [22] Maximum export rate is 1,500 cfs or 100% of 3-day running average of San Joaquin River flow at Vernalis, whichever is greater. Variations to this maximum export rate are authorized if agreed to by the operations group established under the Framework Agreement. This flexibility is intended to result in no net water supply cost annually within the limits of the water quality and operational requirements of this plan. Variations may result from recommendations of agencies for protection of fish resources, including actions taken pursuant to the State and federal Endangered Species Act. Disputes within the operations group will be resolved by the CALFED policy group. Any agreement on variations will be effective immediately and will be presented to the Executive Director of the SWRCB. If the Executive Director does not object to the variations within 10 days, the variations will remain in effect.

- [23] Percent of Delta inflow diverted is defined on page II-14. For the calculation of maximum percent Delta inflow diverted, the export rate is a 3-day running average and the Delta inflow is a 14-day running average, except when the CVP or the SWP is making storage withdrawals for export, in which case both the export rate and the Delta inflow are 3-day running averages.
- [24] The percent Delta inflow diverted values can be varied either up or down. Variations are authorized subject to the process described in footnote 22.
- [25] If the best available estimate of the Eight River Index (described in footnote 13) for January is less than or equal to 1.0 MAF, the export limit for February is 45% of Delta inflow. If the best available estimate of the Eight River Index for January is greater than 1.5 MAF, the February export limit is 35% of Delta inflow. If the best available estimate of the Eight River Index for January is between 1.0 MAF and 1.5 MAF, the export limit for February will be set by the operations group established under the Framework Agreement within the range of 35% to 45%. Disputes within the operations group will be resolved by the CALFED policy group.
- [26] For the November-January period, close Delta Cross Channel gates for up to a total of 45 days. The timing and duration of the gate closure will be determined by the operations group established under the Framework Agreement.
- [27] For the May 21-June 15 period, close Delta Cross Channel gates for a total of 14 days. The timing and duration of the gate closure will be determined by the operations group established under the Framework Agreement.

**FOOTNOTE 2 FOR TABLE II-1 AND FOOTNOTE 3 FOR TABLES II-2 AND II-3**

**Sacramento Valley  
Water Year Hydrologic Classification**

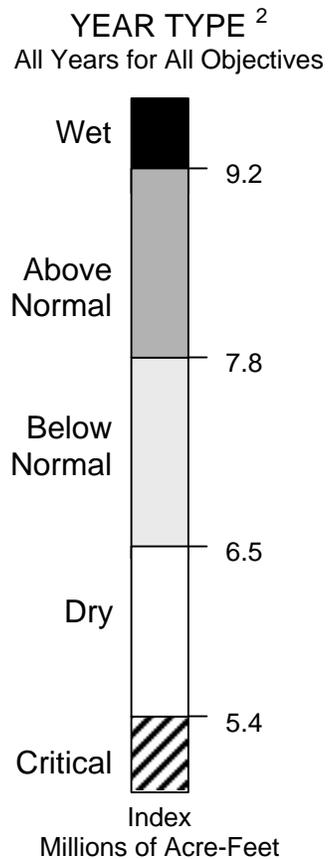
Year classification shall be determined by computation of the following equation:

$$\text{INDEX} = 0.4 * X + 0.3 * Y + 0.3 * Z$$

- Where:
- X = Current year's April – July Sacramento Valley unimpaired runoff
  - Y = Current October – March Sacramento Valley unimpaired runoff
  - Z = Previous year's index<sup>1</sup>

The Sacramento Valley unimpaired runoff for the current water year (October 1 of the preceding calendar year through September 30 of the current calendar year), as published in California Department of Water Resources Bulletin 120, is a forecast of the sum of the following locations: Sacramento River above Bend Bridge, near Red Bluff; Feather River, total inflow to Oroville Reservoir; Yuba River at Smartville; American River, total inflow to Folsom Reservoir. Preliminary determinations of year classification shall be made in February, March, and April with final determination in May. These preliminary determinations shall be based on hydrologic conditions to date plus forecasts of future runoff assuming normal precipitation for the remainder of the water year.

| <u>Classification</u>     | <u>Index<br/>Millions of Acre-Feet (MAF)</u>   |
|---------------------------|--|
| <b>Wet</b> .....          | Equal to or greater than 9.2                   |
| <b>Above Normal</b> ..... | Greater than 7.8 and less than 9.2             |
| <b>Below Normal</b> ..... | Equal to or less than 7.8 and greater than 6.5 |
| <b>Dry</b> .....          | Equal to or less than 6.5 and greater than 5.4 |
| <b>Critical</b> .....     | Equal to or less than 5.4                      |



<sup>1</sup> A cap of 10.0 MAF is put on the previous year's index (Z) to account for required flood control reservoir releases during wet years.

<sup>2</sup> The year type for the preceding water year will remain in effect until the initial forecast of unimpaired runoff for the current water year is available.

**FOOTNOTE 17 FOR TABLE II-3**

**San Joaquin Valley  
Water Year Hydrologic Classification**

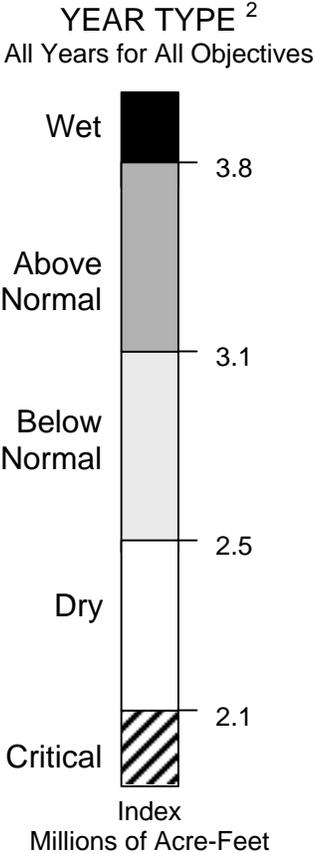
Year classification shall be determined by computation of the following equation:

**INDEX = 0.6 \* X + 0.2 \* Y + 0.2 \* Z**

- Where:
- X = Current year's April – July San Joaquin Valley unimpaired runoff
  - Y = Current October – March San Joaquin Valley unimpaired runoff
  - Z = Previous year's index<sup>1</sup>

The San Joaquin Valley unimpaired runoff for the current water year (October 1 of the preceding calendar year through September 30 of the current calendar year), as published in California Department of Water Resources Bulletin 120, is a forecast of the sum of the following locations: Stanislaus River, total flow to New Melones Reservoir; Tuolumne River, total inflow to Don Pedro Reservoir; Merced River, total flow to Exchequer Reservoir; San Joaquin River, total inflow to Millerton Lake. Preliminary determinations of year classification shall be made in February, March, and April with final determination in May. These preliminary determinations shall be based on hydrologic conditions to date plus forecasts of future runoff assuming normal precipitation for the remainder of the water year.

| <u>Classification</u>     | <u>Index<br/>Millions of Acre-Feet (MAF)</u>   |
|---------------------------|--|
| <b>Wet</b> .....          | Equal to or greater than 3.8                   |
| <b>Above Normal</b> ..... | Greater than 3.1 and less than 3.8             |
| <b>Below Normal</b> ..... | Equal to or less than 3.1 and greater than 2.5 |
| <b>Dry</b> .....          | Equal to or less than 2.5 and greater than 2.1 |
| <b>Critical</b> .....     | Equal to or less than 2.1                      |



<sup>1</sup> A cap of 4.5 MAF is put on the previous year's index (Z) to account for required flood control reservoir releases during wet years.

<sup>2</sup> The year type for the preceding water year will remain in effect until the initial forecast of unimpaired runoff for the current water year is available.

## FOOTNOTES 11 AND 23 FOR TABLE II-3

### NDOI and PERCENT INFLOW DIVERTED <sup>1</sup>

The NDOI and the percent inflow diverted, as described in this footnote, shall be computed daily by the DWR and the USBR using the following formulas (all flows are in cfs):

$$NDOI = DELTA INFLOW - NET DELTA CONSUMPTIVE USE - DELTA EXPORTS$$

$$PERCENT INFLOW DIVERTED = (CCF + TPP) \div DELTA INFLOW$$

where  $DELTA INFLOW = SAC + SRTP + YOLO + EAST + MISC + SJR$

- SAC* = Sacramento River at Freeport mean daily flow for the previous day; the 25-hour tidal cycle measurements from 12:00 midnight to 1:00 a.m. may be used instead.
- SRTP* = Sacramento Regional Treatment Plant average daily discharge for the previous week.
- YOLO* = Yolo Bypass mean daily flow for the previous day, which is equal to the flows from the Sacramento Weir, Fremont Weir, Cache Creek at Rumsey, and the South Fork of Putah Creek.
- EAST* = Eastside Streams mean daily flow for the previous day from the Mokelumne River at Woodbridge, Cosumnes River at Michigan Bar, and Calaveras River at Bellota.
- MISC* = Combined mean daily flow for the previous day of Bear Creek, Dry Creek, Stockton Diverting Canal, French Camp Slough, Marsh Creek, and Morrison Creek.
- SJR* = San Joaquin River flow at Vernalis, mean daily flow for the previous day.

where  $NET DELTA CONSUMPTIVE USE = GDEPL - PREC$

- GDEPL* = Delta gross channel depletion for the previous day based on water year type using the DWR's latest Delta land use study.<sup>2</sup>
- PREC* = Real-time Delta precipitation runoff for the previous day estimated from stations within the Delta.

and where  $DELTA EXPORTS^3 = CCF + TPP + CCC + NBA$

- CCF* = Clifton Court Forebay inflow for the current day.<sup>4</sup>
- TPP* = Tracy Pumping Plant pumping for the current day.
- CCC* = Contra Costa Canal pumping for the current day.
- NBA* = North Bay Aqueduct pumping for the current day.

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1 Not all of the Delta tributary streams are gaged and telemetered. When appropriate, other methods of estimating stream flows, such as correlations with precipitation or runoff from nearby streams, may be used instead.

2 The DWR is currently developing new channel depletion estimates. If these new estimates are not available, DAYFLOW channel depletion estimates shall be used.

3 The term "Delta Exports" is used only to calculate the NDOI. It is not intended to distinguish among the listed diversions with respect to eligibility for protection under the area of origin provisions of the California Water Code.

4 Actual Byron-Bethany Irrigation District withdrawals from Clifton Court Forebay shall be subtracted from Clifton Court Forebay inflow. (Byron-Bethany Irrigation District water use is incorporated into the GDEPL term.)

**FOOTNOTE 14 FOR TABLE II-3**

| TABLE A<br>Number of Days When Maximum Daily Average Electrical Conductivity of 2.64 mmhos/cm Must Be Maintained at Specified Location [a] |  |     |     |     |     |                  |  |     |     |     |     |                  |  |     |     |     |     |
|--|--|-----|-----|-----|-----|------------------|--|-----|-----|-----|-----|------------------|--|-----|-----|-----|-----|
| PMI [b]<br>(TAF)   | Chippis Island<br>(Chippis Island Station D10) |     |     |     |     | PMI [b]<br>(TAF) | Port Chicago<br>(Port Chicago Station C14) [d] |     |     |     |     | PMI [b]<br>(TAF) | Port Chicago<br>(Port Chicago Station C14) [d] |     |     |     |     |
|  | FEB  | MAR | APR | MAY | JUN |                  | FEB  | MAR | APR | MAY | JUN |                  | FEB  | MAR | APR | MAY | JUN |
| £ 500  | 0  | 0   | 0   | 0   | 0   | 0                | 0  | 0   | 0   | 0   | 0   | 5250             | 27   | 29  | 25  | 26  | 6   |
| 750  | 0  | 0   | 0   | 0   | 0   | 250              | 1  | 0   | 0   | 0   | 0   | 5500             | 27   | 29  | 26  | 28  | 9   |
| 1000   | 28 [c]   | 12  | 2   | 0   | 0   | 500              | 4  | 1   | 0   | 0   | 0   | 5750             | 27   | 29  | 27  | 28  | 13  |
| 1250   | 28   | 31  | 6   | 0   | 0   | 750              | 8  | 2   | 0   | 0   | 0   | 6000             | 27   | 29  | 27  | 29  | 16  |
| 1500   | 28   | 31  | 13  | 0   | 0   | 1000             | 12   | 4   | 0   | 0   | 0   | 6250             | 27   | 30  | 27  | 29  | 19  |
| 1750   | 28   | 31  | 20  | 0   | 0   | 1250             | 15   | 6   | 1   | 0   | 0   | 6500             | 27   | 30  | 28  | 30  | 22  |
| 2000   | 28   | 31  | 25  | 1   | 0   | 1500             | 18   | 9   | 1   | 0   | 0   | 6750             | 27   | 30  | 28  | 30  | 24  |
| 2250   | 28   | 31  | 27  | 3   | 0   | 1750             | 20   | 12  | 2   | 0   | 0   | 7000             | 27   | 30  | 28  | 30  | 26  |
| 2500   | 28   | 31  | 29  | 11  | 1   | 2000             | 21   | 15  | 4   | 0   | 0   | 7250             | 27   | 30  | 28  | 30  | 27  |
| 2750   | 28   | 31  | 29  | 20  | 2   | 2250             | 22   | 17  | 5   | 1   | 0   | 7500             | 27   | 30  | 29  | 30  | 28  |
| 3000   | 28   | 31  | 30  | 27  | 4   | 2500             | 23   | 19  | 8   | 1   | 0   | 7750             | 27   | 30  | 29  | 31  | 28  |
| 3250   | 28   | 31  | 30  | 29  | 8   | 2750             | 24   | 21  | 10  | 2   | 0   | 8000             | 27   | 30  | 29  | 31  | 29  |
| 3500   | 28   | 31  | 30  | 30  | 13  | 3000             | 25   | 23  | 12  | 4   | 0   | 8250             | 28   | 30  | 29  | 31  | 29  |
| 3750   | 28   | 31  | 30  | 31  | 18  | 3250             | 25   | 24  | 14  | 6   | 0   | 8500             | 28   | 30  | 29  | 31  | 29  |
| 4000   | 28   | 31  | 30  | 31  | 23  | 3500             | 25   | 25  | 16  | 9   | 0   | 8750             | 28   | 30  | 29  | 31  | 30  |
| 4250   | 28   | 31  | 30  | 31  | 25  | 3750             | 26   | 26  | 18  | 12  | 0   | 9000             | 28   | 30  | 29  | 31  | 30  |
| 4500   | 28   | 31  | 30  | 31  | 27  | 4000             | 26   | 27  | 20  | 15  | 0   | 9250             | 28   | 30  | 29  | 31  | 30  |
| 4750   | 28   | 31  | 30  | 31  | 28  | 4250             | 26   | 27  | 21  | 18  | 1   | 9500             | 28   | 31  | 29  | 31  | 30  |
| 5000   | 28   | 31  | 30  | 31  | 29  | 4500             | 26   | 28  | 23  | 21  | 2   | 9750             | 28   | 31  | 29  | 31  | 30  |
| 5250   | 28   | 31  | 30  | 31  | 29  | 4750             | 27   | 28  | 24  | 23  | 3   | 10000            | 28   | 31  | 30  | 31  | 30  |
| ≥ 5500   | 28   | 31  | 30  | 31  | 30  | 5000             | 27   | 28  | 25  | 25  | 4   | >10000           | 28   | 31  | 30  | 31  | 30  |

[a] The requirement for number of days the maximum daily average electrical conductivity (EC) of 2.64 mmhos per centimeter (mmhos/cm) must be maintained at Chippis Island and Port Chicago can also be met with maximum 14-day running average EC of 2.64 mmhos/cm, or 3-day running average NDOIs of 11,400 cfs and 29,200 cfs, respectively. If salinity/flow objectives are met for a greater number of days than the requirements for any month, the excess days shall be applied to meeting the requirements for the following month. The number of days for values of the PMI between those specified in this table shall be determined by linear interpolation.

[b] PMI is the best available estimate of the previous month's Eight River Index. (Refer to Footnote 13 for Table 3 for a description of the Eight River Index.)

[c] When the PMI is between 800 TAF and 1000 TAF, the number of days the maximum daily average EC of 2.64 mmhos/cm (or maximum 14-day running average EC of 2.64 mmhos/cm, or 3-day running average NDOI of 11,400 cfs) must be maintained at Chippis Island in February is determined by linear interpolation between 0 and 28 days.

[d] This standard applies only in months when the average EC at Port Chicago during the 14 days immediately prior to the first day of the month is less than or equal to 2.64 mmhos/cm.