

Board of Directors

Carolee Krieger
president

Michael Jackson
secretary

Jim Edmondson
treasurer

Malinda Chouinard
director

Yvon Chouinard
director

Huey Johnson
director

Josh Green
director

Nick Di Croce
director

Tom Stokely
*director,
water policy
coordinator*

**In memoriam
Dorothy Green**
founding secretary

Web Site

www.c-win.org

Staff

Tim Stroshane
*senior research
associate*

Advisors

Maude Barlow
Gray Brechin
Hilal Elver

**SUMMARY
of
Testimony on
Optimal Conditions for Public Trust Resource Protection and Recovery
in the San Francisco Bay-Delta Estuary
Before the State Water Resources Control Board**

Submitted by

Tim Stroshane, Senior Research Associate

California Water Impact Network

February 16, 2010

The California Water Impact Network's (C-WIN) testimony will provide direct answers to the State Water Board's questions contained in the proceeding notices issued in December 2009, and summarizes our recommendations in Table 4 (starting on page 30 of our testimony) for optimal ecological conditions relating to flows for the Delta portion of the estuary, extending out to western Suisun Bay. C-WIN also testifies about the considerable scientific record that was developed over 20 years ago that established conceptual and empirical foundations for an earlier draft water quality control plans and water rights decision that were not adopted due to political intervention in Board deliberations, as well as much of the research that has occurred since 1995.

C-WIN testimony also incorporates by reference testimony presented to this proceeding of the California Sportfishing Protection Alliance, with its more detailed focus on scientific support for optimal flow regimes for anadromous salmonids.

State Board Question: *What can the State Water Board reasonably be expected to accomplish with respect to flow criteria within the nine months following enactment of SB 1? What issues should the State Water Board focus on in order to develop meaningful criteria during this short period of time?*

The California Water Impact Network believes The State Water Board can reasonably expect to develop and complete your recommendations with respect to flow criteria by your August 2010 deadline to the Legislature set by SB X7 1. The State Water Board must accept that it will have to make challenging professional and political judgments in an environment of scientific uncertainty. Human institutions must nearly always make decisions without complete information. The Legislature has directed the State Water Board to rely upon the best available science and that is your charge.

State Water Board Question: *How should the State Water Board address scientific uncertainty when developing the Delta outflow criteria? Specifically, what kind of adaptive management, monitoring, and special studies programs should the State Water Board consider as part of the Delta outflow criteria, if any?*

C-WIN recommends that the State Water Board apply a precautionary and protective approach in developing Delta outflow criteria that takes account of the Estuary's flows—and the timing, quality (e.g., temperature), and volume of flows—needed to enable listed fish species to recover to their former abundance. In essence: first, do no harm, or in the Delta's current situation, relax the stressors as the State Water Board the Delta with provides needed base and pulse flows. We urge the Board not to “pre-balance” the flow needs of the fish with some impression of whether water contractors or water project operators would accept the flows or not.

C-WIN also believes the Board should address uncertainty by identifying areas in your flow criteria where important uncertainties do exist. Once identified, the Board should encourage adaptive management approaches to addressing them. The quest for greater scientific understanding of these resources must not paralyze the Board from exercising its authority to act on behalf of protecting these species.

State Water Board Question: *What methodology should the State Water Board use to develop flow criteria for the Delta? What does that methodology indicate the needed minimum and maximum volume, quality, and timing of flows are for different hydrologic conditions under the current physical conditions of the Delta?*

From C-WIN's review of scientific exhibits from the 1987 through 1992 period as well as more recent scientific literature, the Bay-Delta estuary needs:

- **Base flow criteria** that provide an overall hydrologic regime to support a thriving estuary. The estuary must serve as a rich and highly diverse nursery for the young of species, with diverse habitats to encourage greater niche specialization and more successful survival strategies.
- **Pulse flow criteria** to encourage transport in and through the Delta and production of anadromous fish, because anadromous (migratory) fish use the Bay-Delta Estuary as a migration corridor at select times of year.
- **Temperature criteria** for source tributaries because anadromous fish need cold water conditions in the Delta's major tributaries to survive their

**Summary of C-WIN Testimony: Optimal Conditions in the San Francisco Bay-Delta Estuary
February 16, 2010**

migration down the Sacramento and San Joaquin rivers to the Delta. Sources of flows are discussed below.

- **Estuarine criteria** correlated with base flow criteria that simultaneously delineate the region of greatest nursery function and freshwater species and biomass productivity.
- **Source flow criteria** for all major Delta tributary rivers, and we recommend the State Water Board employ fair share allocation flow factors that would support Delta outflows that address the other criteria we recommend to you.

State Water Board Question: *What key information, in particular scientific information or portions of scientific information, should the State Water Board rely upon when determining the volume, quantity, and timing of water needed for the Delta ecosystem pursuant to the board's public trust obligations? For large reports or documents, what pages or chapters should be considered? What does this scientific information indicate regarding the minimum and maximum volume, quality, and timing of flows needed under the existing physical conditions, various hydrologic conditions, and biological conditions? With respect to biological conditions, what does the scientific information indicate regarding appropriateness of flow to control non-native species? What is the level of scientific certainty regarding the foregoing information?*

The Board should seek out and rely on scientific information that establishes and explains the relationships among flow, salinity, food web productivity and species abundance for improving estuarine conditions to a point that listed species recover, invasive species are better controlled and suppressed, and overall biomass productivity increases. We provide detailed testimony on key information on pages 8 to 23 of Exhibit C-WIN 2.

State Water Board Question: *When determining Delta outflows necessary to protect public trust resources, how important is the source of those flows? How should the State Water Board address this issue when developing Delta outflow criteria?*

The source of Delta outflows is extremely important to determining what Delta outflows are necessary to protect public trust resources.

In particular, increased flows to the Delta from the San Joaquin River Basin should address these and other ecological and water quality issues in the Delta. C-WIN

**Summary of C-WIN Testimony: Optimal Conditions in the San Francisco Bay-Delta Estuary
February 16, 2010**

recommends that the State Water Board develop fair share methods for Delta inflow contributions from each of the major tributaries of both the Sacramento River and San Joaquin River basins at a time when allocations are briefed and testified to in evidentiary hearings preparatory to a water rights decision on Delta outflow.

**Recommendations of the California Water Impact Network
to the State Water Board on Optimal Environmental Conditions
to Protect Bay-Delta Estuary Public Trust Resources**

C-WIN developed recommendations on optimal conditions to protect and restore Delta ecosystems and fisheries using broad flow and related criteria to the State Water Board. C-WIN recommendations include:

- Mean daily temperature of no higher than 59 degrees Fahrenheit based on Central Valley Regional Water Quality Control Board Basin Plan for five and a half months (December 1 through May 15) in all years.
- Based on recommendations originally submitted by DFG to the State Water Board in 1992 and updated from research by fisheries biologist Carl Mesick into optimal pulse flows benefiting salmon smolts, we recommend significant positive pulse flows in Old River
- Base flows in the Sacramento at Rio Vista should be no less than 6,000 cfs in all years according to DFG in 1987 from February 1 through October 31 in all water year types. Such flows will help not only fall run salmon but spring run salmon as well. Spring pulse outflows at Chipps Island of between 20,000 and 43,000 cfs were recommended to the State Water Board in 1987, and in the future should be characterized as flows sufficient at Freeport (above potential diversions to a peripheral canal) to be measured at that level at Chipps Island. We recommend that they be set at about 30,000 cfs as optimal flows, prior to any balancing with other beneficial uses.
- Positive base flows for the San Joaquin River at Jersey Point maintaining a 14-day average between February 1 through June 30 to increase Delta smelt habitat, early on for spawning period activity, and later for migrating to Suisun Bay before temperatures rise in the south and central portions of the Delta.
- Maintain positive net seaward flows at Jersey Point, of 1,000 cfs in critical and dry years, 2,000 cfs in below- and above-normal years, and 3,000 cfs in wet years from October 1 through June 30. This would increase survival of smolts migrating

**Summary of C-WIN Testimony: Optimal Conditions in the San Francisco Bay-Delta Estuary
February 16, 2010**

down the mainstem rivers, decrease the number of smolts diverted into the central Delta, increase the survival of smolts diverted into the central Delta, and provide attraction flows for San Joaquin Basin adults (October-December).

- Optimal Delta outflows at Chipps Island by period of the year and water year type using a mean 14-day running average of the Net Delta Outflow Index.
- Approximate X2 positions to be maintained during periods February 1 through March 31, April 1 through July 31, and August 1 through January 31, based on the optimal Delta outflows.
- Optimal operations by water facilities to achieve optimal ecological conditions, including Delta Cross Channel gate closures, installation and operation of an acoustical barrier on Georgiana Slough to block fish entry from the Sacramento River, and two export restriction periods: from February 1 through March 15 when pumps may operate so long as minimum positive flows are retained in the San Joaquin River at Jersey Point according to our optimal conditions; and from March 16 to June 30, when no exports would be permitted to ensure safe passage of migrating salmonid smolts down Old River toward Jersey Point, as well as permit passage of pulse flows called for above without entrainment losses at the export pumps. Additional purposes of this objective are to encourage salmon smolts in the San Joaquin system to avoid the San Joaquin mainstem channel through the Stockton DWSC, and to reduce movement of Sacramento system salmon smolts into the central Delta.
- Given serious problems with overbite clam (*Corbula amurensis*), we recommend suppression flows in excess of 115,000 cfs in 2 to 4 years out of every 10. Suppression flows recommended in 1987 have not occurred and the problem of invasive benthic filter feeders is cited as an important competitor for zooplankton prey sought by Delta smelt. Higher flows are now needed to suppress a much larger problem than was anticipated in 1987 in order to reestablish freshwater estuarine habitat that would be optimal to Delta smelt, longfin smelt and other listed estuarine fish species.