STATE WATER RESOURCES CONTROL BOARD

**PUBLIC WORKSHOPS AND REQUEST FOR INFORMATION:
COMPREHENSIVE (PHASE 2) REVIEW AND UPDATE TO THE BAY-DELTA PLAN**

Workshop 3: Analytical Tools for Evaluating Water Supply, Hydrodynamic and Hydropower Effects

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Submitted on Behalf of Sacramento Valley Water Users and Northern California Water Association

I have been employed by Ducks Unlimited (DU) since 1997 and currently serve as the Director of Conservation Planning for DU's Western Regional Office. In my current role, I provide research and planning support for all of DU's conservation programs in the Pacific Flyway. I have co-authored nearly 20 manuscripts in peer-reviewed journals and have also authored several technical publications, including the 2006 Central Valley Joint Venture Implementation Plan.

The focus of my presentation will highlight the importance of the Sacramento Valley to waterfowl and other wetland dependent waterbirds and describe the type of analysis needed to: 1) evaluate how changes in surface water supplies associated with increased Delta outflows will influence the availability of habitat for waterfowl and other wetland dependent birds, and 2) evaluate how these changes in habitat availability will reduce the number of waterfowl and other wetland dependent birds that have traditionally relied on the Sacramento Valley during fall and winter.

I would like to address the following specific points in my presentation:

- Sixty-percent of all waterfowl in the Pacific Flyway winter in the Central Valley, with half of these birds relying on the Sacramento Valley. National Wildlife Refuges, State Wildlife Areas, privately managed wetlands and ricelands that provide habitat for waterfowl and other wetland dependent birds in the Sacramento Valley are dependent upon access to reliable, timely and high quality water supplies. Almost all of these lands in the Sacramento Valley receive surface water supplies directly from irrigation water suppliers, as well as indirectly though return flows from other surface water suppliers. A good portion of the water supplied to these habitat lands is made available through tailwater recovery and other efficient water management practices implemented by the irrigation water suppliers. Disruptions to these water supplies will impact the beneficial uses and public trust values these lands provide.

- Ninety-five percent of the Central Valley's historic wetlands have been lost. The establishment of National Wildlife Refuges and State Wildlife Areas, as well as intensively managed private wetlands and flooded rice fields, has helped provide the habitat values that were once supplied by native wetlands. These habitat values not only benefit waterfowl, but also wintering shorebirds, raptors, riparian songbirds, and other wetland dependent species in the Sacramento Valley

- As part of this phase of the review and potential modification of the 2006 Bay-Delta Plan, the State Water Resources Control Board (SWRCB) will be focusing on "fish and wildlife beneficial uses." Although much of the discussion during these workshops has

focused on fishery resources in the Bay-Delta, it is also important that the SWRCB recognize beneficial uses and public trust values outside of the Delta, as well as the impact modifications to the Bay-Delta Plan will have on them. In particular, the SWRCB's analysis needs to consider the beneficial uses of water supplied to lands that provide wetland habitat in the Sacramento Valley and the consequences of no longer doing so. Ducks Unlimited recently evaluated the impacts of different flooding regimes in the Yolo Bypass on waterfowl; such an analytical tool could be used to evaluate similar impacts in the Sacramento Valley.

- Just as the SWRCB considered the importance of birds that depend upon the waters in Mono Lake, here the SWRCB should similarly consider the importance of water to birds along the Pacific Flyway in the Sacramento Valley

<u>Values Provided by Wetlands in the Sacramento Valley are Totally Dependent upon Reliable Water Supplies</u>

In his book, *The Fall and Rise of the Wetlands of California*, Philip Garone states, "What we as a society do with our water—from whom and where we take it, and to whom and where we deliver it—reveals much about our values and our relationship with nature. Recent efforts to protect and restore wetlands in the Central Valley and nationally tell us a great deal about how priorities for water use have shifted during the twentieth Century and into the twenty-first." (Page 3)

Over the past two decades, considerable progress has been made to enhance habitat for migratory waterfowl, wintering shorebirds, raptors, riparian songbirds and other wetland dependent species using the Sacramento Valley. This includes expansion and enhancement of National Wildlife Refuges and State Wildlife Areas, agricultural practices that provide wetland functions, increases in the amount of privately managed wetlands and, most importantly, reliable, high-quality water supplies. The water rights possessed by water suppliers in the Sacramento Valley have allowed them to supply water to harvested rice fields during the winter to provide habitat, irrigate managed wetlands and enter into arrangements to deliver water to Refuges and Wildlife Areas. The efforts of the water suppliers to install state-of-the-art fish screens have further ensured the reliability of their water supplies, allowing them to divert water year-round, even in the winter months when water is needed to provide critical habitat in the Sacramento Valley. Without a secure, reliable supply of water, these wetland values will be lost.

The results of these efforts can be seen by examining the gain in waterfowl habitat since the late 1970s and early 1980s. Figure 4-10 and Figure 4-12 on pages 50-51 of the attached *Central Valley Joint Venture 2006 Implementation Plan* show gains in duck food supplies over the past twenty-five years compared to bird needs. During the late 1970s and early 1980s, duck food supplies may have been inadequate or largely exhausted by late January or early February. Fortunately, habitat gains over the past twenty-five years have dramatically improved this situation as food supplies now appear adequate from August through March. However, these gains are totally dependent on having reliable surface water supplies into the future for both wetland and flooded rice habitats.

Recent analysis of the effects of increasing flows through the Delta has led to some startling revelations regarding potential impacts on the operations of the State Water Project and the Central Valley project. I am not an expert in hydrology, but, relying upon the work that MBK Engineers has submitted to the SWRCB during these workshops, it appears that dedicating even 40 percent of unimpaired flows to the Delta will have severe effects on the operation of Sacramento Valley reservoirs. As the level of flows increases so does the probability that the reservoirs will be unable to maintain viable operations. Additionally, increasing flows through the Delta will negatively affect carryover storage and the ability to divert water in the fall and winter months. This in turn will prevent water suppliers from being able to deliver water to Refuges and Wildlife Areas, managed wetlands and rice fields during the time of year it is needed most to provide habitat values to birds using the Sacramento Valley. Any analysis of changes to the Bay-Delta Water Quality Control Plan must include an evaluation of the impact those changes will have on the availability and/or reliability of water supplies that provide wetland habitat benefits.

Wetland Habitats in the Sacramento Valley and Associated Water Needs

In the Sacramento Valley, habitat for wetland dependent species is primarily provided by flooded ricelands, National Wildlife Refuges and State Wildlife Management Areas, and privately managed wetlands. These habitats and their annual water needs are summarized below.

Flooded Rice

Each year, between 500,000 and 600,000 acres of rice are planted in the Sacramento Valley. Over 230 species are known to use California ricelands for habitat. Of that, 30 species are special-status wildlife: California Species of Special Concern, Federal Bird Species of Conservation Concern, California Fully Protected Species, California Threatened Species, California Endangered Species, Federally Endangered Species or Bald and Golden Eagle Protection Act. Moreover, 40,000 acres of Sacramento Valley wetlands now rely upon rice drain water for fall flooding. Rice fields in the Sacramento Valley are specially-designated as Shorebird Habitat of International Significance – one of the largest special ecological sites of its kind in North America – helping support nearly seven million waterfowl (60 percent of all waterfowl in the Pacific Flyway) and 300,000 shorebirds.

One acre of rice provides about two-thirds of the waterfowl food that is provided by one acre of managed wetland. There are about 350,000 acres of winter-flooded rice in the Central Valley. In terms of waterfowl food, this equates to about 235,000 wetland acres (350,000 x 2/3). Wetland restoration costs in the Central Valley, including the costs of land purchase, average about $6,500 per acre. Replacing the food now provided by rice with wetland-based foods would total over $1.5 billion. The amount of water needed to meet the winter-flooded rice objectives established in the Central Valley Joint Venture 2006 Implementation Plan is 425,000 acre-feet per year.

Public and Privately Managed Wetlands

National Wildlife Refuges and State Wildlife Areas in the Sacramento Valley provide nearly 27,000 acres of wetland habitat, while privately managed wetlands provide an additional 43,000 acres. Of these 70,000 acres, approximately 85% are seasonal wetlands while the remaining 15% are managed as semi-permanent wetlands. Seasonal wetlands are usually flooded in fall and drawn down between March and May, while semi-permanent wetlands are usually flooded from fall through July. Collectively, these wetlands require 389,000 acre-feet of water per year to be properly managed (Central Valley Joint Venture 2006). To fully meet the wetland objectives established for the Sacramento Valley in the Central Valley Joint Venture 2006 Implementation Plan, an additional 50,000 acres of seasonal and semi-permanent wetlands must be restored. These restored acres will require an additional 266,000 acre-feet of water per year, bringing the total wetland water need in the Sacramento Valley to 655,000 acre-feet per year.

Thus, according to the Central Valley Joint Venture, the combined water needs of flooded rice habitats and wetlands in the Sacramento Valley exceeds 1 million acre-feet per year.

Public Trust Values of the Pacific Flyway

As Walter Bourez from MBK Engineers mentioned in his written comments for the first workshop, implementing new flow objectives on the Sacramento River (to achieve either 50% unimpaired Delta outflow or 40% unimpaired Delta outflow from January through June) "would break the system." Among the impacts would be the availability of water in the fall and winter months, which is necessary to create Pacific Flyway habitat for migratory waterfowl, wintering shorebirds, and other terrestrial species. According to Mr. Bourez's comments, "(ii) an average

reduction of 2,200,000 acre-feet in reservoir carryover storage would occur under the 50% of unimpaired flow scenario; (iii) an average reduction of 1,000,000 acre-feet in reservoir carryover storage would occur under the 40% of unimpaired flows scenario." With these impacts on the reservoirs, the probability that surface water would be available in the fall and winter months for Pacific Flyway habitat becomes highly uncertain. This problem is further exacerbated during drought years.

The only alternative to the application of surface waters on these lands to create wetlands habitat is to utilize groundwater. In the Sacramento Valley, groundwater extraction is most often more energy intensive and expensive than surface water supplies. If access to surface water supplies was hampered by new flow objectives, it also is a safe assumption that other water users will be increasing their groundwater usage. In his comments, Mr. Bourez stated that, "in many critical years, there would need to be over 1,000,000 acre-feet of additional groundwater pumping to maintain current levels of water use, with pumping reaching 1,600,000 acre-feet in some years and exceeding 1,000,000 acre-feet in multiple consecutive years in multi-year droughts. Because such levels of groundwater pumping in the Sacramento Valley are not feasible under current conditions, significant reductions in Sacramento Valley irrigated acreage for both farming and wetlands would occur if either the 50% or 40% of unimpaired flows scenarios were implemented."

Reductions in the availability of surface water supplies will have significant impacts on habitats that have traditionally supported waterfowl and other wetland dependent species in the Sacramento Valley. In a report Ducks Unlimited prepared for the California Rice Commission in

2010, we determined that, "A 25 percent loss of rice acreage would reduce the capacity to support duck populations by about 600,000 birds. A 50 percent loss would double that figure to 1.2 million ducks."

The public trust values provided by Sacramento Valley habitats, the species that use them and the surface water supplies necessary to maintain them is undeniable. Any analysis of potential changes to the Bay-Delta Plan must include an investigation of the impact the changes will have on the water supplies necessary to maintain the public trust values these lands provide.

The 2006 Central Valley Joint Venture Implementation Plan provides a strong biological foundation for any effects analysis of the reduction in surface water supplies on wetland and agricultural habitats in the Sacramento Valley, and the consequence for wetland dependent birds. The Plan has established wetland and winter-flooded rice objectives for multiple bird groups that rely on the Sacramento Valley, and has identified the amount of water (acre-feet) required to properly manage these habitats.

As the MBK report has shown, increasing Delta outflow from January through June will reduce reservoir carryover storage, and ultimately the surface water supplies available for wetland management and winter-flooding of harvested rice fields (For the carryover impacts of establishing January-June Delta outflow requirements at 40% or 50% of unimpaired flows, see Figures 12 and 13 in MBK Engineers' April 25, 2012 report *Evaluation of Potential State Water Resources Control Board Unimpaired Flow Objectives*, submitted for the SWRCB's first 2012 Bay-Delta workshop.). Although the exact impact of increased Delta outflows on surface water

supplies may not be currently known, it is possible to "model" a range of scenarios that reflect varying degrees of reduced water availability. These water supply scenarios would result in different levels of habitat availability for wetland dependent birds, and identify at what level habitat is no longer sufficient to meet the needs of wetland dependent birds. Similar analyses have already been conducted for the Bay-Delta Conservation Plan's effects on wetland birds that will result from converting existing habitat types to other land uses, and for the Conservation Measure 2 for the Yolo Bypass. Both these analysis used the Central Valley Joint Venture Plan as a biological basis, and also relied on the model used to establish habitat objectives for waterfowl and other bird groups in the Plan.

Conclusion

Any reallocation of water away from uses in the Sacramento Valley can have a direct impact on habitat values in the region. Any analysis of water supply impacts for changes to the Delta Water Quality Control Plan must include the effect those changes will have on the availability and reliability of water for public trust values provided by National Wildlife Refuges, State Wildlife Areas, managed wetlands, ricelands, and other land uses in the Sacramento Valley.

Exhibits:

- California Mid-winter Waterfowl Survey – Total Ducks
- California Mid-winter Waterfowl Survey – All Waterfowl (all ducks, geese & swans)
- *Assessing Waterbird Benefits From Water Use In California Ricelands*, May 2010

- *Waterfowl Impacts of the Proposed Conservation Measure 2 for the Yolo Bypass – An effects analysis tool,* July 16, 2012
- *Central Valley Joint Venture 2006 Implementation Plan*
- *Wildlife Known To Use California Ricelands*, 2011
- *Raptors and Rice in California's Sacramento Valley*, 2011
- Various letters regarding the Pacific Flyway