

-- Draft CMARP Proposal --

Storage and Conveyance
Wetlands Water Use

A primary objective of the CALFED Bay-Delta Program involves improving and increasing natural habitats as well as improving ecological functions in the Bay-Delta to support populations of valuable plant and animal species. Wetland development and management is currently under consideration as a component of the proposed alternative solutions. Identification of potential net water use impacts due to the conversion of agricultural crops to wetlands is instrumental in evaluating the viability of land use alternatives.

An initial attempt has been made to estimate the water use impacts associated with habitat development. A draft report has been prepared by the Technical Services Branch of the CALFED Bay-Delta Program entitled *Agriculture-to-Wetlands Land Use Conversions – Net Water Use Comparative Analysis*, June 1998. **According to the data and assumptions used in this report, net water use for seasonal, semi-permanent, and permanent wetlands will increase water requirements by 35%, 80%, and 135%, respectively. That being the case, it is crucial that wetlands water use estimates be refined and defensible as they may play a primary role in determining the feasibility of the proposed habitat restoration.**

As specified in the conclusions of this report, “preparation of a cogent analysis may require identification, compilation, and consideration of additional data regarding wetlands water use.” This proposal describes the variables and parameters that need to be developed through further study or field investigations. The premise of further investigation is to develop and apply the same approach to wetlands as is currently used to quantify agricultural water use. Informational needs fall into three primary categories: (1) Evapotranspiration Rates, (2) Operational Procedures, and (3) Development of standardized, pond-specific vegetative compositions (similar to agricultural crop mixes). Irrigation efficiencies can also be derived from the above data. Specific study methods, scoping, and scheduling are not addressed in this proposal.

Perhaps the most critical parameter required in estimating wetlands water use is evapotranspiration rates of specific vegetative species. A variety of species and habitats are detailed in the *CALFED Bay-Delta Program Environmental Restoration Program Plan*. It is recommended that the evapotranspiration rate of each of the proposed species be determined with respect to the proposed location of development. This will facilitate a more accurate comparison to agricultural water use as Et rates of specific crops (in specific regions) have been determined with a great deal of certainty.

Operational procedures on the proposed wetlands are another critical parameter that needs to be further defined. Two vital operational components need to be standardized (to the extent possible). Water flow-through maintenance activities (both scheduling of releases and volume of water passed) will significantly impact net water use. This is especially significant with permanent wetlands since half of the applied water may be required for this purpose.

The second operational component involves pond maintenance practices. Dewatering and discing activities may impact infiltration and evaporation losses. The frequency, time of year, and duration of these activities need to be quantified. Ultimately, operational procedures, in conjunction with vegetative Et, will facilitate development of applied water estimates and irrigation efficiencies of the managed wetlands.

Several species of vegetation may be encountered with one type of proposed habitat. This will require development of standardized habitat/vegetative configurations. Development of standardized habitat "crop mixes" is necessary to estimate the applied water requirements, vegetative consumptive use, and irrigation efficiencies of pond-specific habitats. The vegetative mix can be defined on a regional, pond-specific, or per acre basis -- depending on the variation in vegetation versus total cropped area. With the parameters and data detailed above, a more valid and accurate water use comparison can be developed.