State of California

The Resources Agency

Memorandum

Date : DEC 30 1997

To : Stein Buer
CALFED Bay-Delta Program

From : **Department of Water Resources**

Subject: Applied Water Analysis

Attached is the draft report transmitting the applied water analysis for CALFED Level 1 and Level 2 islands, tracts, and miscellaneous areas within the Delta. The agricultural applied water and projected urban water usage estimated by the Department of Water Resources' Central District Land and Water Use and Conservation Section were based upon readily available data as per CALFED's request. This was due to CALFED's short timeframe and money constraints. The analysis was guided by a memorandum from the CALFED Bay-Delta Program dated October 10, 1997. The study was coordinated and priorities set by CALFED staff. The following priorities were verbally communicated to Central District staff:

1. Development of projected monthly applied agricultural water data for Level 2 islands and tracts for 2020 critical dry year

2. Monthly water requirements for nearby urban areas for 2020 normal year

Additional data were developed within the financial constraints of the work authority. These include the following:

1. Monthly applied agricultural water data for Level 2 islands and tracts for 1990 critical dry and normal years

2. Projected monthly applied agricultural water data for Level 2 islands and tracts for 2020 normal year

3. Annual applied agricultural water data for Level 2 islands and tracts for 1990 and 2020 critical dry and normal years

Please note the following comments on the applied water data provided in this report for the CALFED Consumptive Use Model. The quantities of applied water calculated in the spreadsheets of this report refer to the amounts of water

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which must be applied through irrigation to meet the needs of the crops mapped in DWR land use surveys. Crop water needs which must be met include both evapotranspiration and cultural practices. The calculation for applied water of a particular crop includes the average efficiency of irrigation systems in the study area. Irrigation efficiencies for the Delta Service Area and western uplands estimated for DWR Bulletin 160-93 range from 52 to 78 percent, depending on crop type. Projected irrigation efficiencies for year 2020 range from 60 to 78 percent.

Applied water varies with the pattern of precipitation. In a critical dry year, although consumptive use remains relatively constant, applied water increases due to the decreased contribution of precipitation. In California, there is little precipitation during the growing season, so annual applied water exceeds consumptive use in both normal and critical dry years.

Applied water and consumptive use differ in timing as well as quantity. Although irrigation scheduling will vary with the winter precipitation pattern, applied water is likely to exceed consumptive use early in the growing season when the rooting depth of field crops is shallow, leaf area is small, and trees are just emerging from dormancy. Later in the season, farmers may apply less water than the consumptive use of a crop, relying on moisture stored in the soil from earlier irrigations, to meet the crop water demand.

Attached are a hard copy of the data developed for this project along with the corresponding files on disk. The report includes a brief narrative and spreadsheets showing calculations of projected urban water requirements and applied agricultural water. Notes on the spreadsheets provide additional information on the sources and limitations of data incorporated into the analysis.

This applied water analysis was assembled within a short timeframe using existing data. A more recent set of data for much of the study area will become available when processing of the 1996 data from DWR's land use survey of San Joaquin County is complete. If needed for the CALFED consumptive use model, increased specificity on crop distribution and corresponding water applications is currently available from land use survey data.

We look forward to working with you in the future on this and other projects. If you have any questions concerning this report, please contact Ed Morris at (916) 227-7578.

for Karl P. Winkler, Chief
Central District
(916) 227-7566

Attachments

cc: William J. Bennett, Chief
Division of Planning and Local Assistance
Marco Bell
CALFED Bay-Delta Program

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