

## Preliminary Water Quality Assessment of Central Delta Pumping

There have been a few simple hydrodynamic (Fischer Delta Model) studies that MWD and CCWD have completed that can be used to learn more about the hydrodynamic and salinity changes that would occur when pumping is shifted from the south Delta to the central Delta.

KT Shum (CCWD) recently completed a short-period study which was based on recent conditions in the Delta (Aug-Dec. 1999) except that export pumping at Tracy pumping plant was shifted to McDonald Island to simulate the effects of central Delta pumping.

Under these conditions use of the Central Delta intake at 4,500 cfs when outflow is below 6,000 cfs affects water quality in Old River (salinity increases). Middle River quality isn't affected much and remains relatively good. Even after the export shift, salinity in the central Delta is better than salinity in the south Delta, but the shifted pumping degrades salinity in the central Delta by about 5-10% relative to the base (unshifted) case. The overall blend for exports is probably unchanged because the better water accessed in the central Delta is negated by the slight degradation to the water that is pumped out of the south Delta (degradation also of the order of 5-10%). These results are applicable in the fall when outflow is relatively low. Operations could avoid the degraded water by pumping less from the central Delta or none at all. Additionally, because of migrating salmon during the fall, diversions from the central Delta intake may be reduced. The dual intakes would primarily be used in the spring and winter and summer.

Generally, the farther north the intake goes, the better the water quality because of the proximity to the Mokelumne River and Georgiana Slough. This is confirmed by CCWD's longer-term FDM studies of existing conditions.

Chuching Wang (MWD) also completed several relevant studies. Chuching's studies were based on longer-term analyses (WY 1922-92). Diversions were 5,000 cfs at Bouldin Island in one study and 5,000 cfs at the San Joaquin River near 14-mile Slough in another. The diverted water would be isolated for SWP export only. Results showed that for the San Joaquin River diversion, there would be slight TDS degradation in the South Delta and eventually a push in export water quality. For the Bouldin Island diversion, the results indicated TDS degradation in the South and Central Delta but significant improvement, about 24%, in the SWP export. Chuching has also conducted modeling analyses for larger scaled diversions (12,500 cfs) to study the effect of isolated and through Delta transfer of the diverted water on the export water quality.

DWR has completed DSM2 studies which quantify the relationship between shifted pumping from Tracy Pumping Plant to the central Delta and the impact on stage in the south Delta. Results indicate an increase of 0.1 feet in stage for every 1,000 cfs of Tracy pumping shifted to the central Delta. The effect is smaller for Clifton Court Forebay shifting because Clifton Court fills on the high tide only (0.03 ft for each 1,000 cfs of reduction in Clifton Court diversions from the south delta).

The historical MWQI data (grab samples) in central and south Delta channels should be analyzed. These data can provide some insight relative to the organic carbon concentration in the central and south Delta.