V. Conclusions

Concentrations of water and sediment deposition fluxes measured in the San Joaquin River suggest that settling and resuspension rates are similar for much of the DWSC. Most of the sediment burial occurs between within the first mile of the DWSC below the Port of Stockton. Beyond Rough and Ready Island it appears that a dynamic steady-state condition exists between particle settling and resuspension. A mass balance analysis is currently underway to quantify burial and resuspension rates. These results will be incorporated in the final draft of this report.

Calculated settling rates of TSS, VSS, chlorophyll *a* and pheophytin *a* are relatively high. The high estimated settling velocities appear to be caused by resuspension and overtrapping and/or aggregation of particles in the DWSC. Strong correlations between chlorophyll *a*, pheophytin *a*, and VSS with TSS for the trapped sediments suggest that this lighter organic matter is associated with inorganic soils that settle more rapidly. Relatively heavy mineral soil grains may be collecting organic matter in route to the channel bottom.

The data presented here also show that chlorophyll *a* concentrations decrease rapidly upon entry to the DWSC. The phytoplankton associated with the chlorophyll *a* decay may exert a significant oxygen demand while in the DWSC. The trapped sediments exhibit good correlations between the ultimate BOD and the sum of chlorophyll *a* and pheophytin *a* suggesting that algae decomposition is responsible for much of the oxygen demand associated with the suspended matter entering the DWSC.

Correlations of the ultimate BOD with phytoplankton pigments were poor for waters of the DWSC. This appears to be associated with the relatively high soluble fraction of BOD in the DWSC. However, a limited number of measurements performed in the San Joaquin River above the DWSC exhibit much better correlations with chlorophyll *a* concentrations and the sum of chlorophyll *a* and pheophytin *a* concentrations. These observations may suggest that phytoplankton decomposition in the DWSC results in a transformation of BOD from a particulate form associated with intact algae cells to a soluble form. Additional BOD measurements of water collected from the San Joaquin River and DWSC are needed to verify this hypothesis.

V. References

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