**Tracy Research Technical Report Abstract**

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Johnson, P.L., M. Campbell, and J.A. Higgs. 2004. *Physical Model Study of a Primary Bypass Intake with Louvers at the Tracy Fish Collection Facility, Tracy, California*. Tracy Fish Collection Facility Studies. Volume 28. U. S. Bureau of Reclamation, Mid-Pacific Region and Denver Technical Service Center. 34 pp. + appendices.

A 1:6 scale physical model and a computational model of a Tracy Fish Collection Facility (TFCF) primary bypass intake with approach louvers were studied to refine bypass approach velocity distributions. The TFCF functions to prevent fish entrainment at the Tracy Pumping Plant. The TFCF collects fish that are then returned to the Delta. To achieve efficient fish collection, velocity fields should be generated that are uniform and that supply well directed guidance to the bypass entrance. In the first phase of this study, modeling was used to develop low maintenance internal features of the bypass entrance that generated near-uniform internal velocity distributions (Kubitschek 2003). This second phase study focused on extending the 1:3 model findings to the approach flow. Study findings show that velocity distributions in the vicinity of the bypass entrance are influenced by approach flow velocity distributions. This may imply that the TFCF trashracks and louvers should be maintained clean to sustain uniform velocity fields approaching and entering the intakes. Findings also show that by adding a minor flow restriction to the backside of the louver immediately adjacent to the bypass entrances, a local through louver high velocity zone can be eliminated which should improve fish guidance to the bypass intake. Finally, findings show that acceptable passing flow and bypass entrance hydraulics can be maintained with the bypass guide wall removed. This supports possible future guide wall removal that could lead to application of improved louver cleaning techniques (i.e., eliminate the need for removal of the louver panels during cleaning).