

## **State Route 99 Crossing Water Surface Elevation Analysis**

This data collection activity is not part of any of the 2014 MAP studies, but rather was undertaken because proposed changes to planned fall pulse Restoration Releases had the potential to impact third party activities on the river. Topographic, bathymetric, and water surface survey data were collected by the Department of Water Resources South Central Region Office (DWR-SCRO) in the immediate vicinity of the low-flow channel at the State Route (SR) 99 crossing over the San Joaquin River.

California Department of Transportation (Caltrans) is retrofitting the north and southbound lanes of SR 99 Bridge over the Reach 1A segment of the San Joaquin River (SJR). Part of the construction in 2013 included building falsework under the bridge and across the SJR channel. To ensure that the falsework would not be inundated, the contractors designed the falsework based on earlier high water elevations they estimated from water marks on temporary piers. Prior to the planned fall pulse release of 1,050 cfs from Friant Dam in late October 2013, DWR-SCRO was contacted by the Bureau of Reclamation to request we investigate conditions at the site and evaluate whether planned flows would impact the construction project. To complete the analysis, DWR collected topography, bathymetry and water surface elevation data to compare with the existing 1-D hydraulic model geometry and estimate water surface elevations before and after the flow release from Friant Dam.

### Summary of Data Collected

On October 24, 2013 DWR-SCRO completed a topographic/bathymetric survey at seven cross sections under the SR 99 bridge at the construction site to compare with the existing HEC-RAS 1-D hydraulic model. Water surface elevations immediately upstream and downstream of the bridge and at the construction area were also collected for model calibration. Flow was estimated to be about 270 cfs during survey. To monitor the increase in flows and stage and to validate the hydraulic model, DWR-SCRO conducted follow-up water surface elevation surveys on October 31, 2013 and November 1, 2013. The local flows during the surveys were approximately 675 cfs and 785 cfs, respectively, as estimated from the Donny Bridge flow gage.

### Summary of Results

The construction project at HWY 99 did not significantly impact the water surface elevations and the estimated high water mark elevation. Comparison of the water surface profiles from the existing hydraulic model with the water surface elevations collected by DWR-SCRO showed minimal differences. Survey data and model output resulted in the conclusion that the contractor's assumptions were reasonable, and the construction project was not likely to be negatively impacted by the 1,050 release.