Gravel pits are currently connected to the San Joaquin River in several locations of Reach 1, which is located just downstream from the Friant Dam. The San Joaquin River Restoration Program (SJRRP) seeks a tool to help guide management decisions related to the impacts of gravel pits on the water quality of Reach 1 with respect to temperature.

A two-dimensional (2D) unsteady temperature model is being developed to better understand the spatial and temporal variations in temperature within Reach 1 of the San Joaquin River. To date, a 2D hydraulic model has been built in Reach 1A between Highway 41 (Mile Post (MP) 255) and Sycamore Island (MP250.5) using Reclamation’s model, SRH-2D. Several gravel pits are located within this 4.5-mile reach of river. The hydraulic model was calibrated using available water surface elevation data for flows ranging between 700 cfs and 4,500 cfs. Since the model was developed, however, updated gravel pit surveys have been conducted. These new topographic data will be incorporated into the model.

The SRH-2D model with the temperature component is currently being tested on another river system in Washington. Once validated, the temperature component will be applied to the Reach 1A model. Temperature measurements within the gravel pits and river will be used for model calibration. The model will be evaluated to determine its potential in replicating existing measured temperature patterns.

If the SRH-2D temperature model is capable of reproducing measured temperatures within the test reach, the model may be extended to help prioritize which gravel pits have the greatest impacts to water temperature, and possibly to evaluate predation potential of juvenile salmonids. In addition, the model may be used to help evaluate possible restoration strategies, such as gravel pit isolation or segregation.