

Tuolumne River Gravel Addition- Phase II Enhance salmon and steelhead/rainbow trout spawning habitat by adding gravel to 3 additional riffles below the Old La Grange Bridge.,

## **Scope of Project**

### Description

The purpose of the project is to begin the restoration of the coarse sediment supply to the Tuolumne River by introducing clean gravels into the river between La Grange Dam and Old Basso Bridge. Increased and improved chinook salmon spawning habitat can be expected.

Clean, sized river run gravels would be placed into or on the bank of the river at several appropriate sites. The amount and placement of these gravels would be determined by the physical and hydrological conditions specific to each site. The gravel mixture would be sized smaller than the gravel currently existing on the bed surface and appropriate for salmon spawning use. The project assumes gravel movement over time. The gravel would mobilize, deposit as bars and spawning habitat, and redeposit over time. All the gravel placed during the project would be moved downstream by the flow of the Tuolumne River, mimicking the natural process of coarse sediment transport.

### Approach/Tasks/Schedules

The project would be done in 2 phases segregated only because of geography and logistics. Phase 1 has placed 10,000 cubic yard of spawning gravel in the river from La Grange Dam downstream to the La Grange Bridge (J59) (river miles 47 to 51). All work necessary for this phase of the project has been completed in August 1999. Monitoring and evaluation of this phase will help guide the continued replenishment of gravel in the Tuolumne River.

Phase 2 would add 10,000 cubic yards of spawning gravel from the La Grange Bridge (J59) downstream to the Basso Bridge (Hwy-132). If appropriate, Phase 2 would also add more gravel to the sites used in Phase 1. Phase 2 would be completed in 2000.

In both Phase 1 and 2, gravel from local sources would be purchased, transported and placed in the addition sites. Selection of gravel addition sites would be dependent upon their biological potential to support spawning, geomorphic and hydrological conditions, access and their overall state of implementability.

The California Department of Fish and Game is the primary partner for implementation of this project. The DFG has the clerical, fiscal and contractual personnel necessary to support the biological and technical experts administering this project. The DFG have also taken into consideration information and recommendations obtained from the watershed analysis being conducted by the Tuolumne River Technical Advisory Committee (contracted consultants) and other sources to complete this project. Funding for Phase I of this project has been provided by CALFED. Matching funds for Phase II will be requested from the Tracy or Four Pumps mitigation agreements.

## **Justification for the Project**

Construction of La Grange Dam in 1893 ended coarse sediment supply from the Tuolumne River watershed upstream of the town of La Grange. Since its construction, sediment transported during high flows have come from the bed itself or limited floodplain deposits. Elimination of upstream sediment supply has caused bed particle coarsening in the spawning reach near La Grange. This deterioration of salmon spawning habitat has been identified in the CALFED process as a primary stressor of salmon and steelhead trout. Gravel supplies are a critical part of salmonid restoration efforts and long-term maintenance of these gravels is necessary. This project would mimic the natural process of coarse sediment supply and transport and would help increase and improve degraded spawning habitat in the upper reach of the designated spawning area (Fish and Game Code 1505) heavily used by fall-run and late-fall-run chinook salmon and steelhead. The size mix of gravel will also provide spawning material for resident rainbow trout.

Gravel replenishment projects can produce direct and immediate benefit to returning adult salmon. Use of the replenished areas by adult spawners will be measured beginning the spawning season following the gravel addition. Although the results are not guaranteed, similar gravel replenishment projects on the Merced River have resulted in immediate use by spawning adults. Monitoring of physical attributes of the channel will provide a measure of the increased spawning habitat available. The duration of the benefit of gravel addition has not been quantified. However as natural transport moves gravel from the introduction site it will be re-deposited in riffles downstream, improving the functionality of the river system for anadromous salmonids as well as other riparian functions.

As identified in the Revised Draft Restoration Plan for the AFRP (1997) this project supports Tuolumne River Action 2 and 6, both high priority actions and a high priority watershed. Additionally, this project provides a potential location for mitigation of Tracy Pumping Plant operations (CVPIA 3406 (b)(4)) and implements CVPIA 3406(e)(6).

**Budget**

\$190,000 to cover an estimated need of \$380,000 (seek partnership with the Four Pumps Program)