

## Demonstration Project to Test a New Interdisciplinary Approach to Rehabilitating Salmon Spawning Habitat in the Central Valley

Winter 2003

This was the second quarter of this CALFED project to demonstrate the utility of the Spawning Habitat Integrated Design Approach (SHIRA). Presently the project is in a post-project assessment phase for the 2002 enhancement site and long-term monitoring phase for the 1999, 2000, and 2001 enhancement sites. Most emphasis was placed on the 2002 site during this period. Post-project assessment was facilitated using the SHIRA Scientific Exploration Mode. Two scientific experiments were underway. In the first experiment 15,000 painted tracer rocks were placed at the 2002 enhancement site to track scour and sediment transport in relation to different hydrodynamic patterns. Tracer rocks were tracked and surveyed using a total station. In the second experiment many vertical velocity profiles were measured throughout the 2002 enhancement area to address several different questions: 1) to what extent is the log-velocity profile equation violated in this setting and what should be done about it?, 2) how do bed  $0.6 \times \text{depth}$ , and mean velocity values relate in this setting and how can that information be used to improve sediment transport predictions?, 3) what is the hydrodynamic structure of the various habitat units present at the 2002 site?

Significant outreach efforts were made this quarter. Seven presentations on this project were made during this period. Presentations were made to UC Santa Barbara, UC Berkeley, CALFED Science Conference, Society for Ecological Restoration- Northwest Chapter, U.S. Forest Service, Yuba River Technical Working Group, trinity River Restoration Program. As this list shows, there is tremendous widespread interest in SHIRA and applying it beyond the Mokelumne River. Such applications are highly likely starting in 2003 or 2004. We also participated in a 1-day field trip to the Merced River Robinson Reach led by Prof. Tom Dunne to discuss adaptive management experiments for flow and sediment management. Finally, we provided advice in support of a gravel augmentation workshop that may be sponsored by CALFED in the near future.

A manuscript providing full documentation of SHIRA was completed. A second paper documenting the 2001 site was also prepared as a case study illustrating SHIRA and the kinds of science that can be addressed using it. A fully featured SHIRA web site is available that describes the methodology, including movies of computer simulations, field data, adaptive management strategies, and procedural flow charts. The URL is [http://lawr.ucdavis.edu/faculty/gpast/shira/shira\\_contents.htm](http://lawr.ucdavis.edu/faculty/gpast/shira/shira_contents.htm). This will serve as a one-stop source of information for anyone interested in making their rehabilitation projects objectively based.

Through an on-going adaptive management process, SHIRA is now in its 5<sup>th</sup> generation.