

Preparer Information

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Project Information

ProjectNo_2C U-04-SC-005 StartDate_3a 9/01/05 EndDate_3b 8/31/08
ProjectTitle_4 Long-term Geomorphic Effects of Dams on Rivers in the Central Valley of California: A Comprehensive and Comparative Approach

CALFed Fellow contact information

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Research Mentor (for additional please see #8)

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Additional Research Mentors and Community Mentors

Additional Research Mentors_8

Kris Vyverberg, CDFG Sacramento, 1416 9th St, Sacramento, CA 95814, 916-445-0411, kavberg@dfg.ca.gov
Dr. Michael Singer, USGS Post-doc, mdsinger@usgs.gov, 510-813-4848
Dr. Peter Downs, Stillwater Sciences, 2855 Telegraph Ave #400, Berkeley, CA 94705, 510-848-8098, downs@stillwatersci.com

Additional Community Mentors_9

Project Objectives: Please type your responses, and answer the questions in a style appropriate for laymen.

ProjectObjectives_10

My objectives for this study are the quantification and comparison of the hydrologic and geomorphic alterations that have occurred on the major dammed tributaries in the Central Valley of California. Specifically, I am quantifying pre- and post-dam sediment budgets, sediment deficits and changes in the magnitude and frequency of the geomorphic processes affecting the channel and associated communities. Additionally, at eight to twelve study sites, I am evaluating the corresponding changes that have occurred in channel form. From the previous analyses, this study will provide specific and accurate recommendations for CalFed's hydrologic and geomorphic restoration targets, particularly for the programmatic targets: iCentral Valley Streamflowsi and iCoarse Sediment Supplyi (CalFed ERPP Volume II).

Summary of progress in meeting each of these goals and objectives

ProgressSummary_11

and archives in San Bruno but also including the California Geological Survey library in Sacramento and the UC system libraries. I finished a hydrologic comparison of the magnitude of changes in flows downstream of each of the dams with adequate gage records using peak and daily flow data. I established twelve gravel tracer sites on seven relatively unstudied rivers in the Central Valley in the fall of 2005 and reoccupied the sites in the spring and summer of 2006, then again in fall 2006 and spring 2007. Currently, I am analyzing these data to determine relative mobility thresholds on each tributary. Additionally, my advisor and I recently finished a model estimating the amount of sediment and gravel stored behind dams draining into the Central Valley to approximate the amount of gravel that would have been added had there been no dams (manuscript in preparation). I have collected a variety of historical data that I will be re-measuring this summer to determine the relative effects of the dams.

PROJECT MODIFICATIONS: Please explain any substantial modifications in research plans, including new directions pursued. Describe major problems encountered, especially problems with experimental protocols and how they were resolved. Describe any ancillary research topics developed.

Modifications_12

My main difficulty to date is getting access to historical topographic data from FEMA for comparison to current topography. If CalFed staff could help me obtain some of this data, it would greatly appreciated. As a result of researching different methods for surveying channel topography, I have come across Terrestrial LiDAR, which has not been used for surveying channels, and have applied it successfully to approximately 20 different sites, a number of which are in the Central Valley. This new survey method is extremely well-suited to studying rivers and I am excited about the possibilities of applying it to other sites.

COOPERATING ORGANIZATIONS: List those agencies and/or persons who provided financial, technical or other assistance to your project since inception. Describe the nature of their collaboration.

CoopOrganiz_15

California Department of Fish and Game (Kris Vyverberg) - technical assistance and advice regarding rivers around Sacramento.
California Department of Water Resources (Koll Buer) - provided technical feedback and advice for rivers in the Northern Sacramento Valley.
U.S. Geological Survey (Michael Singer) - provided advice on sampling methods and overall scope for Northern Sacramento Valley Rivers.
Stillwater Sciences (Peter Downs) - provided advice on overall scope and methods for the San Joaquin Tributaries.
McBain & Trush (Scott McBain) - provided advice on sampling protocol and methods for the overall project.

AWARDS: List any special awards or honors that you, or mentor or members of the research team, have received during the duration of this project.

Awards_16

NA

KEYWORDS: List keywords that will be useful in indexing your project.

Keywords_17

Central Valley rivers, geomorphology, sediment, fisheries, gravel, hydrology

PATENTS: List any patents associated with your project.

