



CALFed Progress Questionnaire
California Sea Grant College Program

ConfirmationNumber
20061013144133

Printed: 4/23/2008

1:55:01 PM

ProjectYear_2A 1st Year ProjectNo_2C R/SF-8
TypeQuestionnaire_2B Interim Questionnaire

Preparer Information

PrepName_1A John Harrison
PrepEmail_1B harrisoj@vancouver.wsu.edu
PrepPhone_1C 360-546-9210

Project Information

ProjectNo_2C R/SF-8 StartDate_3a 9/1/05 EndDate_3b 9/1/08
ProjectTitle_4 Modeling Nutrient and Organic Carbon Loads and Sources in Central Valley Watersheds: Taking Existing Monitoring Data to the Next Stage

CALFed Fellow contact information

FelTitle_5A Dr FelLast_5B Harrison FelFirst_5C John FelInit_5D A
FelInstitution_5E Washington State University
FelDepartment_5F School of Earth and Environmental Sciences
FelStreetAddr_5G 14204 NE Salmon Creek Avenue
FelCity_5H Vancouver FelState_5I WA FelZip_5J 98686
FelPhone_5K 360-546-9210 FelFax_5L 360-546-9064
FelEmail_5M harrisoj@vancouver.wsu.edu
FelPositionTitle_5N Assistant Professor

Research Mentor (for additional please see #8)

RMTtitle_6A Dr RMLastName_6B Dahlgren RMFirstName_6C Randy RMInit_6D A
RMInstitution_6E University of California-Davis
RMDepartment_6F Land, Air, and Water Resources
RMStreetAddr_6G One Shields Avenue
RMCity_6H Davis RMState_6I CA RMZip_6J 95616
RMPhone_6K 530-752-2814 RMFax_6L 530-752-1552
RMEmail_6M radahlgren@ucdavis.edu
RMPositionTitle_6N Professor

Community Mentor (for additional please see #9)

CMTtitle_7A Dr CMLastName_7B Bergamaschi CMFirstNamt_7C Brian CMInit_7D _____
CMInstitution_7E USGS

Summary of progress in meeting each of these goals and objectives

ProgressSummary_11

In the first year of my CBDA Fellowship I have made significant progress in addressing the above questions, including:

- i Acquisition and pre-processing of requisite datasets, including basin delineations, river network representations, water discharge data, solute concentration data, and historic land-use data.
- i Application of the Global Nutrient Export from Watersheds (NEWS) models at 1km, mean annual resolution for Sacramento and San Joaquin Rivers and their tributaries. This work will be presented as a research talk at the 4th Biennial CALFED Bay-Delta Program Science Conference.
- i Analysis of historic and modern nutrient transport through the Sacramento and San Joaquin Rivers and their tributaries.

In addition, to the Central Valley river nutrient modeling work, the CBDA fellowship has facilitated my participation in a number of related and synergistic activities. These activities have included participation in biogeochemical research related to nutrient transport through constructed wetlands in California's Central Valley, research related to understanding sources and transport of DOC and precursors of disinfection byproducts, and research on global patterns of denitrification and nutrient delivery to coastal waters.

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

I recently was offered and accepted a tenure-track faculty appointment at Washington State University's Vancouver Campus. While this is a wonderful opportunity, I wanted to ensure that my new responsibilities did not hinder my ability to complete the research I began as a CALFED Science Fellow. I therefore submitted a revised scope and budget to CALFED. I proposed to de-emphasize the DIP modeling in order to focus on the DOC and DIN modeling. I also proposed to hire a postdoc or other personnel to continue

the model development and application work as well as supporting some summer salary for myself. I also proposed to maintain a close working relationship with Drs. Randy Dahlgren and with Brian Bergamaschi, my CALFED research and community mentors, respectively through email and phone contact as well as through occasional visits to California. These changes were approved, and I am in the process of transferring my award to WSU-Vancouver.

BENEFITS AND APPLICATIONS: Suggest the relevance of these new findings to management. Describe any accomplishment, that is significant effects your project has had on resource management or user group behavior. CALFED is looking for "management cue" (see <http://science.calwater.ca.gov/pdf/soemgmtcues.pdf>).

BenefitsApplic_13

NA--yet

PUBLICATIONS: List any publications, presentations, or posters that have resulted from this funded research. Give as many details as possible, including status of paper (e.g., in review; in press), journal name, conference location and date of presentation. Please note (as outlined in the conditions of the award) that each fellow is required to submit an abstract for an oral or poster presentation at each State of the Estuary conference and CALFED Science Conference during the duration of the fellowship.

Publications_14

This award has contributed to the following publications, abstracts and presentations, which are currently in varying stages of production as indicated below:

Published

Glibert, P. M., J. A. Harrison, C. Heil and S. P. Seitzinger (2006) Escalating worldwide use of urea: a global change contributing to coastal eutrophication, *Biogeochemistry*, doi:10.1007/S10533-3070-0, 1-23.

In Press

Seitzinger, S. P. and J. A. Harrison (In Press) Sources and Delivery of Nitrogen to Coastal Systems, Chapter 8 in *Nitrogen in the Marine Environment*, 2nd edition. D. Capone, D.A. Bronk, M. R. Mullholland, E. Carpenter Eds., Academic Press, New York.

Seitzinger, S. P., J. A. Harrison, J. K. Bohlke, A. F. Bouwman, R. Lowrance, B. J. Peterson, C. Tobias, and G. Van Drecht (In Press) Denitrification across landscapes and waterscapes: a synthesis, *Ecological Applications*.

In Preparation

Dahlgren, R. A., J.A. Harrison, S.S. Henson, A.T. Oigee, E.E. Van Nieuwenhuysse, P.W. Lehman, and E. Gallo (In Preparation for Resubmission) Diel phytoplankton dynamics in a eutrophic river resulting from growth and transport.

Chow, A.T., R.A. Dahlgren, and J.A. Harrison (In Preparation) Patterns and sources of DOC and DBP formation potential in California's Central Valley River systems, *For Environmental Science and Technology*.

Henson, S.S., Dahlgren, R.A., and J.A. Harrison. (In Preparation) Patterns, magnitudes and controls of phytoplankton growth and transport through the San Joaquin River. For J. Freshwater Biol.

Harrison, J.A., T. Ahrens, P.A. Matson, J.M. Beman, I.O. Monasterio, and P. Jewett (In Preparation) Nitrogen in the Yaqui Valley: sources, transfers, and consequences, Chapter in Mexico's Yaqui Valley: A Synthesis of a Decade of Interdisciplinary, Place-based Research, NRC Press.

Abstracts and Presentations

Harrison, J.A., and R.A. Dahlgren, Loading and Transport of Carbon, Nitrogen and Phosphorus in Central Valley Watersheds: Early Results from a Modeling Approach - CALFED Science Conference, Sacramento, CA October 2006.

Harrison, J. A., Rivers, Nutrients, and Greenhouse Gases: Insights from a Case Study and a Global Model, Ecosystems Center, Marine Biological Laboratory, Woods Hole, MA: 5/2006.

Harrison, J. A., Rivers, Nutrients, and Greenhouse Gases: Insights from a Case Study and a Global Model, San Diego State University, San Diego, CA: 3/2006.

Harrison, J. A., Human impacts on watershed fluxes of bioactive chemicals: insights from modeling and field-based approaches, Washington State University, Vancouver and Pullman (2 lectures), WA: 3/2006.

Harrison, J. A., Rivers, Nutrients, and Greenhouse Gases: Insights from a Case Study and a Global Model, University of Texas, Austin, TX: 3/2006.

Harrison, J. A., Human impacts on watershed biogeochemistry: insights from modeling and field-based approaches, Bodega Bay Marine Lab, Bodega Bay, CA: 2/2006.

Harrison, J.A., Urban areas as sources of pollution, Ecological Society of America, Merida, Mexico: 1/2006.

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

UC Davis - Randy Dahlgren - Provided water quality data for Sacramento and San Joaquin Rivers, space, research support, and paid for benefits
USGS in Sacramento-Donna Knifong and Charlie Kratzer-provided watershed delineations, land-use data, and water quality data
Calfed Science Program-Donna Podger-Provided DOC concentration data

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

Offered tenure track faculty positions at UT Austin, San Diego State University, and Washington State University in Vancouver

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

Keywords_17

nitrogen, dissolved inorganic nitrogen, DIN, dissolved organic carbon, DOC, land-use change, climate change, nutrient transport.....
modeling, watershed biogeochemistry

PATENTS: List any patents associated with your project.

Patents_18

does not apply

Additions: Additional information can be added here. Please begin the text with the number of the question you are adding to.

Additions_19

