

NOTICE OF INTENT TO AWARD

This Funding Announcement is not a request for applications. This announcement is to provide public notice of the Bureau of Reclamation's intention to fund the following project activities without full and open competition.

ABSTRACT	
Funding Announcement	R11AS20018
Project Title	Data processing and analysis in support of the 6-year steelhead survival study
Recipient	University of Washington, Seattle
Principal Investigator / Program Manager	Rebecca Buchanan
Anticipated Federal Amount	\$194,439.00
Cost Share	None
Total Anticipated Award Amount	\$194,439.00
New Award or Continuation?	New Award
Anticipated Period of Performance	3 Years
Award Instrument	Cooperative Agreement
Statutory Authority	Public Law 102-575, Central Valley Project Improvement Act, Title 34, Section 3406 (b)(1) and Section 3407(e)
CFDA # and Title	15.512
Single Source Justification Criteria Cited	(2) Continuation & (4) Unique Qualifications
Reclamation Point of Contact	Vivian Davis, Grants Management Specialist Email: vdavis@usbr.gov

OVERVIEW

Reclamation operates the Federal Central Valley Project (CVP) in coordination with the State Water Project (SWP), which is operated by the California Department of Water Resources (DWR). The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service's (NMFS) 2009 Biological Opinion (BiOp) on long-term operations of the CVP and SWP (OCAP) includes a Reasonable and Prudent Alternative

(RPA) Action (IV.2.2) that requires Reclamation and DWR to undertake experiments utilizing acoustically-tagged salmonids to confirm proportional causes of mortality due to flows, exports, and other project and non-project adverse effects on steelhead smolt out-migrating from the San Joaquin Basin and through the southern Delta. The BiOp requires that the duration of the study be six years. The so-called ‘6-year study’ is a continuation of the Vernalis Adaptive Management Program (VAMP) and will use the same acoustic array and basic study design and approach. The University of Washington developed the statistical methods used to quantify the mark-recapture model and the overall survival rate of outmigrating salmonids. It is proposed to continue the Reclamation-University of Washington partnership in implementing the 6-year study. The work will be conducted under the auspices of the Interagency Ecological Program (IEP), a consortium of nine Federal and three State agencies responsible for monitoring and special studies in the San Francisco Bay-Delta estuary.

RECIPIENT INVOLVEMENT

Working closely with the Reclamation co-principal investigator (co-PI), the University of Washington (U of W) will parameterize a Cormack-Jolly-Seber mark-recapture model for steelhead smolts migrating out of the San Joaquin catchment through the Sacramento-San Joaquin Delta and use this model to quantify reach-specific and overall survival probabilities and to assess the relative importance of factors affecting survival.

To fulfill the requirements of this agreement, the University of Washington (UW), in partnership with Reclamation, shall complete the following tasks and provide the following deliverables.

Task 1: Provide statistical support for Year 1 of study (2011).

Task 1a: Study Design and Model Development for 2011

The University of Washington will provide real-time consulting on the design and analysis of the 2011 OCAP 6-year acoustic tag experiment (OCAP RPA IV.2.2). A primary responsibility of this sub-task is to assure that the specific tag release and hydrophone detection design that is implemented in 2011 is supported by a valid statistical model to estimate the survival and movement parameters of the steelhead smolts. The UW shall be responsible for assuring estimability of all survival and movement parameters. To this end, a statistical study plan shall be prepared outlining the tag release and detection design, the mark-recapture model, and estimability of the parameters. This study plan shall be prepared prior to the field season to serve as a design guide and to assure estimability of model parameters. Concurrent with the study plan, statistical software shall be prepared for analyzing the tagging data prior to data arrival. The software shall be tailored to the 2011 mark-recapture model. This will assure that all analyses are operational and can be performed shortly after data acquisition to hasten report timing.

Task 1b: Mark-Recapture Analysis for 2011

The raw telemetry data shall be processed into event histories prior to the UW receiving the data. The UW shall then convert the event histories into capture histories needed for analyzing the mark-recapture model. Computer processing and personal inspection of the data shall be used to assure that complex event histories of individual fish are correctly converted into capture histories useful for survival analysis. Maximum likelihood estimation based on the developed tagging models shall be used to estimate basic movement and survival parameters. This analysis will be used to summarize smolt movement and survival processes at larger geographic scales of management interest.

Task 1c: Reporting for 2011

A technical report shall be prepared, including statistical design and analysis methods, model fitting results, and estimates of smolt survival and movement parameters. The report shall be prepared in Microsoft Word for inclusion in other reports. A draft report shall be submitted to the Bureau of Reclamation 12 weeks after receiving the final quality assurance/quality control (QA/QC) event histories.

Task 1d: Study Design for 2012

The UW shall provide real-time consulting for the design and analysis of the 2012 study. The UW shall provide advice on issues such as sample size, layout of the acoustic receivers, and location of the releases.

Task 2: Provide statistical support for Year 2 of study (2012).

Task 2a: Model Development for 2012

The University of Washington shall prepare the statistical software necessary to implement the mark-recapture model developed in Task 1d of the 2011 study. The software shall be tailored to the 2012 mark-recapture model, and shall be developed prior to data arrival. This will assure that all analyses are operational and can be performed shortly after data acquisition to hasten report timing.

Task 2b: Mark-Recapture Analysis for 2012

The raw telemetry data shall be processed into event histories prior to the UW receiving the data. The UW shall then convert the event histories into capture histories needed for analyzing the mark-recapture model. Computer processing and personal inspection of the data shall be used to assure that complex event histories of individual fish are correctly converted into capture histories useful for survival analysis. Maximum likelihood estimation based on the developed tagging models shall be used to estimate basic movement and survival parameters. This analysis will be used to summarize smolt movement and survival processes at larger geographic scales of management interest.

Task 2c: Reporting for 2012

A technical report shall be prepared, including statistical design and analysis methods, model fitting results, and estimates of smolt survival and movement parameters. The report shall be prepared in Microsoft Word for inclusion in other reports. A draft report shall be submitted to the Bureau of Reclamation 12 weeks after receiving the final QA/QC event histories.

Task 2d: Study Design for 2013

The UW shall provide real-time consulting for the design and analysis of the 2013 study. The UW shall provide advice on issues such as sample size, layout of the acoustic receivers, and location of the releases.

Task 3: Provide statistical support for Year 3 of study (2013).

Task 3a: Model Development for 2013

The University of Washington shall prepare the statistical software necessary to implement the mark-recapture model developed in Task 2d of the 2012 study. The software shall be tailored to the 2013 mark-recapture model, and shall be developed prior to data arrival. This will assure that all analyses are operational and can be performed shortly after data acquisition to hasten report timing.

Task 3b: Mark-Recapture Analysis for 2013

The raw telemetry data shall be processed into event histories prior to the UW receiving the data. The UW shall then convert the event histories into capture histories needed for analyzing the mark-recapture model. Computer processing and personal inspection of the data shall be used to assure that complex event histories of individual fish are correctly converted into capture histories useful for survival analysis. Maximum likelihood estimation based on the developed tagging models shall be used to estimate basic movement and survival parameters. This analysis will be used to summarize smolt movement and survival processes at larger geographic scales of management interest.

Task 3c: Reporting for 2013

A technical report shall be prepared, including statistical design and analysis methods, model fitting results, and estimates of smolt survival and movement parameters. The report shall be prepared in

Microsoft Word for inclusion in other reports. A draft report shall be submitted to the Bureau of Reclamation 12 weeks after receiving the final QA/QC event histories.

Task 3d: Study Design for 2014

The UW shall provide real-time consulting for the design and analysis of the 2014 study. The UW shall provide advice on issues such as sample size, layout of the acoustic receivers, and location of the releases.

RECLAMATION INVOLVEMENT

Substantial involvement on the part Reclamation is anticipated for the successful completion of the objectives to be funded by this award. In particular, Reclamation will be responsible for the following:

One of the co-principal investigators of this project is a Reclamation scientist. Reclamation will thus work very closely with the other co-PIs to ensure that the study design, sampling methods, statistical analyses, and other technical elements of the project are fully implemented and that the terms of the agreement are fully met.

This agreement is one element of a multi-agency, interdisciplinary, 6-year study of steelhead smolt survival in the San Joaquin River and Sacramento-San Joaquin Delta. The overall project leader for the 6-year study is Dr. Josh Israel of Reclamation's Environmental Affairs Division. Dr. Israel will be working closely with Dr. Buchanan of the University of Washington before each field season to maximize the statistical rigor of the study design and ensure that the field data are fully integrated with the mark-recapture model. Dr. Israel and Dr. Buchanan will also work closely on the analysis of the resulting data sets and will be co-authors on peer-reviewed publications stemming from this work.

SINGLE-SOURCE JUSTIFICATION

DEPARTMENT OF THE INTERIOR SINGLE SOURCE POLICY REQUIREMENTS
Department of the Interior Policy (505 DM 2) requires a written justification which explains why competition is not practicable for each single-source award. The justification must address one or more of the following criteria as well as discussion of the program legislative history, unique capabilities of the proposed recipient, and cost-sharing contribution offered by the proposed recipient, as applicable.
In order for an assistance award to be made without competition, the award must satisfy one or more of the following criteria: (1) Unsolicited Proposal – The proposed award is the result of an unsolicited assistance application which represents a unique or innovative idea, method, or approach which is not the subject of a current or planned contract or assistance award, but which is deemed advantageous to the program objectives; (2) Continuation – The activity to be funded is necessary to the satisfactory completion of, or is a continuation of an activity presently being funded, and for which competition would have a significant adverse effect on the continuity or completion of

the activity;

- (3) Legislative intent – The language in the applicable authorizing legislation or legislative history clearly indicates Congress’ intent to restrict the award to a particular recipient of purpose;
- (4) **Unique Qualifications** – The applicant is uniquely qualified to perform the activity based upon a variety of demonstrable factors such as location, property ownership, voluntary support capacity, cost-sharing ability if applicable, technical expertise, or other such unique qualifications;
- (5) Emergencies – Program/award where there is insufficient time available (due to a compelling and unusual urgency, or substantial danger to health or safety) for adequate competitive procedures to be followed.

Reclamation did not solicit full and open competition for this award based the following criteria:

(2) Continuation and (4) Unique Qualifications:

This agreement provides funding to continue the University of Washington’s co-PI’s involvement in salmonid survival studies in the San Joaquin River and Sacramento-San Joaquin Delta. It would not be cost effective for the government to work with another university cooperator on these particular aspects of the program because it would require that most of the work conducted during previous phases of this effort be repeated. The U of W co-PI is uniquely qualified to continue this effort to statistically quantify reach-specific and overall survival of outmigrating steelhead smolts.

STATUTORY AUTHORITY

Central Valley Project Improvement Act, Public Law 102-575, Section 3406 (b)(1):

(b) FISH AND WILDLIFE RESTORATION ACTIVITIES- The Secretary, immediately upon the enactment of this title, shall operate the Central Valley Project to meet all obligations under State and Federal law, including but not limited to the Federal Endangered Species Act, 16 U.S.C. 1531, et seq., and all decisions of the California State Water Resources Control Board establishing conditions on applicable licenses and permits for the project. The Secretary, in consultation with other State and Federal agencies, Indian tribes, and affected interests, is further authorized and directed to:

(1) develop within three years of enactment and implement a program which makes all reasonable efforts to ensure that, by the year 2002, natural production of anadromous fish in Central Valley rivers and streams will be sustainable, on a long-term basis, at levels not less than twice the average levels attained during the period of 1967-1991; Provided, That this goal shall not apply to the San Joaquin River between Friant Dam and the Mendota Pool, for which a separate program is authorized under subsection 3406(c) of this title; Provided further, That the programs and activities authorized by this section shall, when fully implemented, be deemed to meet the mitigation, protection, restoration, and enhancement purposes established by subsection 3406(a) of this title; And provided further, That in the course of developing and implementing this program the Secretary shall make all reasonable efforts consistent with the requirements of this section to address other identified adverse environmental impacts of the Central Valley Project not specifically enumerated in this section.

and

SECTION 3407 (e) FUNDING TO NON-FEDERAL ENTITIES- If the Secretary determines that the State of California or an agency or subdivision thereof, an Indian tribe, or a nonprofit entity concerned with restoration, protection, or enhancement of fish, wildlife, habitat, or environmental values is able to assist in implementing any action authorized by this title in an efficient, timely, and cost effective manner, the Secretary is authorized to provide funding to such entity on such terms and conditions as he deems necessary to assist in implementing the identified action.