

**Study 43**

# **USGS Non-Structural Fish Passage**

**Final  
2015 Monitoring and Analysis Plan**





# 1.0 USGS Non-Structural Fish Passage

## *Theme(s):*

- Flow management
- Adult migration paths
- Fish reintroduction
- Passage and transport

## *Related Question(s):*

- AM-002: Does the existing geomorphology of the river provide sufficient passage (e.g., depth, velocity, resting pools, large wood debris, thermal refugia, stable morphology, and sediment transport) for adult migrants?

## 1.1 Statement of Need

This study addresses the potential non-structural passage issues facing adult Chinook salmon within the Restoration Area. Adult passage may be impeded by non-structural components of the river channel, including critical riffle depths, temperature barriers, and false migration pathways such as agricultural drains and tributaries to the river. Evaluation of these passage impediments will help inform reintroduction management and monitoring decisions.

## 1.2 Background

The California Department of Water Resources has performed an Adult Passage Study (Monitoring and Analysis Plan Study 20) that addresses meeting minimum passage requirements at structures (velocities, depths, jump heights), but does not address passage issues posed by non-structural components of the river channel. The current focus of this study is on identifying critically low riffle depths during base restoration flows of Critical Low flow years as defined in Exhibit B of the Settlement. Migrating adults will encounter the lowest flows in March through May and October through December.

## 1.3 Anticipated Outcomes

The study will result in a USGS Scientific Investigation Report or journal article.

## 1.4 Methods

**Type of Study:** Reporting writing. Reclamation's bathymetry data will be used in conjunction with one dimensional HEC-RAS flow modeling outputs to identify areas of

critical low flow. We will then ground truth these areas with acoustic Doppler current profiler (ACDP) field work.

- 1) Existing information available: DWR's Adult Passage Study (Monitoring and Analysis Plan Study 20), ACDP mapping field data already collected.
- 2) Timing for the study: Field work was conducted October 2012. May also use field data collected by Toby Minear for other SJRRP USGS studies.

**Reach(es):** Reach 1 and 2

**Life stage:** Adult

## **1.5 Deliverables and Schedule**

The field work had already been conducted for this study. We are now in the process of analyzing the data and writing the report. Work conducted on this study during 2015 consists only of writing the report. Report is expected to be completed by end of Fiscal Year 2015.

## **1.6 Budget**

The total cost estimate is \$0 for 2015.

## **1.7 Point of Contact / Agency Principal Investigator**

Marissa Wulff, US Geological Survey, 6000 J. Street, Sacramento, CA