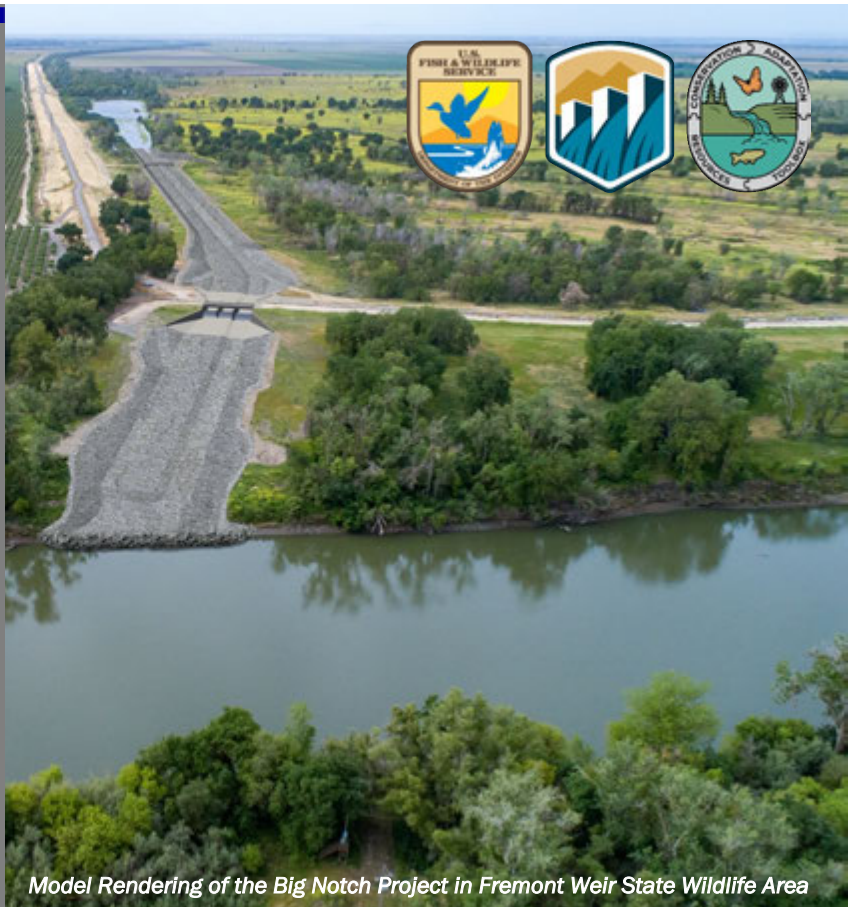


HABITAT CONNECTIONS

Upgrading Water Infrastructure to Improve Fish Passage and Habitat in the Yolo Bypass



Levee and dam construction and other activities within California's Central Valley have disrupted river-floodplain connectivity throughout the valley, diminishing fish rearing habitat on the floodplain and impairing fish passage. This has contributed to the decline of several federally- and state-listed species of salmonid and sturgeon. The Bureau of Reclamation (Reclamation) and California Department of Water Resources (DWR) have partnered to improve habitat for these species in the Yolo Bypass, the largest floodplain left in the Central Valley, through the Big Notch Project. This project will modify the Fremont Weir, the Bypass' main input, to improve juvenile salmonid habitat and adult fish passage into the Bypass.



Model Rendering of the Big Notch Project in Fremont Weir State Wildlife Area

KEY ISSUES ADDRESSED

Juvenile fishes reared in the food-rich floodplain habitat grow faster and survive longer than fish reared in the main channel. The proposed notch and gated headworks structure will increase the time juveniles can access rearing habitat by allowing inundation when the river is at lower water levels. The new migratory channel and fish passage structure will improve adult fish passage, reducing stranding. Fish needs must be balanced with other uses of the Bypass, which is mostly privately owned. Private ownership of land in the Bypass requires agencies to obtain flowage easements to change the timing and duration of water released.

PROJECT GOALS

- Increase access to and acreage of seasonal floodplain rearing habitat for juvenile salmonids
- Improve connectivity between the Sacramento River and Yolo Bypass for passage of adult salmonids and sturgeon
- Coordinate with local interested parties to minimize negative impact on existing land uses while still maximizing benefits to fishes

REDUCE, REUSE, REGRAVEL

Rock waste, specifically fish-friendly rounded river rocks from the nearby American River, was repurposed for this project.



Construction Underway on the Big Notch Project

PROJECT HIGHLIGHTS

Headworks Structure Installation: A new notch and gated headworks structure will be placed into the east side of Fremont Weir. This structure will allow water to pass through the Fremont Weir when the river reaches 15 feet in elevation instead of the previous 32 feet. This will increase the inundation of the floodplain, improving juvenile rearing habitat.

Improved Fish Passage: A new channel will provide more direct access for migrating fish from the Sacramento River to the Tule Canal. The new gated notch will allow adult fish passage for more of the year by providing flows at lower elevations. A supplemental fish passage structure is also being added to the west side of Fremont Weir. Berms that currently pose a fish passage barrier will also be removed.

Public Access: The project team is building a pedestrian bridge to maintain existing public access to the Fremont Weir Wildlife Area.

Real Estate Acquisition: The project involves changing water flow on privately owned land, requiring the project team to work with landowners to acquire numerous flowage easements.

Collaborators

- California Department of Water Resources
- Bureau of Reclamation
- U.S. Geological Survey
- See online for full list of partners

CART Author: Kate Richter, University of Arizona, August 2023.

Photo Credit: California DWR

For more information on CART, contact Genevieve Johnson (gjohnson@usbr.gov) or Karlee Jewell (karlee_jewell@fws.gov).

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LESSONS LEARNED

Project managers coordinated with federal agencies, the Central Valley Flood Protection Board, and local landowners to obtain necessary real estate rights, specifically numerous flowage easements. The project team attempted to work collaboratively with all landowners, but some were unwilling to sell. The project team still ensured all interested party concerns were heard, making compromises where they could. Earlier coordination with federal agencies could have increased efficiency of the real estate process and acquisition of flowage easements. Monthly meetings were held to update all parties, which helped the project timeline stay on track.

The timing of construction in the floodway is restricted by wildlife movement and the flood system. The project team held weekly meetings with the Flood Board to obtain variances that allowed them to work into the flood season and minimized scheduling issues by doing a prep contract that readied the site for construction. Construction crews also cleared woody material to deter nesting birds that would limit the construction period.

NEXT STEPS

- Continue construction, including finishing the new headworks structure and gravel work
- Conduct a mark-recapture study to monitor juvenile salmonid entrainment and evaluate how well adaptive management plan targets are being met
- Monitor adult passage with ARIS sonar imaging
- Monitor construction impacts on groundwater levels

For more information on this project, contact Elizabeth Vasquez: elizabeth.vasquez@water.ca.gov

