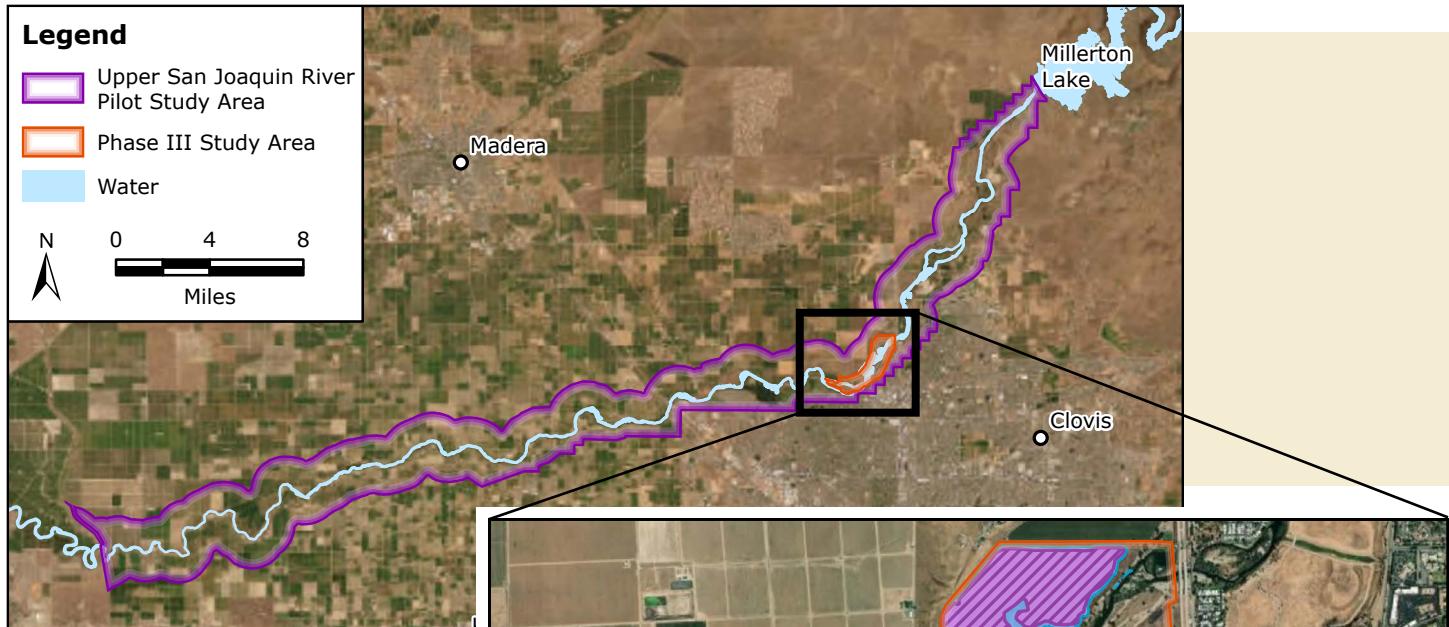




UPPER SAN JOAQUIN RIVER MULTI-BENEFIT FLOODPLAIN RESTORATION STUDY

OCTOBER 2025



Study Overview

The California Department of Water Resources (DWR), in partnership with local agencies, is [conducting multi-benefit floodplain restoration pilot studies](#) in several watersheds, including the Upper San Joaquin River (USJR). DWR's Flood-Managed Aquifer Recharge (Flood-MAR) and Central Valley Flood Protection Plan

Conservation Strategy teams have partnered to conduct these studies and develop a decision support toolset called ecological floodplain inundation potential or "Eco-FIP" to identify the best opportunities to restore and expand floodplains to enhance habitat, increase groundwater recharge, reduce flood risk, and provide other benefits.

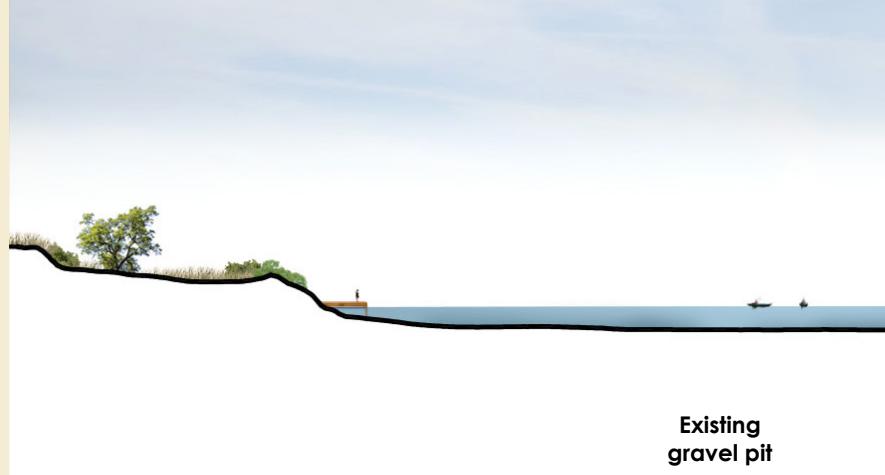
The USJR Pilot Study team collaborated with ongoing efforts to restore functional floodplain processes, increase rearing and spawning habitat for salmonids, and promote native vegetation communities. A key component of the study concepts for the San Joaquin River in this area is the restoration of gravel mining pits to reduce stranding of salmonids and remove deep-water habitat for non-native predatory fish.

Study Phases

Phase I of the USJR Pilot Study examined large-scale inundation potential along the study area from Friant Dam downstream to the Chowchilla Bypass. These results were used to identify and prioritize potential restoration sites based on a quantitative analysis of habitat suitability and recharge metrics.

In Phase II, preliminary conceptual designs were developed for sites determined to have the highest potential for recharge and habitat restoration.

For Phase III, preliminary concepts from Phase II were advanced at San Joaquin River Conservancy properties downstream of State Route 41. Phase III project concepts focused on in-channel processes and system function such as channel evolution, fish passage, spawning habitat, floodplain function, and riparian habitat. By creating and expanding natural floodplain habitats, the project concepts also enhance the natural beauty of the area and passive recreation opportunities such as birding and hiking. Additional recreational elements could include trails, boardwalks, boat launches, and viewing/fishing platforms.



Spotlight: Project Concept 3B

Project Concept 3B focuses on remediation of former gravel mining pits by disconnecting some pits and filling in others. Disconnection from the river is achieved with berms that have a French drain to allow subsurface flow and are designed to overtop above 8,000 cubic feet per second. For pits that are not disconnected from the river, in-stream fill is targeted to bring river depths up to conditions that reduce habitat for non-native predatory fish and reestablish conditions for salmonid spawning, rearing, and natural riverine processes.

Concept 3B seeks to further repair the channel and floodplain morphology by building a baseflow channel with spawning riffles, alcoves, side channels, and floodplain benches. A mix of riparian and upland plant communities would be established, and these habitats would enhance opportunities for human interaction with nature. Additional recreational opportunities would be incorporated where possible.

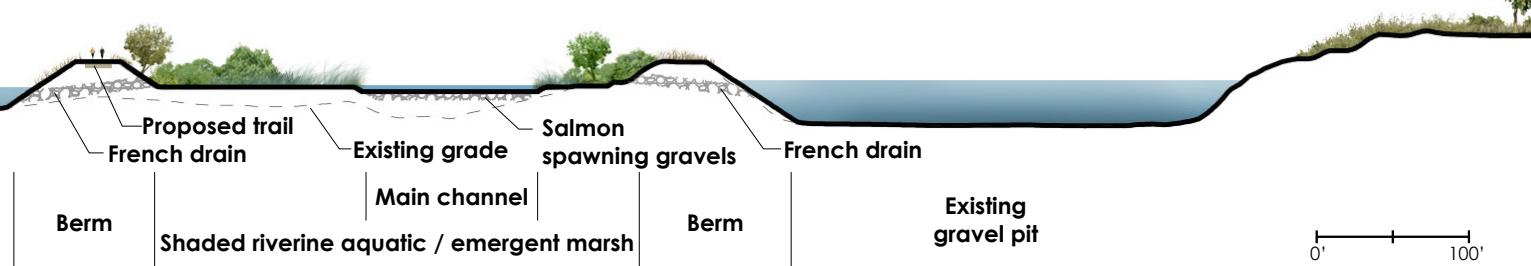
Alignment and Parallel Planning Efforts

The USJR Pilot Study aims to support and contribute to other efforts and objectives in the region. Several planning efforts and groundwater sustainability plans have been completed in parallel to the work on Phases I through III of the study. Additionally, many organizations are working toward common goals of the study and have aided in restoration efforts within the San Joaquin River and surrounding areas. These planning organizations include:

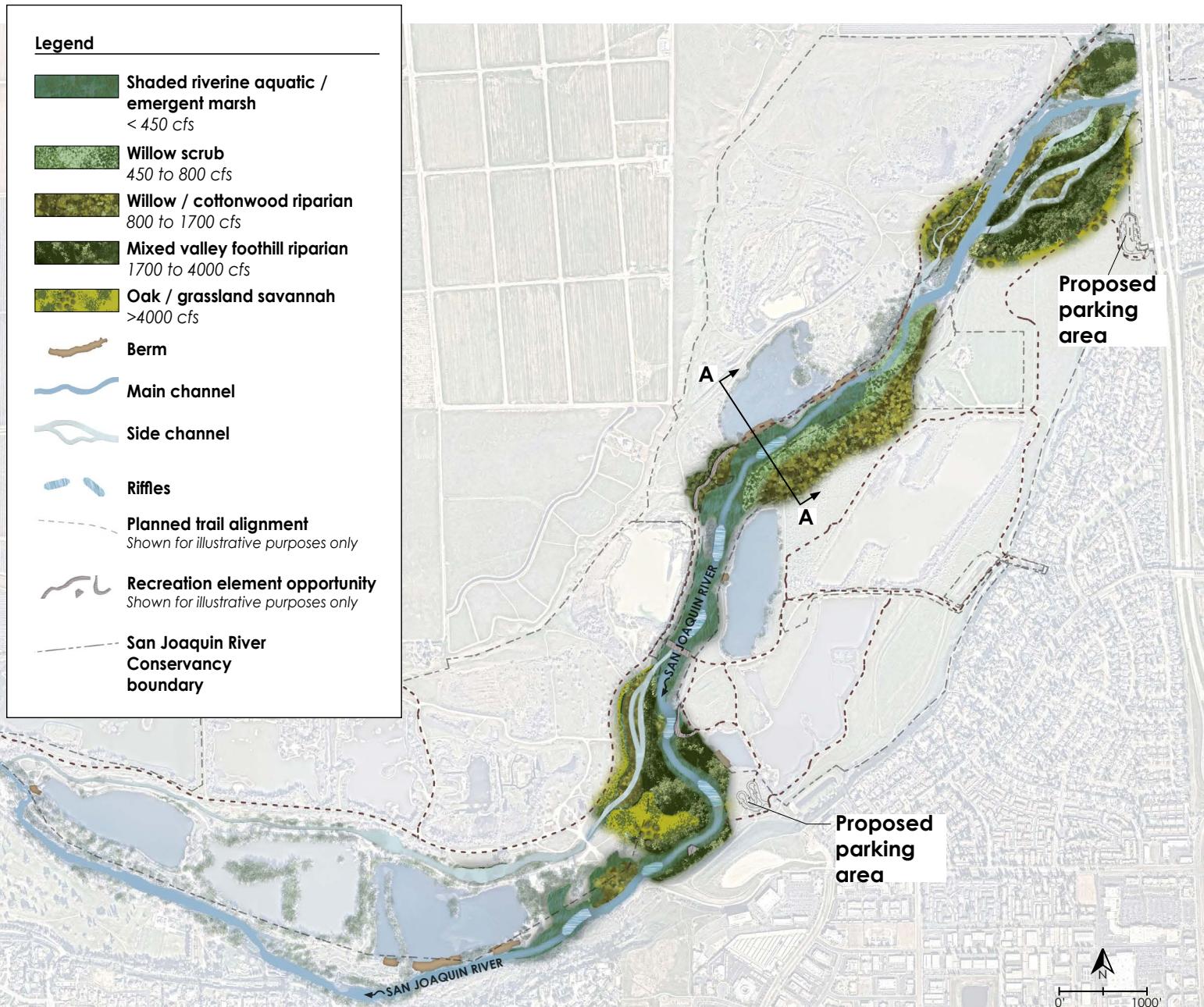
- Madera County
- North Kings Groundwater Sustainability Agency
- San Joaquin River Conservancy
- San Joaquin River Parkway and Conservation Trust
- San Joaquin River Restoration Program



Concept 3B: Cross-section A-A



Concept 3B: Plan Rendering





Findings

Floodplain restoration studies are being conducted at several sites across California and can be applied to many river systems throughout the state. The USJR Pilot Study was the first of several Eco-FIP studies, and the work done on this effort, including data collection, site investigations, and alternative concept development, is the most detailed for any of these studies. The scientifically derived restoration concepts developed in these pilot studies can help advance DWR's and partner agencies' objectives, and the application of the toolkit to this study can serve as a helpful model for other practitioners considering multi-benefit projects.

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