

SAN JOAQUIN RIVER RESTORATION PROGRAM PROGRAM UPDATE

SPRING 2019

SAN JOAQUIN RIVER RESTORATION PROGRAM



The San Joaquin River Restoration Program (Program) is a comprehensive, long-term effort to restore flows to the San Joaquin River from Friant Dam to the confluence of the Merced River and restore a self-sustaining Chinook salmon population in the river while reducing and avoiding adverse water supply impacts from Restoration Flows.

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for all the latest Program news, events and information.

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NOT ONLY ABOUT THE FISH: PROGRAM CREATES WATER SUPPLY BENEFITS

While restoring fish populations to the San Joaquin River is the backbone of the San Joaquin River Restoration Program, the Program also is obligated to try to minimize impacts to water users as a result of river restoration efforts. In the nearly 13 years since the start of the Program, \$28 million has been spent to benefit Friant contractors in the San Joaquin Valley. Through improved water management and infrastructure, the Program is helping maximize water users' supplies, improve groundwater overdraft, combat subsidence, and streamline operations.



Subsidence from groundwater over-pumping has diminished the capacity of the Friant-Kern Canal

FRIANT-KERN CANAL CAPACITY CORRECTION

The Program has provided \$10.3 million to assist the Friant Water Authority with restoring the original design and built capacity of the Friant-Kern Canal (FKC). The canal, which runs 152 miles from Friant to the Kern River in Bakersfield, has fallen victim to groundwater overpumping and the resultant subsidence which has reduced canal capacity to half its original capacity – canal flows have fallen from a max of 4,000 cubic-feet-per-second (cfs) to 1,600 cfs in lower canal sections. Despite a previous attempt in the 1970s to help remedy the problem, subsidence has continued and Friant contractors remain unable to take full advantage of wetter water-type years water years when an abundance of precipitation could allow for aquifer recharge due to diminished canal capacity. Program funds are being used to plan and design a full \$400 million FKC fix through immediate repairs (such as lining portions of the canal leaking from subsidence), planning, and environmental compliance work.

GROUNDWATER RECHARGE BASINS

With nearly 40 percent of California’s total water supply coming from groundwater (even more in dry years), maintaining healthy groundwater supplies in the San Joaquin Valley is a critical tool in the water management toolbox. Unfortunately, years of overpumping from the valley aquifers has depleted the groundwater supply and led to widespread subsidence that has impacted not only the ability of certain areas to recharge to pre-subsidence levels, but also dams, canals and other critical water infrastructure which has sunk with the ground.

The Program has committed approximately \$15M toward groundwater storage projects to help combat subsidence and improve the flexibility of water supplies. Creating droughtproof, conjunctive use projects in this arid region can assist with state efforts to combat groundwater overdraft through regulatory efforts like the Sustainable Groundwater Management Act. In addition, groundwater recharge projects help to create a sustainable water supply for human use in the Upper San Joaquin River Basin and free up water needed for in-stream flows that benefit fish.

Projects completed to date include the Kimberlina Road Groundwater Recharge and Banking and the Cordeniz Basin Groundwater Storage Project, both of which allow for the storage and recovery of San Joaquin



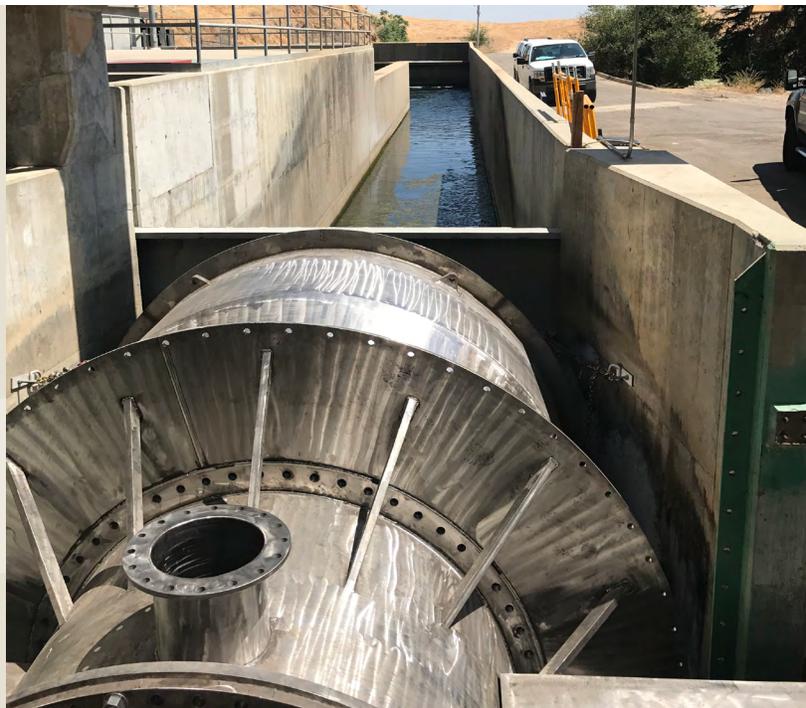
Aerial view of the Kimberlina Groundwater Recharge Basin.

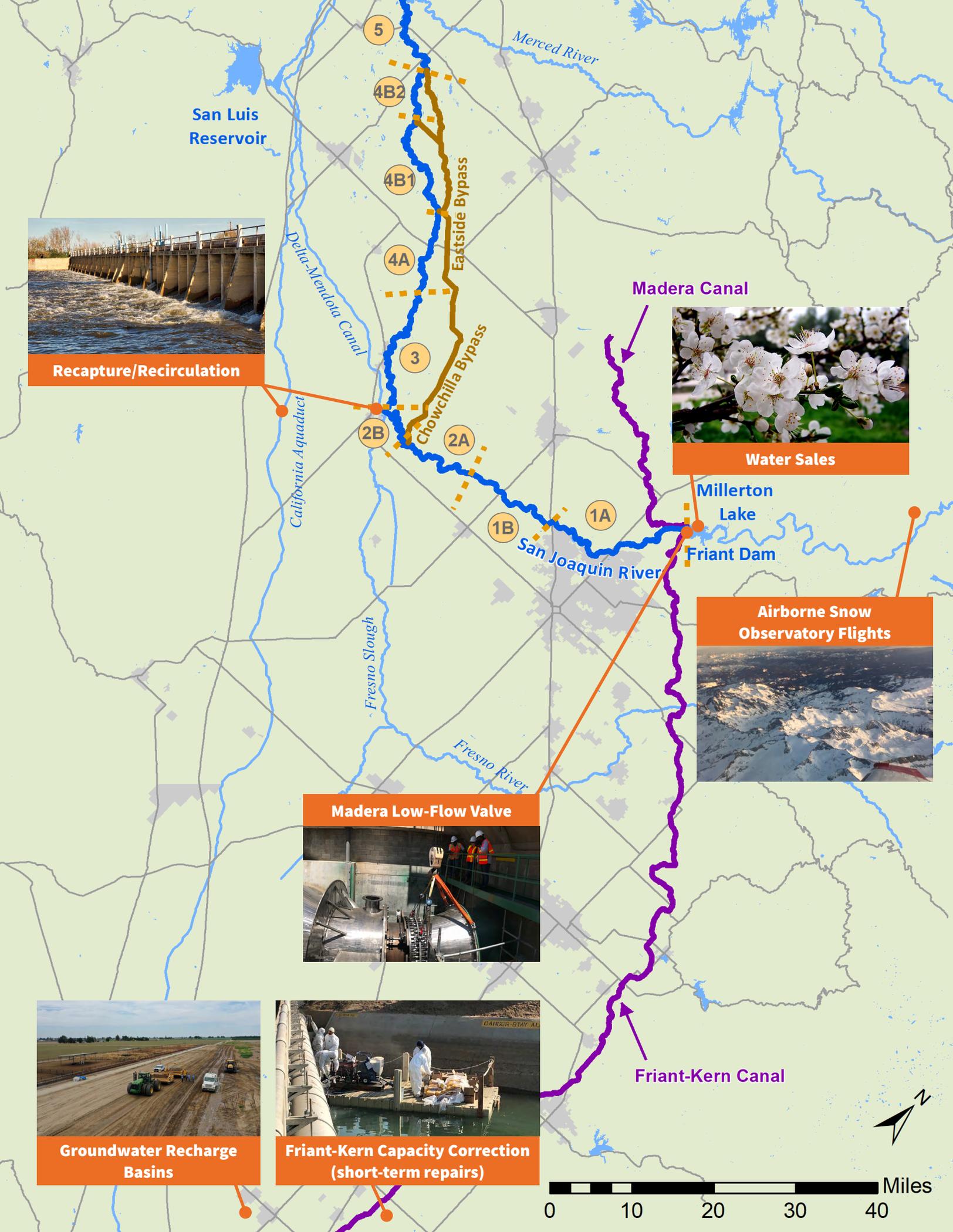
River flows. Other projects still under construction include the Pixley/Delano-Earlimart Joint Groundwater Bank and the Porterville In-Lieu Project Service Areas 1 & 2. In total, these projects provide 406,151 acre-feet of Restoration Water Account reduction – a Program benefit to water users.

PROJECT	SPONSOR	TOTAL PROJECT COST (MILLIONS)	PARTNER COST SHARE FUNDING (MILLIONS)	STATUS
Pixley/Delano-Earlimart Joint Groundwater Bank	Pixley Irrigation District	\$17.4	\$7.5	Construction pending
Cordeniz Basin Groundwater Storage Project/ Conjunctive Exchange Program	Tulare Irrigation District	\$3.9	\$1.9	Construction pending
Porterville In-Lieu Project Service Areas 1&2	Porterville Irrigation District	\$2.8	\$1.2	Construction complete
Kimberlina Road Groundwater Recharge & Banking	Shafter-Wasco Irrigation District	\$11.9	\$4.2	Construction complete

MADERA LOW-FLOW VALVE

Located at the headworks for the 36-mile long Madera Canal, the \$4 million Madera Low-Flow Valve became operational in 2018 with the purpose of increasing operational capacity for the canal. Previously, the existing valve was only capable of “on/off” operations and, as reservoir levels decreased, the accuracy of releases was reduced – potentially creating situations of uncertainty for water users. With the new valve, incremental adjustments at an accuracy of 1 percent across the variable head pressure of a dynamic reservoir, are possible.





San Luis Reservoir

Merced River

Delia-Mendota Canal

Eastside Bypass

Madera Canal

California Aqueduct

Chowchilla Bypass

Millerton Lake

Friant Dam

San Joaquin River

Fresno Slough

Fresno River



Recapture/Recirculation



Water Sales



Airborne Snow Observatory Flights



Madera Low-Flow Valve

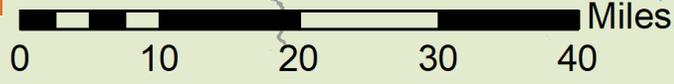


Groundwater Recharge Basins



Friant-Kern Capacity Correction (short-term repairs)

Friant-Kern Canal



AIRBORNE SNOW OBSERVATORY (ASO)

While multiple techniques are available for measuring snowpack and predicting the available runoff, few have the scope and provide information like the National Aeronautic and Space Administration's ASO flights. The high-altitude plane flights, conducted by NASA, use cutting-edge LIDAR (Light Detection and Ranging) technology to pulse lasers towards earth in order to better read snow depths. Information from this process can help area water managers better predict the amount of runoff from precipitation and thus, allow more focused operations at Friant Dam to benefit water users. For example, if dam operators have a better understanding of when and how much runoff will occur in the reservoir, they can they can more accurately plan for timed releases that can provide water when users need it most. The Friant Water Authority estimates it has saved 50,000 acre-feet of water as a result of the flights.



Photo credit: NASA-Jet Propulsion Laboratory

WATER SALES

Water sales from the Program's Recovered Water Account (RWA) and Unreleased Restoration Flows (URF) create other sources of water for Friant Division long-term water users.

RWA water, which is sold for \$10 acre-foot, is available when wet hydrologic conditions are present in the watershed and water is not needed for Restoration Flows.

URF sales and exchanges are generated when the Program cannot release Restoration Flows into the river due to channel capacity constraints. When this occurs, the flows become available to sell either for direct delivery, or as exchanges whereby water users swap water stored in Millerton Reservoir for flows now. As channel capacity increases due to seepage easements and physical projects which better contain flows, URF availability is expected to diminish.

To date, the Program has sold over 700,000 acre-feet of RWA water and 600,000 acre-feet of URF water – netting over \$19M for Program activities.

RECAPTURE/RECIRCULATION PLAN

The Recapture and Recirculation Plan is an effort to recirculate, recapture, reuse, exchange, or transfer Program Restoration Flows in order to benefit Friant contractors. In essence, Program Restoration Flows are released from Friant, move downstream through the Restoration Area, pass the confluence with the Merced River and continue downstream until they are diverted at a predetermined location and brought back into circulation for use by Friant contractors. Since 2009, 350,000 acre-feet have been captured and recirculated for use. Currently, the Program is developing a final Environmental Impact Statement/ Report for the Recapture and Recirculation Plan.

WHO ARE FRIANT CONTRACTORS?

The Friant contractors are a group of long-term Central Valley Project contractors who are serviced by the Madera and Friant-Kern Canal. Both of these canals divert water from Friant Dam for "beneficial use" by 32 Friant Division Long-Term Contractors (irrigation and water districts). Friant Water Authority collectively oversees the operation and maintenance of the FKC to the benefit of all the contractors except those serviced by Madera Canal.

FOR MORE INFORMATION

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