



SAN JOAQUIN RIVER
RESTORATION PROGRAM

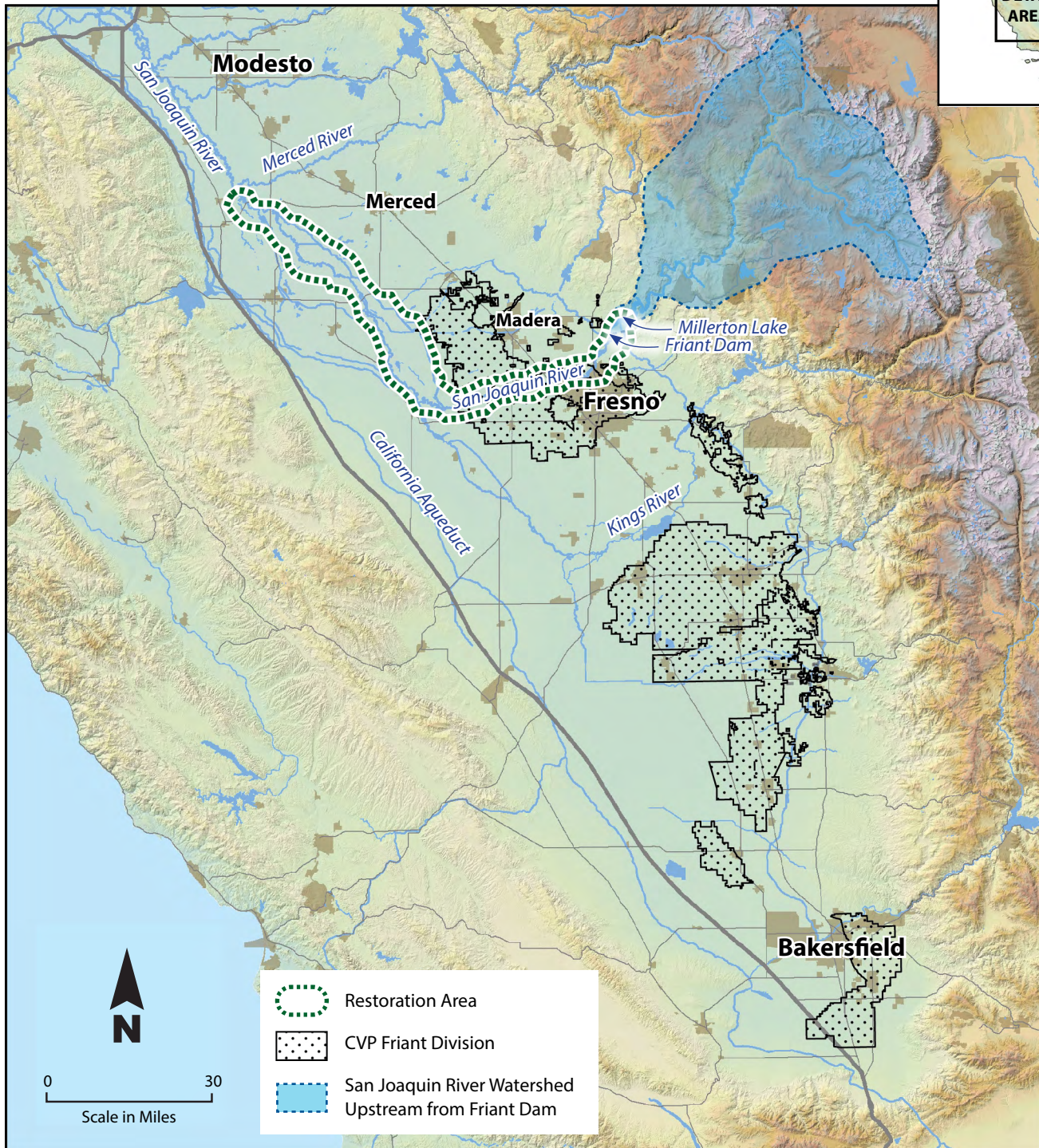


ANNUAL REPORT 2017-2018



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

SAN JOAQUIN RIVER RESTORATION AREA



FROM THE SJRRP PROGRAM MANAGER

A time of transition...2017–2018 marked many changes for the Restoration Program — return of much needed rains, spring-run Chinook Salmon spawning on the San Joaquin River, re-focusing of achievable near-term priorities in an updated Framework, and a new Program Manager to name a few. While new to the Program Manager position in June 2018, I am no stranger to the Program and served as the Lead Fish biologist for nearly a decade before accepting this opportunity.

Interestingly, my new position came as California was still recovering from a five-year drought which created numerous challenges including a reduced water supply for both the environment and water users. A collective sigh of relief came in 2017 when the clouds opened and the second-highest level of precipitation in recorded history fell across the state, bringing much needed water back to San Joaquin River Basin.

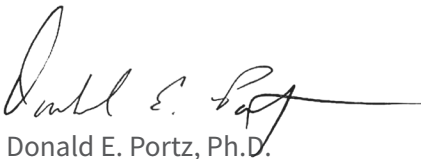
Most notably there were two huge developments for the Program in 2018: The first recorded spring-run Chinook Salmon spawning in the San Joaquin River for over 60 years, and completion of a critical guiding Program document – the Funding Constrained Framework. Both of these milestones showcased the positive direction of the Program and the progress we are making. The Funding Constrained Framework highlights the Program direction to move forward in a financially feasible manner and prioritizes the immediate actions necessary to achieving our ultimate goal of a naturally reproducing, self-sustaining population of Chinook Salmon, and secondly, the spring-run spawning demonstrates the first steps in supporting a long-missing species on the path to reintroduction.

Some of the Program’s other highlights for 2017–18 included:

- Acquisition of the former Mitigated Lands Trust, Inc. property needed to begin construction of the Reach 2B/Compact Bypass Project;
- Completion and installation of the Madera Canal Low-Flow Valve which provides greater operational flexibility to get irrigators the water they need, when they need it; and,
- Completion of two groundwater recharge and banking projects in the Tulare Irrigation District and the Shafter-Wasco Irrigation District in order to help stabilize water supplies, combat subsidence, increase water banking opportunities and offset water supply impacts from Restoration Flows.

Our staff continue to work diligently, thoughtfully, and effectively to meet the terms of the San Joaquin River Restoration Settlement and Public Law 111-11 (Act) and I am proud of what they have accomplished. I would like to express my heartfelt gratitude to all the staff from the five Implementing Agencies, the Restoration Administrator and Technical Advisory Committee, Settling Parties, Stakeholders, and the public for their continued involvement and interest.

Sincerely,



Donald E. Portz, Ph.D.

Program Manager
San Joaquin River Restoration Program
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SECTION 1: 2017-2018 MAJOR ACCOMPLISHMENTS

The San Joaquin River Restoration Program (SJRRP or Program) accomplished numerous major milestones in 2017-2018. The Program's major accomplishments are highlighted in this section.

A Wet System

In 2017, after five years of drought, the San Joaquin River basin was quenched with the second largest water year in recorded history. The year was a welcome relief from 2015 which saw sections of the river go dry due to a lack of available Restoration Flows during the heart of summer. With a “wet” Restoration Year Type declared, over 4.4 million acre-feet of inflow were recorded at Millerton Reservoir – nearly 10 times the full storage of the reservoir.

As a result, the Restoration Area saw flows of a magnitude it has not seen since the existence of the Program. During this period, peak flood releases from Friant Dam reached nearly 10,000 cubic feet per second (cfs). During peak flood flows, which carried into July (a typical year would end in April or May), the Eastside Bypass looked like an inland sea as inflows from the Fresno and Chowchilla rivers brought flows in the lower reaches of the bypass to 11,000 cfs. And, while the 2018 water year was not as fruitful water wise as the 2017 water year, it still delivered a Normal-Dry Restoration Year Type with approximately 2.8 million acre-feet of total inflow into Millerton Reservoir. The San Joaquin River remained a connected river, with wetted channels and flows throughout.

Spring-run Spawn

A critical component of the Program's Restoration Goal is to have a naturally reproducing and self-sustaining population of spring-run Chinook salmon. The historic run of fall-and-spring run salmon was extirpated from the river in the 1950s as operations of Friant Dam dried sections of the river, preventing volitional migration of fish to their spawning grounds. In June 2017, Program biologists released 115 ancillary adult broodstock (bred specifically for the Restoration Program) spring-run Chinook salmon to the Reach 1 of the Restoration Area – the reach with the best holding and spawning habitat on the river – in order to study if conditions were conducive to salmon reproduction. A similar experiment was completed in 2016, but no successful redds (fish nests) were reported.



2018 adult salmon broodstock release.

The year 2017 proved to be a different year for spawning. Beginning in December 2017, juvenile spring-run Chinook salmon were captured in rotary screw traps placed in several reaches of the river – the direct result of the spawning adults released months earlier. In follow-up redd surveys, 13 redds were confirmed throughout Reach 1 of the river below Friant Dam. The news was very exciting for Program staff and others as it confirmed that spring-run Chinook salmon could successfully hold and spawn in the upper reaches of the river and the viability of existing spawning habitat. This event was the first recorded spawning of spring-run Chinook in the river in more than 65 years.

Program staff built on the successes from 2017 with a late spring 2018 release of 179 ancillary adult broodstock to the river. This release yielded 42 successful redds.

Determining Priorities

It cannot be ignored that there are significant costs involved with restoring a river, especially one with the magnitude of the San Joaquin. Realizing that Program funding was tightening, Implementing Agencies, the Settling Parties and the Third Parties sat down to evaluate Program priorities and set a realistic budget that reflects fish

1: 2017-2018 MAJOR ACCOMPLISHMENTS

restoration and water management objectives given available funding. Stage 1 for this vision will include actions that provide volitional fish passage in the river to Friant Dam, a key objective to re-establish a self-sustaining population of fall-run and spring-run Chinook salmon in the San Joaquin River. These actions include construction of Reach 2B and the Mendota Pool Bypass; fish passage and improvements for the Arroyo Canal and Sack Dam; and, the Eastside Bypass Improvements Project, which includes Reach O levee improvements, improvements to the San Luis Wildlife Refuge water supply, and fish passage at the Eastside Bypass Control Structure.

Another guiding Program document started in 2017 and completed in 2018 is the Fisheries Framework: Spring-run and Fall-run Chinook Salmon. This framework highlights methods and rationale for Program fish actions and establishes a realistic schedule for implementation of said actions. Specifically, the Fisheries Framework outlines the goals and objectives for establishing spring-run and fall-run Chinook salmon populations in the Restoration Area; defines the habitat and ecosystem conditions that will support naturally reproducing, self-sustaining salmon populations; outlines the scientific foundation for the planned management actions; and, describes a proposed Adaptive Management process and implementation plan.

Water Users Benefit from Completed Projects

While 2017 produced an abundance of precipitation, how to maximize the capture of that precipitation is always a challenge for water users. The Program's Water Management Goal completed several projects intended to help reduce impacts from Restoration Flows.

The Madera Low-Flow Valve, a critical component of the Madera Canal Capacity Restoration Project, was completed and installed in 2017. The \$1.8 million project is integral to the San Joaquin River system and carries water 36 miles northwest from Friant Dam to the Chowchilla River. A component of the Friant Division of the Central Valley Project, the Madera Canal fulfills the long-term contracts of Madera Irrigation District and Chowchilla Water District. Deliveries to these contractors, however, have seen reduced conveyance capacity caused by increased canal roughness, seepage, and changes in canal geometry as a result of bank erosions and accumulation of sediment and large debris. Installation of the low-flow valve at Friant Dam will provide for more precise releases to Madera Canal and allow for reduced conveyance losses when incorporated with planned channel improvements.

Additional efforts to achieve the Water Management Goal included completion of two groundwater banking projects via Part III of the Settlement Act. Part III authorizes and directs the Secretary to provide financial assistance to local agencies within the CVP for the purposes of designing and constructing ground water recharge or banking facilities that offset water supply impacts to Friant Contractors. The Part III projects are part of a conjunctive use plan to store excess surface water in the ground during wetter years in order to make allow of groundwater extraction during drier years. Part III projects, in addition to providing increased drought resilience, also have the potential to help alleviate subsidence caused from the over-pumping of groundwater.

The Settlement Act provided \$50 million of cost share funding to assist awarded agencies in constructing these groundwater facilities. The first funding opportunity announcement under the financial assistance program was advertised in 2013 and resulted in four local agencies receiving more than \$14 million of cost share funding. Since then, increasing land prices and project alterations have resulted in modifications to the original grants, increasing the cost share funding in 2016 by approximately \$1 million.



Construction of the Tulare Irrigation District's Cordeniz Basin Project

1: 2017-2018 MAJOR ACCOMPLISHMENTS



Two of four projects selected for Part III funding have been completed. Those projects are:

- Construction of the Tulare Irrigation District's Cordeniz Basin Project began in November 2015 and was the first of the Part III projects to move forward. This project, a \$3.8 million cost-shared effort completed in 2017 (\$1.95 million provided by the Program), expanded a 20-acre groundwater recharge basin to 80-acres, as well as installation of Supervisory Control and Data Acquisition (SCADA) equipment, relocation of a segment of the Serpa Ditch and the construction of five groundwater monitoring wells.
- Construction was also completed in 2017 on a groundwater banking and extraction project to increase water supply protection for the Shafter-Wasco Irrigation District. The Program provided \$5 million (of \$12.1 million total) toward the Kimberlina Road Groundwater Recharge and Banking Project to allow Shafter-Wasco ID store water delivered from the Friant-Kern and Calloway canals. Three new wells allow the banked groundwater to be extracted during times of need.
- Funded under Part III include the South Valley Water Bank Authority Pixley Groundwater Banking Project (\$7.5 of \$17.4 million in total) which will develop a 575-acre spreading basin for groundwater recharge, a new turnout from the Friant-Kern Canal, 16 recovery wells, pumping plants, electrical controls and facilities, and 4.5 miles of pipeline for the delivery and recovery of water.
- Irrigation District In-Lieu Groundwater Project (\$1.2 of \$2.8 million) which will provide new infrastructure to deliver surface water to nearly 2,500 acres of farmland through more than 15,000 feet of new laterals.

The Program additionally served a key role in development of an in-lieu project aimed to address land subsidence in the Red Top Area through a December 2016 release of final environmental documents to facilitate a 10-year water transfer and exchange up to 10,000 acre-feet annually of recaptured San Joaquin River Restoration Flows. Located east of the City of Dos Palos and between the San Joaquin River and Eastside Bypass, the Red Top Area has experienced substantial land subsidence caused by over-reliance on deep aquifers below the Corcoran Clay. This subsidence has delayed implementation of the Arroyo Canal Fish Screen and Sack Dam Replacement Project, a Phase 1 project of the Settlement Act. The Red Top project included construction of a pipeline to Central California Irrigation District's Poso Canal to an existing turn-out in the Red Top area.



Restoration Flows returned to the river in earnest with the 2017 wet year.

SECTION 2: FRAMING A PROGRAM

Section 2 describes how the Program stays on track.

THE SETTLEMENT

In 1988, a coalition of environmental groups, led by the Natural Resources Defense Council (NRDC), filed a lawsuit challenging the renewal of the long-term water service contracts between the United States and the Central Valley Project Friant Division contractors.

After more than 18 years of litigation, a Settlement was reached on September 13, 2006, that was subsequently approved by the court on October 23, 2006. The “Settling Parties” included the NRDC, the Friant Contractors, the Friant Water Users Authority (now the Friant Water Authority), the Department of the Interior, and the Department of Commerce.

The Settlement’s two goals are:

- **Restoration Goal:** To restore and maintain fish populations in “good condition” in the San Joaquin River main stem, below Friant Dam to the confluence of the Merced River, including naturally reproducing and self-sustaining populations of salmon and other fish.
- **Water Management Goal:** To reduce or avoid adverse water supply impacts to all Friant Division long-term contractors that may result from Restoration Flows provided for in the Settlement.

The Federal San Joaquin River Restoration Settlement Act, signed in March 2009, authorizes and directs the Secretary of the Interior to implement the Settlement. The SJRRP was established to do that, and the Implementing Agencies responsible for its management including Reclamation, USFWS, NMFS, DWR and CDFW (see the program management structure chart on p. 31).

One of the biggest developments of 2017-2018 was the release of the Funding Constrained Framework for Implementation in May 2018. Building on 2015’s Revised Framework for Implementation, the Funding Constrained Framework serves as a guiding document to prioritize key Program actions and fund those actions through at least 2024 (Stage 1). The linchpin of the Funding Constrained Framework actions is the Reach 2B/ Mendota Pool Bypass Project (see p. 17). Other actions highlighted in Stage 1 of the Framework include the Mendota Pool Fish Screen; fish passage improvements to the San Joaquin River side of the Chowchilla Bifurcation Structure; an Arroyo Canal Fish Screen and Sack Dam Fish Passage; near-term actions in the Eastside Bypass to improve fish passage; and water management actions to assist water users with capacity correction projects for the Friant-Kern and Madera canals. All of the restoration actions have a common focus. The goal is to provide volitional (allows fish to move freely up and down the river) fish passage to salmonids in the river.

The Funding Constrained Framework document dovetails with two other documents that outline actions and associated schedules for the Program—The 2015 Revised Framework for Implementation and the 2018 Fisheries Framework: Spring-run and Fall-run Chinook Salmon. The 2015 Revised Framework for Implementation provides a realistic schedule and the associated future funding needs for the Program in order to meet Settlement goals and requirements of the Settlement Act. The Fisheries Framework establishes a realistic schedule for implementing fisheries management actions for the Program and outlines goals and objectives for establishing fall-run and spring-run Chinook salmon in the Restoration Area; defines the habitat and ecosystem conditions necessary to support such populations; provides the scientific justification for re-establishing the populations; and proposes an adaptive management process and implementation plan for the Framework. The Funding Constrained Framework targets the financial and project priorities necessary in order to meet the timelines established for projects in the 2015 Framework for Implementation and the actions outlined in the 2018 Fisheries Framework.

In addition to the 56-page main section of the Funding Constrained Framework, the document has five appendices that include:

- Foundation document highlighting key aspects of the Framework,
- Flow analysis to inform channel capacity decisions in the Framework,
- Federal obligations and expenditures for the Program through Fiscal Year (FY) 2016,
- Project and activity cost summary, and
- Summary schedule for the Mendota Pool Bypass and Reach 2B Improvements.

The estimated budget to achieve the targeted Stage 1 actions highlighted in the Framework is approximately \$643 million.



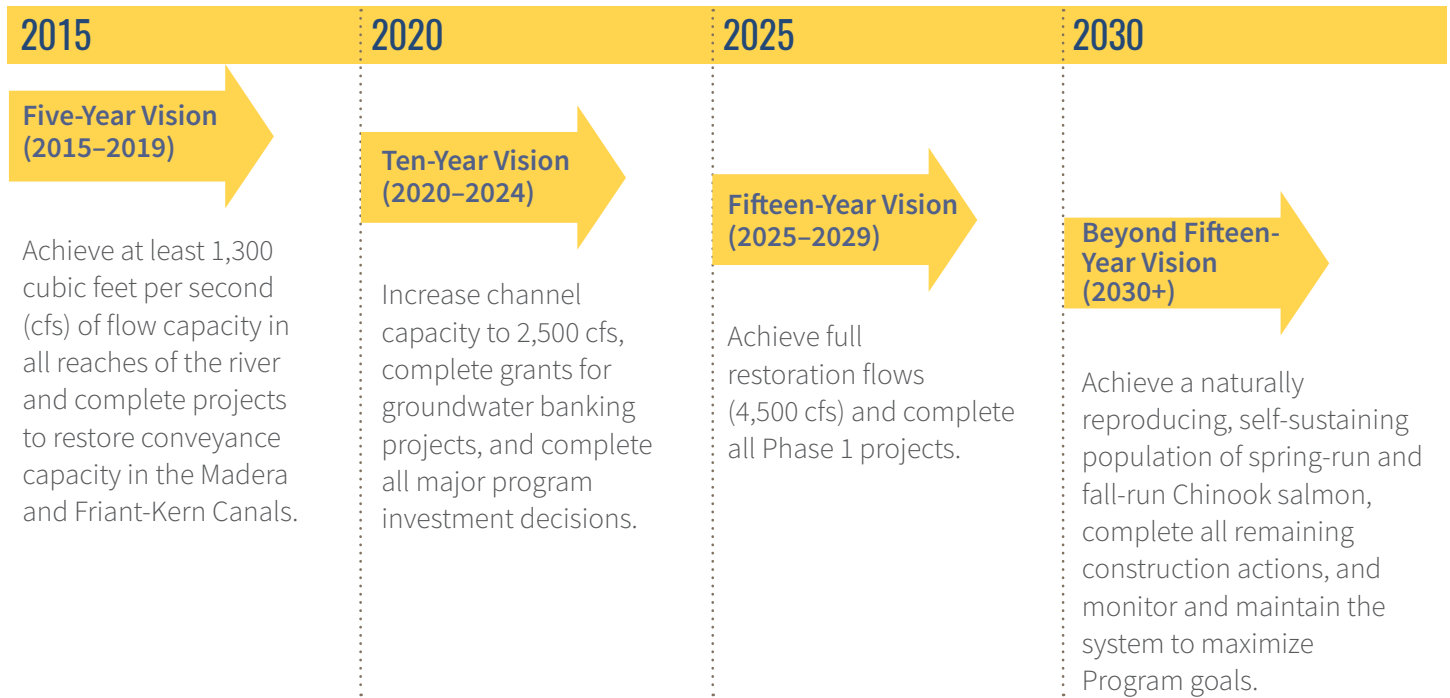
Field crews prepare to set an emergence trap to monitor hatching fry.

Table 1-1. Key SJRRP Major Construction Actions Schedule for Completion in Stage 1

Stage 1, FY 2017 to FY 2040	
PRIMARY GOAL	
Begin the reestablishment of spring-and-fall run Chinook salmon through the establishment of volitional fish passage, sufficient flows to manage temperatures, and provide for the basic habitat needs of the species	
FLOW-RELATED ACTIVITIES	<ul style="list-style-type: none"> • Seepage projects up to 2,500 cfs • Levee stability projects up to 2,500 cfs
RESTORATION GOAL ACTIVITIES	<ul style="list-style-type: none"> • Mendota Pool Bypass and associated structures • Mendota Pool Fish Screen • Levees in Reach 2B to convey 4,500 cfs through Reach 2B and 2,000 cfs into the Mendota Pool • Fish passage improvements to the San Joaquin River Side of the Chowchilla Bifurcation Structure • Arroyo Canal Fish Screen and Sac Dam Fish Passage • Salmon Conservation and Research Facility • Fish passage actions in the Middle Eastside Bypass
WATER MANAGEMENT GOAL ACTIVITIES	<ul style="list-style-type: none"> • Award remaining funding to non-federal partners to move forward with the construction of the Friant-Kern Canal and Madera Canal Capacity Correction projects
Although not construction actions, Stage 1 will also consist of the operations of the facilities constructed along with a number of minor projects and activities	

PROGRAM IMPLEMENTATION APPROACH

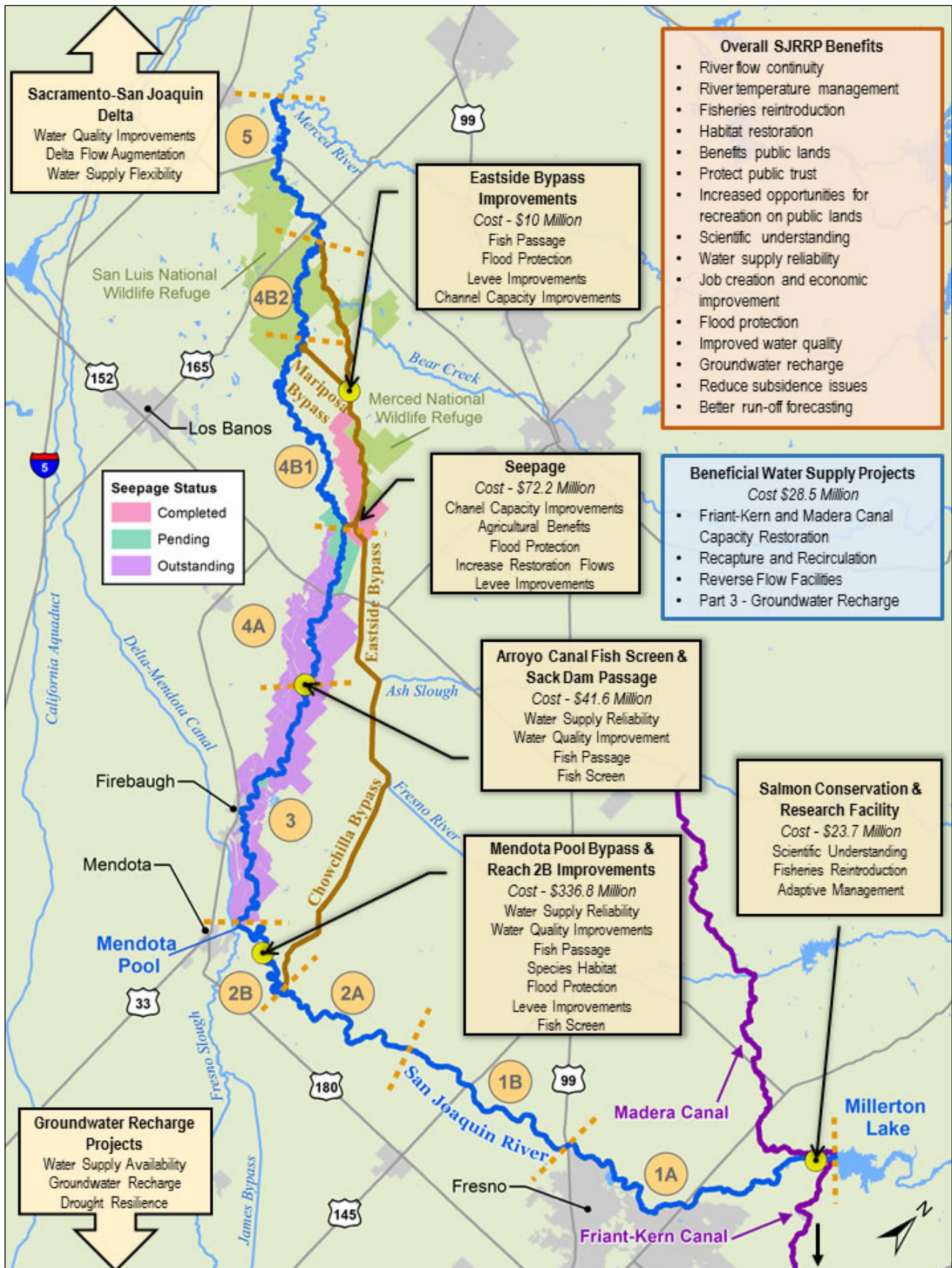
Projects and activities have been prioritized into five-year increments, with a focused “vision” for each five-year increment. Each five-year vision is formulated to make incremental and measurable progress toward achieving the goals of the Settlement, while at the same time limiting and focusing actions to what can realistically be achieved within the five-year span, based on the best information currently available. The Revised Framework represents a path forward in compliance with the Settlement and Settlement Act and should be considered a living document—additional updates will be made as new information is gathered and milestones are reached. The Revised Framework establishes the following five-year visions:



Staff and stakeholders tour the Reach 2B compact bypass model at the Denver Technical Service Center.

2: FRAMING A PROGRAM

San Joaquin River Restoration Program Cost & Benefits Map



SECTION 3: PROGRESS AND ACTIVITIES



RESTORATION ADMINISTRATOR AND TECHNICAL ADVISORY COMMITTEE

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Section 3 describes progress for the following activities in 2017:

- Flow Actions
- Channel and Structural Improvements
- Fish Reintroduction
- Water Management
- Monitoring and Analysis

FLOW ACTIONS

The Program transitioned from Interim Flows to Restoration Flows in January 2014. Restoration Flows are a specific volume of water to be released from Friant Dam under the Settlement. Restoration Flows allow the Implementing Agencies to support initial fish introduction actions and collect relevant data concerning flows, temperatures, fish needs, and seepage losses. Recapture, recirculation, and reuse of Restoration Flows are addressed in the Water Management section on page 21.

Flow Management and Monitoring

Each year, Reclamation and the SJRRP monitor and manage releases and flows in the San Joaquin River, including the Restoration Flows specified in the Settlement and Settlement Act. The Settlement specifies six different Restoration Year types based on hydrologic conditions. Each water year type determines the amount of Restoration Flows to be made available for the SJRRP. Technically, the water years begin in October of the prior year and continue through September of the following year. However, for simplicity, this document defines just the calendar year. For 2017, the Restoration year was classified as a “Wet” water year type—producing the second highest water year on historic record. 2018 proved to not be as wet as 2017 and was classified as a “Normal-Dry” water year type.

As part of annual flow management actions, the SJRRP monitors and manages unexpected seepage losses, Unreleased Restoration Flows, Restoration Flow guidelines, and flow and seepage data.

Unreleased Restoration Flows (URFs)

Reclamation has developed a 10-year plan (water contract years 2016 to 2025) to sell and exchange URFs. URFs are generated when SJRRP Restoration Flows cannot be released into the San Joaquin River channel due to channel capacity constraints. Since its inception, the SJRRP has been addressing downstream constraints that limit Restoration Flows and, the quantity of URFs generated is expected to decline as channel capacity constraints are improved. However, it is anticipated that these constraints will persist at some level until 2030. Until the channel constraints in the San Joaquin River and other conditions are addressed to allow full release of Restoration Flows, URFs may be generated at Friant Dam on an annual basis. Per the Settlement, URFs will be used to best serve the Restoration Goal, including selling or exchanging water, with priority given to Friant Division long-term contractors. The Program completed an Environmental Assessment for the first five years of the 10-year plan in 2016.

RESTORATION ADMINISTRATOR AND TECHNICAL ADVISORY COMMITTEE

The Settlement specified the roles and responsibilities for a Restoration Administrator to provide timely input and recommendations on technical issues related to the Restoration Goal. The Restoration Administrator is supported by a Technical Advisory Committee.

RESTORATION ADMINISTRATOR AND TECHNICAL ADVISORY COMMITTEE - The Settlement specified the roles and responsibilities for a Restoration Administrator to provide timely input and recommendations on technical issues related to the Restoration Goal. The Restoration Administrator is supported by a Technical Advisory Committee.

RESTORATION ADMINISTRATOR - The Restoration Administrator (RA), selected jointly by the Friant Water Authority (FWA) and the Natural Resources Defense Council (NRDC), provides recommendations to the Secretary of the U.S. Department of the Interior (Secretary), in consultation with the Technical Advisory Committee, regarding specific elements of the Settlement and certain issues related to the SJRRP Restoration Goal.

TECHNICAL ADVISORY COMMITTEE - The Technical Advisory Committee (TAC) consists of six voting members selected by FWA and NRDC. The voting members of the TAC assist and advise the RA regarding areas outline in the Settlement, have relevant technical or scientific background or expertise in fields related to river restoration or fishery restoration, and serve for three years. Two nonvoting members representing the state agencies, server as liaisons to the RA and TAC. The federal agencies have three liaisons to the TAC to ensure coordination and information sharing with the Implementing Agencies.

FLOW RECOMMENDATIONS IN 2017 AND 2018 - The release of water from Friant Dam for the SJRRP depends upon the amount of runoff. Using water supply forecasts for the Friant Division of the Central Valley Project, the SJRRP uses the estimated total unimpaired inflow below Friant Dam to determine an allocation. The RA makes recommendations on the timing of releases based on river conditions and the specific restoration goals and objectives at that time. Before an increase in flow rates, the SJRRP analyzes the likely effects on the river and surrounding lands and documents the results with a Flow Bench Evaluation. Following an affirmative evaluation, the SJRRP issues a notification and changes the releases.



Pistachio trees in the San Joaquin Valley.

REACHES OF THE SAN JOAQUIN RIVER RESTORATION AREA

The Restoration Area starts at the Friant Dam and ends at the confluence of the San Joaquin River with the Merced River.

REACH 5: Eastside Bypass/Bear Creek Confluence to the Merced River Confluence

Reach 5 receives flows from Mud and Salt Sloughs and has channels that run through both agricultural and wildlife management areas. Reach 5 is the end of the study area.



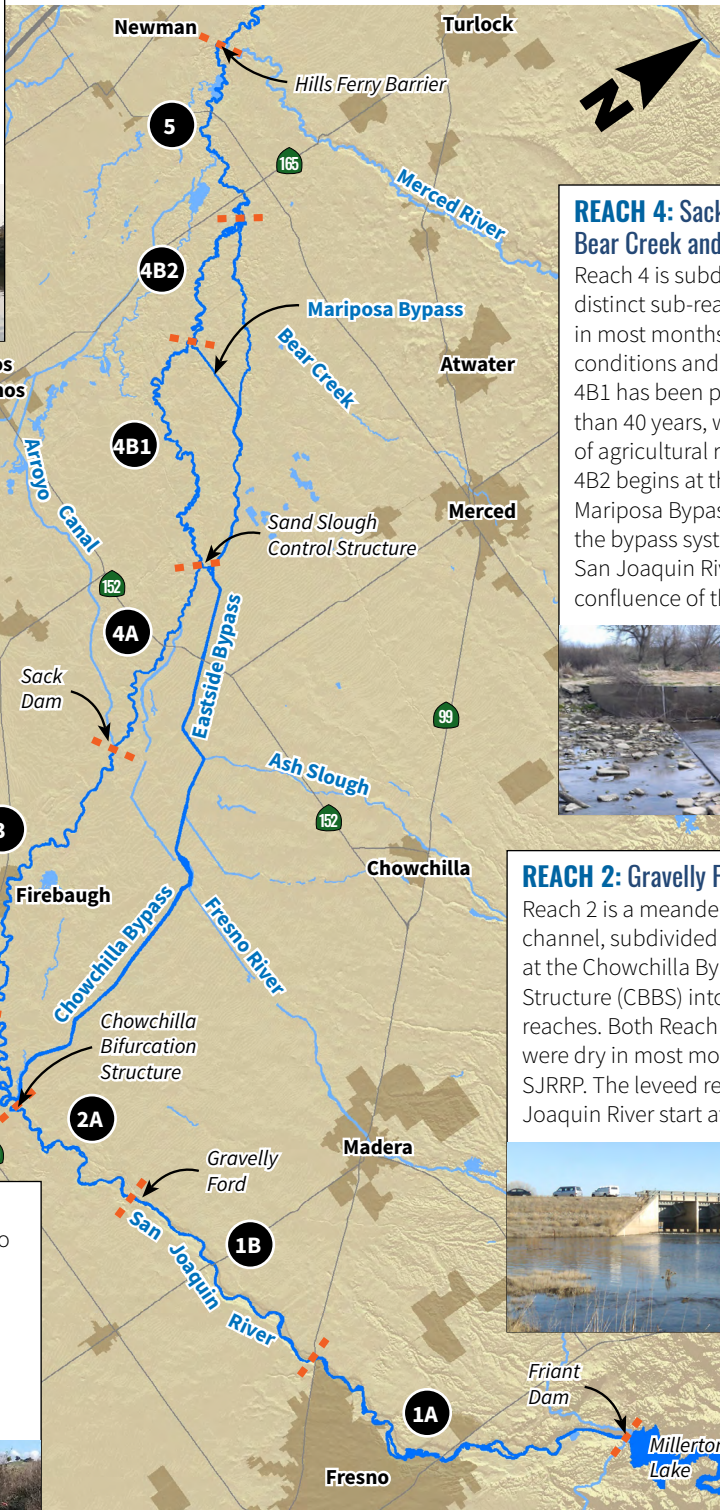
REACH 3: Mendota Dam to Sack Dam

Reach 3 conveys flows from the Mendota Pool for diversion to the Arroyo Canal at Sack Dam; the reach maintains year-round flow in a meandering channel with a sandy bed. This reach flows through a predominantly agricultural area, and diversion structures are common in this reach.



REACH 1: Friant Dam to Gravelly Ford

Reclamation makes releases from Friant Dam to maintain continuous flows past Gravelly Ford, providing deliveries to riparian water rights holders in Reach 1. Reach 1 is the principal area identified for future salmon spawning, but has been extensively mined for instream gravel. Reach 1 does not have levees.



REACH 4: Sack Dam to Confluence of Bear Creek and the Eastside Bypass

Reach 4 is subdivided into three distinct sub-reaches. Reach 4A is dry in most months except under flood conditions and SJRRP flows. Reach 4B1 has been perennially dry for more than 40 years, with the exception of agricultural return flows. Reach 4B2 begins at the confluence of the Mariposa Bypass, where flood flows in the bypass system rejoin the main stem San Joaquin River, and extends to the confluence of the Eastside Bypass.



REACH 2: Gravelly Ford to Mendota Dam

Reach 2 is a meandering, low-gradient channel, subdivided at the Chowchilla Bypass Bifurcation Structure (CBBS) into two sub-reaches. Both Reach 2A and Reach 2B were dry in most months before the SJRRP. The leveed reaches of the San Joaquin River start at Gravelly Ford.



CONSERVATION STRATEGIES AND FLOW-RELATED MITIGATION MEASURES

Channel Capacity Advisory Group (CCAG)

Reclamation and DWR, in consultation with the CCAG, released Channel Capacity Reports in January 2017 and 2018 as a requirement of the programmatic EIS/R level stability thresholds. This annual report, first completed in 2013, describes and updates estimates of “then-existing channel capacities” so that Restoration Flows are managed at or below current capacities. “Then-existing channel capacity” is the channel capacity that corresponds to flows that would not significantly increase flood risk from Restoration Flows in the Restoration Area. The report provides the CCAG and the public a summary of the prior Restoration Year data, methods, and estimated channel capacities and makes recommendations for monitoring and management actions for the following year. This information helps ensure that the release of Restoration Flows does not significantly increase flood risk in the Restoration Area.

The 2018 report provided an update to the 2017 report “then-existing channel capacities,” by considering subsidence in Reach 2A and Reach 2B. The report also highlighted future studies and data gaps that would be key in informing future channel capacities. Some of these technical studies took place in 2017 and informed 2018 updates to Restoration Flow recommendations, including updated modeling to reflect subsidence, and continued implementation of the San Joaquin Levee Evaluation Project (includes geotechnical exploration and analysis). Similarly, the 2018 report continued to summarize and provide updates on future actions, and the studies and monitoring that will affect future “then-existing channel capacities.” The 2018 report also included improved information in Reach 2A and Reach 2B regarding subsidence. This data resulted in recommending a slight capacity increase in Reach 2B. The purpose of the CCAG is to provide independent review of estimated “then-existing channel capacities,” monitoring results, and management actions to address vegetation and sediment transport within the systems as developed by Reclamation.

Seepage Management Program

The goal of the Seepage Management Program is to limit Restoration Flow releases based on groundwater seepage thresholds. These thresholds are based on local crop type or historical water levels and are designed to keep groundwater levels below levels that could cause harm to crops. In 2017 and 2018, Reclamation completed permanent seepage projects on over 1,800 acres of possibly affected agricultural lands in the Restoration Area. These projects allow for the release of up to approximately 650 cfs of Restoration Flow past Mendota Dam. Additionally, in 2017 the Program released the Final Environmental Assessment and Finding of No Significant Impact (FONSI) for seepage management actions through 2020. The purpose of implementing the proposed actions, which was guided by landowner input, are to account for potential seepage impacts and enable Restoration Flow releases of up to 1,300 cfs. Mitigation options include the purchase of land easements to allow for elevated groundwater tables beneath adjacent agricultural fields as a result of Restoration Flows or the purchase of land affected by groundwater seepage from willing sellers. Mitigation options also include physical seepage projects, such as interceptor lines, under separate environmental compliance.

2017-2018 Levee Stability Thresholds by River Reach		
REACH	2017	2018
REACH 2A	6,000	6,000
REACH 2B	1,120	1,120
REACH 3	2,860	2,860
REACH 4A	2,840	2,840
REACH 4B1	Not Analyzed	Not Analyzed
REACH 4B2	930	930
REACH 5	2,350	2,350
MIDDLE EASTSIDE BYPASS	580	580
LOWER EASTSIDE BYPASS	2,890	2,890
MARIPOSA BYPASS	350	350

3: PROGRESS AND ACTIVITIES

Financial Assistance for Seepage Projects

The Seepage Management Plan outlines two approaches to addressing seepage concerns within the Restoration Area, realty actions and physical projects. To date, all seepage projects completed have been realty actions, either fee title acquisition or a seepage easement. Work is now underway for landowners who have expressed interest in a physical project utilizing a financial assistance agreement with Central California Irrigation District for design and construction. The physical project currently under design is expected to become a seepage limitation in Reach 3. Construction of this project will allow for increased Restoration Flow releases in Reach 3 when irrigation demands otherwise utilize channel capacity. The design is expected to be complete in FY 2019 with construction to follow.

Channel Levee Improvements

The San Joaquin Levee Evaluation Project is implemented by the California Department of Water Resources (DWR). Under the project, DWR staff conduct geotechnical evaluations of the flood control system integrity

associated with levee seepage and stability on high-priority levees in the Restoration Area. To limit the risk of levee failure due to the release of Restoration Flows, channel capacities are limited to flow levels that would meet the U.S. Army Corps of Engineers (USACE) factors of safety for levee slope stability and underseepage. If data on the levees is not available to evaluate seepage and stability conditions, flows are limited to those that would remain “in-channel” until adequate data is available. From the initial geotechnical analysis findings, high flood hazards were identified for most San Joaquin River Restoration Program (SJRRP) levees. DWR has prioritized its geotechnical exploration based on current channel capacity limitations and anticipated Restoration Flow routing.

Priority 1 levee evaluations in Reach 2A, the lower portion of Reach 4A, and the middle Eastside Bypass are complete. The results show that only one levee segment in these reaches — 2 miles of the right bank of the Eastside Bypass below Sand Slough — cannot convey at least 2,500 cfs without exceeding USACE criteria. The 2-mile segment of levee was identified for improvements and DWR completed a Basis of Design report for this levee segment in 2017; 95 percent of the designs were completed in 2018. The levee improvement project is scheduled for construction in 2020.

Geotechnical evaluations also continued on the Priority 2 levees, which include the Mariposa Bypass and Reach 4B2. Data was collected on these levee segments in 2016. Geotechnical evaluations on the levees were completed in 2018 and a Geotechnical Conditions Report will be released in 2019. The report will include remediation alternatives and cost estimates that will help the SJRRP determine the costs of improving these levees under the Reach 4B, Eastside Bypass, and Mariposa Bypass Channel and Structural Improvements Project.



The Program has installed over 200 groundwater monitoring wells to help manage seepage conditions.



CHANNEL AND STRUCTURAL IMPROVEMENTS

Mendota Pool Bypass and Reach 2B Improvements Project

The Mendota Pool Bypass and Reach 2B Improvements Project will provide for fish passage around Mendota Pool, increased capacity in Reach 2B, and diversion from Reach 2B into the Mendota Pool as needed. In addition to providing improved fish passage, the project is critical to developing fish habitat in the San Joaquin River below Friant Dam. The selected alternative was identified through a consensus-based process with the local affected community. Land adjacent to the Mendota Pool was acquired by the Program in 2017. Construction of the bypass is expected to begin in 2019. Construction of the Reach 2B levee portion of the project is planned to occur between 2020 and 2025. This project will be the first major fish passage project and first of the Phase 1 projects identified in the Settlement to move to the construction phase. Additional details regarding this project are available in Section 1.

Reach 4B, Eastside Bypass, and Mariposa Bypass Channel and Structural Improvements Project and Report to Congress

Projects within Reach 4B are being planned to increase channel capacity to convey at least 4,500 cfs; establish a low-flow channel; and enable fish passage for Reach 4B, the Eastside Bypass, and the Mariposa Bypass. The original design capacity of Reach 4B was 1,500 cfs and the current capacity is zero cfs. There have been no flows in Reach 4B for many decades. Although construction is not anticipated to begin until 2025, there are several near-term actions driving the project, including significant work to prepare the Eastside Bypass Improvements Project Draft EIS/R, which was released December 2017 for public review.

Projects to allow for passage of anadromous salmonids at key barriers to migration are also being incorporated into the Reach 4B project.¹ The fish passage objectives are to provide unimpeded passage for spring-and-fall run adult Chinook salmon, minimize impacts on flood operations, and account for ground subsidence in the designs. The initial implementation phase of the project will include elements to provide connectivity of flow and fish in the Eastside Bypass between Sand Slough and the Mariposa Bypass, the current Restoration Flow path. This phase of the project, the Eastside Bypass Improvements Project, includes: improvement of two miles of levees along the bypass to improve flow conveyance and modifications to the Eastside Bypass Control Structure, the Dan McNamara Road crossing, and removal of Merced National Wildlife Refuge weirs to improve fish passage. Reclamation and DWR are leading the planning and design of these projects and are on schedule to complete final design and permitting in 2019. Construction of these projects is planned to start in 2020.



Salmon jumping at the Eastside Bypass Bifurcation Structure.

¹ As of 2016, these projects are no longer incorporated as part of the Reach 4B project; they have been moved forward as actions independent of the Reach 4B decision.

3: PROGRESS AND ACTIVITIES



Arroyo Canal Fish Screen and Sack Dam Fish Passage Project

This project implements two of the highest priorities identified in the Settlement: a fish screen on the Arroyo Canal to prevent entrainment of juvenile Chinook salmon in the canal and modifications to Sack Dam to allow for fish passage around the structure. Arroyo Canal and Sack Dam are owned and operated by Henry Miller Reclamation District #2131. The canal and dam are the sole diversion and conveyance facilities for District #2131 which provides agricultural water supply to approximately 47,000 acres of agricultural lands and conveyance of water supply to Federal and State wildlife refuges and private duck clubs.

The original project schedule has been delayed by the discovery of significant subsidence in the project area. In May 2012, Reclamation began monitoring the Arroyo and Temple-Santa Rita Canals to understand the localized subsidence near Sack Dam. The resulting data support the design efforts for the Arroyo Canal Fish Screen and Sack Dam Fish Passage Project. The Program has been working with Henry Miller Reclamation District to meet the planned 2020 construction start date and maintain the existing operation of the Arroyo Canal and Sack Dam until construction begins.



Sack Dam under 2017 floods.



SALMON TRAP AND HAUL

During the 2017-2018 field season, the San Joaquin River Restoration Program decided not to conduct Trap and Haul efforts for fall-run Chinook salmon to help simplify results for monitoring projects. Although spring-and-fall run have distinct adult immigration periods, spring-run hold in pools prior to spawning (beginning in September), whereas fall-run spawn immediately upon reaching spawning grounds in October. U.S. Fish and Wildlife Service conducted a redd capping study, which involved covering the fish nests (redds) with a mesh screen. As the eggs hatch and the fry emerge from the gravel, the mesh screen captures the fry. This data allows the Restoration Program to evaluate the quality of spawning habitat and calculate egg-to-fry survival; important metrics for measuring success toward meeting the Restoration Goal. By not conducting Trap and Haul efforts, the Restoration Program had assurance that the capped redds were produced by spring-run and not fall-run Chinook salmon.

SPRING-RUN CHINOOK SPAWN!

Fisheries Framework

To meet the goal of returning a self-sustaining Chinook salmon fishery to the San Joaquin River, major planning and permitting initiatives are underway. Several studies to evaluate the current and future needs of fish in the river, including some using small groups of hatchery raised Chinook salmon, are already underway. The most comprehensive document to date is the Fisheries Framework, completed in 2018. This document outlines the goals and objectives for establishing spring-run and fall-run Chinook salmon populations in the Restoration Area, identifies the necessary habitat that will support naturally reproducing, self-sustaining salmon populations, provides the science behind these planned management actions, and outlines the proposed implementation plan and adaptive management process for fishery actions.

For the first time in 60 years, spring-run Chinook salmon successfully spawned within the Restoration Area in 2017 - a Program milestone. Adult salmon were grown to adult size over the course of three to four years in tanks at the Salmon Conservation and Research Facility (SCARF) and then released into the river in May; this release marked the first adult salmon hatched and raised on the river to have the chance to spawn naturally in nearly a century. Each fish was coded, wire tagged, implanted with acoustic transponders, and fin clipped for data analysis and monitoring purposes. Although these adult salmon never migrated to the ocean or journeyed back upstream as natural salmon do, they still constructed 13 redds (fish nests) in the most upper reach of the river that were detected through observation, and some successfully spawned, producing offspring before dying.

In 2018, the number of redds grew to 40 redds produced by hatchery-raised spring-run adults – the most recorded in over 60 years. The higher number of redds also gives Program biologists greater insight into preferred spawning habitat of spring-run Chinook within Reach 1. The information can assist with determining if there are habitat limitations for re-establishing a spring-run population.



2018 adult salmon broodstock release.

3: PROGRESS AND ACTIVITIES



Rotary screw trap at Owl Hollow.

Using rotary screw traps (large metal mesh cones placed in the river to funnel fish so they can be counted, studied, tagged and released) deployed in key locations of the San Joaquin River, program biologists caught more than 400 juvenile spring-run Chinook salmon in 2017-2018. These juvenile salmon are offspring of 115 adult spring-run Chinook salmon released to the river months earlier. The traps can help determine not only the number of fish, but also survival rates, migration timing, life history migration strategies, salmon production relationships among river flows and temperature, and an overall view of which river locations are preferred by rearing juvenile salmon. All of

this information will help the Restoration Program to better understand what it takes to bring salmon back to the river.

After being caught in the rotary screw trap, the juvenile fish are measured, weighed, and have a tiny tissue sample taken for genetic identification before being released back to the river. The genetic information helps Program biologists determine the parentage of each fish in the river. The value of this information is two-fold: a better understanding of which fish have the genetics for the greatest chance of survival in the San Joaquin River ecosystem; and, the ability to track the fish back to a specific redd (fish nest) to analyze which locations have the best survival rates and why.

Additional fish reintroduction activities included several fish releases (1,450 yearlings were released in Dec. 2017) into the Restoration Area, including a release of 89,100 juvenile spring-run Chinook salmon (38,106 from the Feather River Fish Hatchery and 51,044 from the SCARF) in March 2017. For monitoring purposes, all released fish were adipose fin-clipped and coded wire tagged and 700 were implanted with acoustic tags. An additional juvenile fall-run Chinook salmon release took place in the Eastside Bypass at El Nido Road in May.

In 2018, juvenile releases totaled 206,875. As with 2017, fish were clipped and coded wire tagged and 700 were implanted with acoustic tags. In addition, 5,200 yearlings were released into the Restoration Area.

To support ongoing efforts to restore and maintain fish populations in the Restoration Area, construction on the new SCARF began in spring of 2017, adjacent to the existing San Joaquin Hatchery, 1-mile downstream of Friant Dam. Construction of the new SCARF is on schedule to be completed in 2019. A new water supply line was constructed in 2017, providing an additional 20 cubic feet per second of water to the existing hatchery and SCARF for the rearing of juvenile salmon.

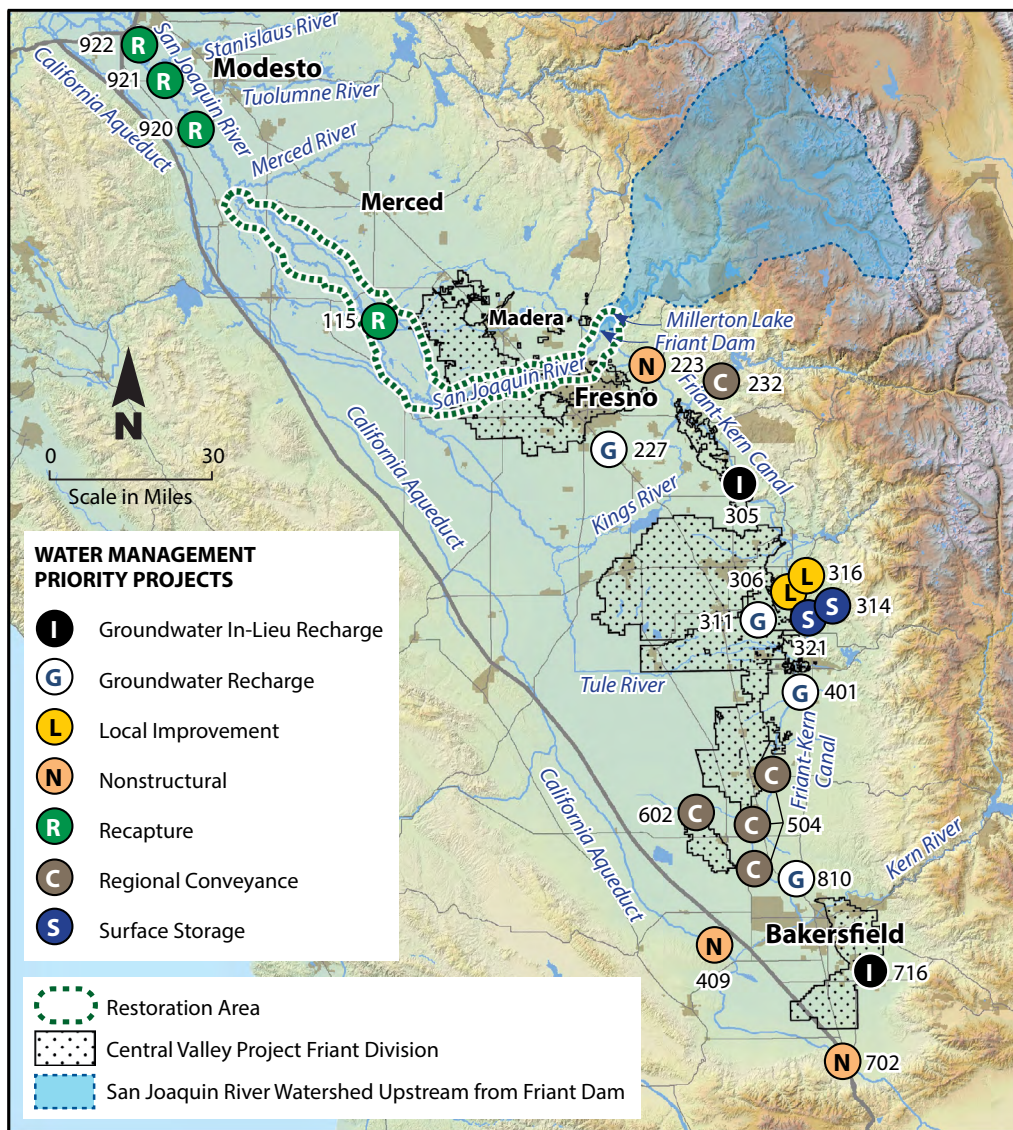


Construction of the Salmon Conservation and Research Facility.

WATER MANAGEMENT

Development and Implementation of Recapture and Recirculation Plan

As required by the Settlement and the Settlement Act, the SJRRP is developing and implementing a Recapture and Recirculation Plan to achieve the Water Management Goal. The plan includes actions to recirculate, recapture, reuse, exchange, or transfer SJRRP Restoration Flows. In support of the Long Term Recapture and Recirculation of Restoration Flows (LTRRRF) EIS/R, Reclamation released a Final Project Description Technical Memorandum in September 2017 to describe the alternatives formulation process; document the alternatives evaluation methods and results; describe the alternatives to be evaluated in the LTRRRF EIS/R and the concepts eliminated from further evaluation; and obtain input and feedback from the Implementing Agencies, Settling Parties, Third Parties, and other stakeholders involved in the LTRRRF Project. The Draft LTRRRF EIS/R will consider alternatives to recapture Restoration Flows, primarily downstream of the Restoration Area (downstream of the confluence with the Merced River), and recirculate, reuse, exchange, or transfer these flows to reduce or avoid water supply impacts to Friant Contractors. The action alternatives would reduce the water supply impact on Friant Contractors associated with the Settlement and help achieve the Water Management Goal.



3: PROGRESS AND ACTIVITIES

While the Long-Term Recapture and Recirculation Plan is being developed, the SJRRP implements near-term actions to contribute to the Water Management Goal. Recapture of Restoration Flows in 2017 and 2018 took place at the Mendota Pool and at existing facilities on the lower San Joaquin River owned by Banta-Carbona and Patterson Irrigation Districts. The amount of Restoration Flows recaptured each year depends on hydrologic conditions, the availability of Restoration Flows, and capacity at pumping and conveyance facilities Reclamation recaptured approximately 25,000 acre-feet in 2017 and 43,000 acre-feet in 2018.

Friant-Kern Canal and Madera Canal Capacity Restoration Projects

MADERA CANAL CAPACITY RESTORATION PROJECT LOW-FLOW VALVE: The Madera Canal low-flow valve was fabricated and installed in 2017 and now allows for greater variability of flows into the canal. The Madera Canal Capacity Restoration Project will help to reduce or avoid adverse water supply impacts to Friant Contractors by enhancing the canal's operating capacity through increased water supply reliability and operational flexibility to meet user demands.



Madera Canal low-flow valve fabrication and installation.

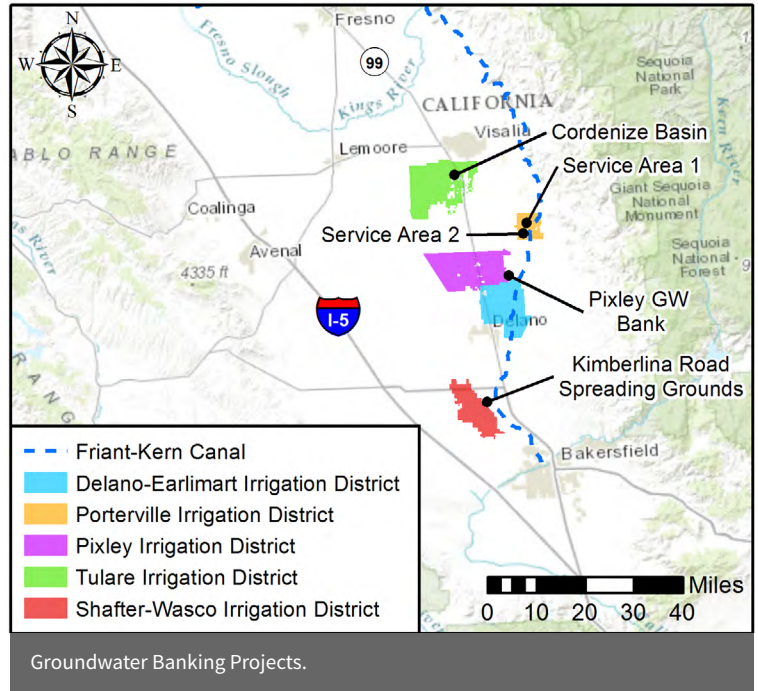


3: PROGRESS AND ACTIVITIES

FRIANT-KERN CANAL REVERSE-FLOW PUMP-BACK PROJECT (WESTERN DROUGHT RESPONSE FUNDED PROJECT): Reclamation’s drought relief efforts in 2015 and 2016 included providing \$3.3 million to the Friant Water Authority for the Friant-Kern Canal Reverse-Flow Pump-Back Project. The estimated \$9.3 million total project will improve the Friant Division’s operational flexibility, including the ability to recover banked groundwater during dry years. The new facilities would also improve the Friant Division’s ability to recirculate and return recaptured Restoration Flows as part of the SJRRP. The project includes planning, designing, constructing, and operating three permanent pump-back facilities on the Friant-Kern Canal. Construction is expected to be completed in late 2019.

Financial Assistance for Groundwater Banking Facilities

Groundwater banking and recharge projects are designed to help offset the water supply impacts to Friant Contractors from the release of Restoration Flows, as outlined in the Settlement and Settlement Act. The projects capture water that would otherwise go downstream in wet years and store it underground for future extraction in lieu of surface diversions during dry years. These projects also have benefits for drought relief, as they improve the region’s collective capability to capture water supplies in wet years and store it underground, offsetting the effects of surface diversions in future droughts and potential subsidence as a result of overpumping groundwater. The SJRRP is providing grant funds to support groundwater banking projects with five local water districts: Tulare Irrigation District, Shafter-Wasco Irrigation District, Porterville Irrigation District, Pixley & Delano-Earlimart Irrigation Districts.



TULARE IRRIGATION DISTRICT (TID): Construction for the TID

Cordeniz Basin Project, an 80-acre groundwater recharge basin and five groundwater monitoring wells, was completed in 2017. The project allows the TID to expand groundwater recharge efforts, improve monitoring of groundwater levels, and reduce adverse water supply impacts to Friant Contractors resulting from the release of Restoration Flows.

SHAFTER-WASCO IRRIGATION DISTRICT: Construction for the Kimberlina Groundwater Recharge Basin and Banking

Project was completed in 2017. The project included the construction of a new 270-acre groundwater recharge basin south of Kimberlina Road to serve as spreading grounds to recharge groundwater in the region. Three new wells adjacent to the spreading basin allow for recovery of the banked water. The project allows the Shafter-Wasco Irrigation District to capture, recharge, and store surface water supplies underground when hydrologic conditions permit and withdraw groundwater when needed, helping to alleviate impacts from reduced available surface water flows and increased groundwater pumping.

PORTERVILLE IRRIGATION DISTRICT (PID): The PID In-Lieu Groundwater Project Finding of No Significant Impact was

signed in September 2016, allowing for construction in 2017. The project includes the construction of a new water conveyance that would allow PID to provide surface water supplies from its CVP allocation to 2,120 acres that currently utilize groundwater for irrigation purposes. These actions will allow adjacent landowners to take surface diversions in lieu of using their groundwater pumps and take surface water supplies that are currently being sold and transferred outside of PID. By no longer pumping groundwater in the service areas, this project will allow the aquifer to recharge passively and slow the overdraft of groundwater in the system.

3: PROGRESS AND ACTIVITIES

PIXLEY & DELANO-EARLIMART IRRIGATION DISTRICTS: The proposed project with the Pixley Irrigation District and Delano-Earlimart Irrigation District would provide an 800-acre basin with the ability to recharge groundwater at a rate of 45,000 acre-feet annually and a well field of 16 recovery wells. The project also includes a 4.5-mile pipeline connecting the new basin to the Friant-Kern Canal and groundwater recovery wells and pumping plants and associated electrical and control facilities to boost water recovered from the project. In consideration of comments received on a 2016 EA/IS, a revised draft EA/IS was released in April 2017 for public review, and a Finding of No Significant Impact was signed in December 2017 for construction to move forward. The system is anticipated to be operational in 2019.

MONITORING AND ANALYSIS

Monitoring and analysis activities are an important part of planning, implementing, and evaluating the SJRRP. Every year, the Program has a variety of annual and multi-year studies under way in all aspects of program planning and implementation. And every year, the Program team identifies research priorities and selects the study and monitoring proposals that best meet Program needs. The following descriptions summarize some of the important studies and monitoring that took place in 2017 and 2018.

Flow Conveyance and Fish Passage

Evaluation and monitoring studies were conducted for many features that affect the capacity to manage irrigation flows, Restoration Flows, and flood flows in the river channel. These studies included levee seepage and stability evaluations in Reach 2A, Reach 4A, and the Middle Eastside Bypass; the effects of varied vegetation types in the river channel on flows; water surface elevation monitoring; subsidence impacts on flows and channel capacity; and modeling of channel seepage of Restoration Flows.

Studies also reviewed and modeled potential non-structural barriers for fish migration, including critical riffle depths, temperature barriers, and false migration pathways, such as agricultural drains and tributaries to the river.

Spawning, Incubation, and Rearing Habitat

Many of the studies related to salmon spawning, incubation, and rearing are being conducted in Reach 1. These studies include evaluating the effects of flows on the physical conditions to support salmon spawning, developing a model of habitats suitable for salmon spawning, monitoring the cold water pool in Millerton reservoir, and evaluating the emergence and survival of salmon and river conditions.

Other studies in Reach 1 focus on sediment movement effects on habitat suitability, including the impact of flows on fine silt deposition, flow forces needed to mobilize sediment of the appropriate size to support salmon spawning beds, use of advanced acoustic technology to monitor movement of cobble- and gravel-sized sediment movements, sediment transport in two major tributaries below Friant Dam, and sand accumulation in spawning areas.

Two other studies look beyond Reach 1, including sediment monitoring in Reach 2B to support forecasts for reach response following levee setbacks and re-surveying Reach 1 and 2 channel cross sections to identify changes in channel geometry and substrates resulting from Restoration Flows.



FISH TAGGING

Each year, the SJRRP provides 700 fish to researchers at the University of California Davis to conduct an experiment evaluating the movement and survival of juvenile fish originating from the Restoration Area. These fish are tagged with acoustic transmitters which allows the researchers to determine the location and movements of tagged fish. This project provides SJRRP with important information about the effects of environmental conditions on fish health, reach-specific sources of mortality, and route selection as juvenile fish emigrate from the Restoration Area, through the Delta, and into the San Francisco Estuary.

3: PROGRESS AND ACTIVITIES

Two previous studies focused on salmon rearing in other reaches, including an analysis of water quality data against water quality parameters for Chinook salmon and identification, testing, and monitoring of pilot floodplain sites to evaluate potential biological productivity and benefits for fish rearing.

Adult Migration and Predation Protection

Three studies examined temperature and predation considerations, including assessing existing riparian habitats and river water temperatures to calibrate temperature models for future restored conditions, modeling of potential water temperature reduction from increased riparian habitat below Sack Dam, and delineating the locations of gravel pits in Reach 1 as a first step toward prioritizing pits to reduce predation.

Fish Reintroduction

Two studies evaluated salmon populations, including genetic monitoring of the interim hatchery Chinook salmon stock and the newly established in-river population and baseline population information essential for assessment of Butte Creek as a potential donor stock for the SJRRP.

Temporary salmon trap and haul activities continued to provide adult and juvenile salmon to test suitability of river conditions. Adult salmon were trapped at the Hills Ferry Barrier and transported to spawning areas in Reach 1, and juvenile salmon were transported from Reach 1 to support successful outmigration. In 2018, fall-run Chinook trap and haul efforts were curtailed in an effort to better study spring-run Chinook spawning habitat.

The SJRRP also evaluated potential locations, designs, operations, and permitting requirements for a segregation weir in Reach 1 to separate spring-run and fall-run salmon.

Long-Term Monitoring

Several long-term monitoring studies continued, including steelhead monitoring and relocation, rotary screw trap monitoring for juvenile salmon, and vegetation monitoring in approximately 20 vegetation locations in the Restoration Area.



Juvenile spring-run Chinook salmon release on the San Joaquin River.

SECTION 4: PUBLIC INVOLVEMENT AND OUTREACH

Section 4 describes SJRRP's efforts to inform and engage the public.

SJRRP PUBLIC OUTREACH ACTIVITIES

- Landowner Coordination
- Technical Feedback Groups
- Public Review of Program Documents
- Stakeholder Briefings
- Press Releases and Media Advisories
- Program Informational Materials
- Community Events

The SJRRP public outreach program provides a wide variety of public outreach activities intended to promote both informational mechanisms for stakeholders, including members of the general public, press, landowners, elected officials and others, and opportunities for those stakeholders to provide input towards key aspects of the program. The Program Public Involvement Plan describes how the five Federal and State agencies implementing the SJRRP inform and involve all levels of the community with the Program. Effective communication and coordination helps to ensure that stakeholders and the general public are informed and have an opportunity to provide meaningful input.

LANDOWNER COORDINATION

Landowner coordination is a critical component of the Program's public outreach efforts. Within the Restoration Area, there is a diverse array of residential; agricultural; commercial; non-profit; and local, State, and Federal government agency landowners and managers. A proactive coordination effort with landowners affected by the Program ensures that property owners have meaningful input on the activities that affect their property and that Program decisions are made in a transparent manner.

The Program has dozens of studies and field activities under way at a given time, including biological investigations, water quality and aquatic invasive species sampling, and studies to better understand salmonid spawning habitat quality and the efficiency of the salmon trap and transport efforts.

The Program also investigates the physical integrity of the river system through levee penetration surveys, geological investigations and topographic surveys of various reaches, and subsidence monitoring surveys. In combination, these surveys provide data about project areas that support the design of Program elements, such as seepage mitigation, revegetation, Restoration Flows, fish reintroduction, permitting, and environmental review of proposed projects.

The Program's Landowner Coordinator helps to facilitate the exchange of information between the SJRRP and affected property owners and helps to secure access to property for Program staff to conduct studies.

In advance of any surveys, studies, or other field activities, the Program sends field advisories to affected landowners and other stakeholders along the river and posts them on the Program website. In addition, as the Program moves into more construction-focused activities, the Program has real estate interests in lands within the Restoration Area required to support various projects. Coordination with the owners and managers of these lands is a critical component of the planning process. The Program real estate team and landowner coordination team work closely together to ensure all parties are well informed and negotiations are able to take place. In 2018 successful seepage easements were completed for 1,831 acres of land.

In specific areas, the Program coordinates with landowners on the planning and design of channel improvements and other restoration activities. For example, the selected alternative for the Mendota Pool Bypass and Reach 2 B Improvements Project was identified through a consensus-based process with the local affected community.

4: PUBLIC INVOLVEMENT AND OUTREACH

SJRRP SCIENCE MEETING

In 2018, the SJRRP held its third Science Meeting August 22 and 23 at the Tsakopoulos Library Galleria in Sacramento, California. The two-day meeting was an opportunity both for those conducting scientific research and monitoring for the Program to showcase their discoveries as well as an opportunity for stakeholders to learn more about the findings. Over 150 attendees had an opportunity over the two-day meeting to listen to 31 speakers and five panels on a variety of SJRRP-related topics. A poster-board session related to scientific data accumulated through Program activities was also on display. Topics covered during the meeting included salmon reintroduction, flow modeling, fish passage, forecasting and a variety of other topics. A new and popular component of the meeting were the “pop-up talks” where presenters had five-minutes to provide an overview of subject matter.



TECHNICAL FEEDBACK GROUPS

Technical Feedback Groups (TFGs) assist Program staff with soliciting input from technical experts, interested stakeholders and the general public. The meetings provide an open and transparent process for the development of key Program strategies, documents and implementation activities. There are currently three TFGs: Restoration Goal, Seepage and Conveyance, and Water Management Goal.

WATER MANAGEMENT GOAL TECHNICAL FEEDBACK MEETINGS

2017	February 10 May 18 September 21
2018	March 16 August 3 October 26

PART III WORKSHOP

2017	May 17
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SEEPAGE AND CONVEYANCE TECHNICAL FEEDBACK MEETINGS

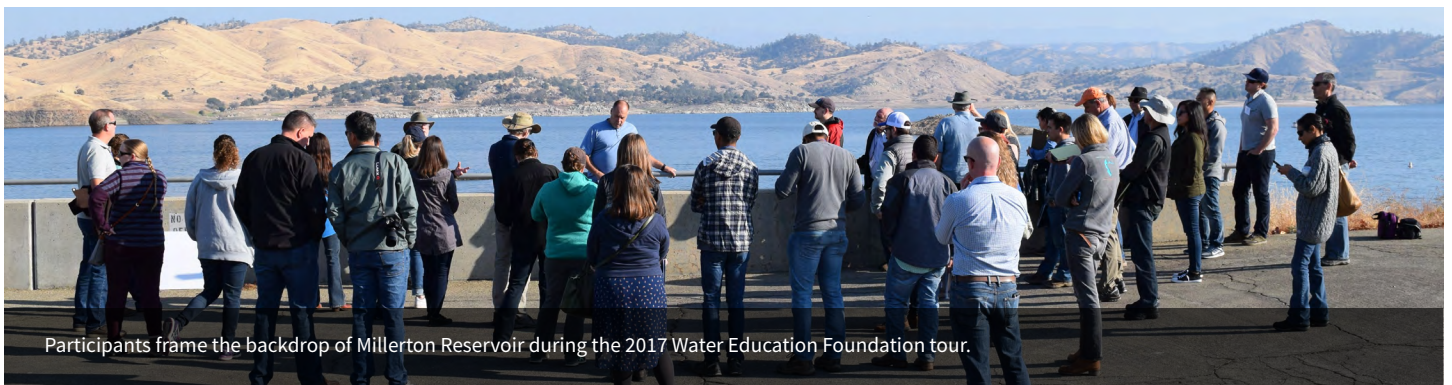
2017	January 23 March 2
2018	None

RESTORATION MANAGEMENT GOAL TECHNICAL FEEDBACK MEETINGS

2017	None
2018	None

TOURS

In both 2017 and 2018, the SJRRP co-sponsored the annual San Joaquin River Restoration Tour, organized by the Water Education Foundation. The two-day tour came from a wide variety of backgrounds including water agencies, government agencies, legislative aids, contractors, students, agriculture and the general public. Tour stops included Friant Dam and Millerton Reservoir, the interim Salmon Conservation and Research Facility, Chowchilla Bifurcation Structure, Mendota Pool and Dam, Sack Dam and Arroyo Canal, Sand Slough Control Structure, the Merced



Participants frame the backdrop of Millerton Reservoir during the 2017 Water Education Foundation tour.

4: PUBLIC INVOLVEMENT AND OUTREACH

National Wildlife Refuge, the Eastside Bypass Control Structure, and the river confluence at Hills Ferry.

In addition, the SJRRP regularly conducts program informational briefings with elected officials, government agencies, stakeholders, and interested organizations to report on the progress of the Program, discuss Program activities and solicit feedback.

PROGRAM INFORMATION MATERIALS AND MEDIA RELATIONS

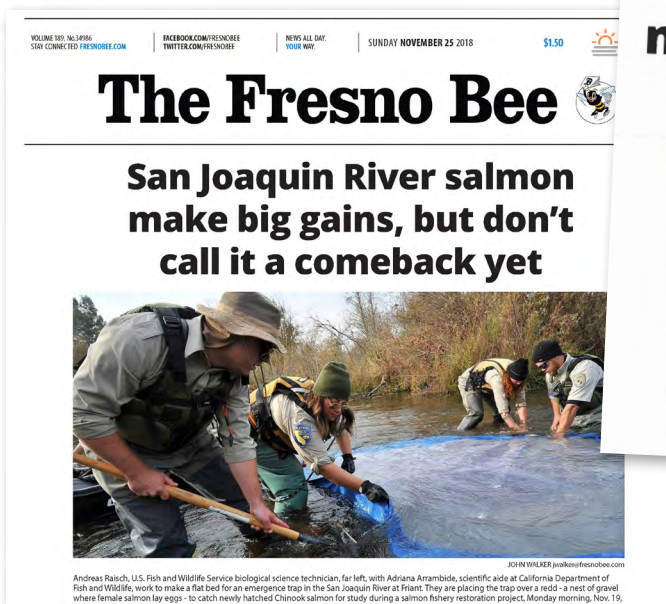
The SJRRP manages a website to house program information including key Program documents and to highlight major Program accomplishments and milestones.

The Program has worked to increase its presence on social media platforms. Via the Reclamation CVP account, the Program generated some of the most popular Tweets in history, in particular on a December 18, 2017 Tweet regarding spring-run spawning in the river for the first time in over 60 years. The tweet garnered 129 retweets and 270 likes and set a benchmark for the CVP account (<https://twitter.com/ReclamationCVP/status/942838706666332161>).

Media relations activities conducted by Program staff has increased awareness of Restoration Program achievements with local and regional media outlets including The Fresno Bee.

2018 PUBLIC REVIEW DOCUMENTS

- Final Initial Study/Mitigated Negative Declaration/Environmental Assessment/FONSI for Eastside Bypass Improvements Project
- Final SJRRP Refuge Replacement Water Supply FONSI
- Final Environmental Assessment/Initial Study/FONSI for South Valley Water Banking Authority Modified Banking Project
- 2018 Channel Capacity Report
- Fisheries Framework
- Proposed Rules for Spring-Run Chinook Salmon Reintroduction Under the SJRRP
- Final EA/FONSI San Joaquin River Restoration Program Seepage Management Actions
- Final EA/FONSI Short Term Recirculation of Recaptured San Joaquin River Restoration Program Flows





Friant Dam, which can hold up to 520,000 acre-feet of water, is the control point for flows into the San Joaquin River.

SECTION 5: PROGRAM COSTS AND FUNDING

Section 5 details the budget and funding for 2017–2018 for the San Joaquin River Restoration Program.

COST CONSIDERATIONS

From the federal perspective, the SJRRP will be almost entirely reliant on federal appropriations during the five-year vision.

While currently \$88 million is available for expenditure from the San Joaquin River Restoration Fund (SJRR Fund), which is not subject to appropriations, and \$35 million is available for implementation of the Friant-Kern and Madera Canal Capacity Restoration Projects, Reclamation anticipates fully obligating these “mandatory” funds by the end of FY 2017.

Accordingly, the Five-Year Vision assumes annual Federal appropriations ranging from \$34 to \$53 million, including \$2.445 million per year in funds from the Central Valley Project (CVP) Restoration Fund (\$2 million indexed to 2015 dollars).

Overall, the SJRRP will be funding constrained, and activities will be subject to the amount of appropriated funds.

AUTHORIZATION AND FUNDING

Federal participation in the SJRRP is authorized under the Central Valley Project Improvement Act and the Settlement Act, part of the Omnibus Public Land Management Act of 2009, Public Law 111-11. The Central Valley Project Improvement Act, signed in 1992, included provisions for the potential restoration of the San Joaquin River and authorized planning and environmental compliance for such activities. The Settlement Act, signed in March 2009, authorizes and directs the Secretary to implement the Settlement. Federal funding obligated for the SJRRP in Federal Fiscal Year (FY) 2015 for planning and environmental compliance activities was \$44.8 million in 2015 and \$49.5 million in 2016.

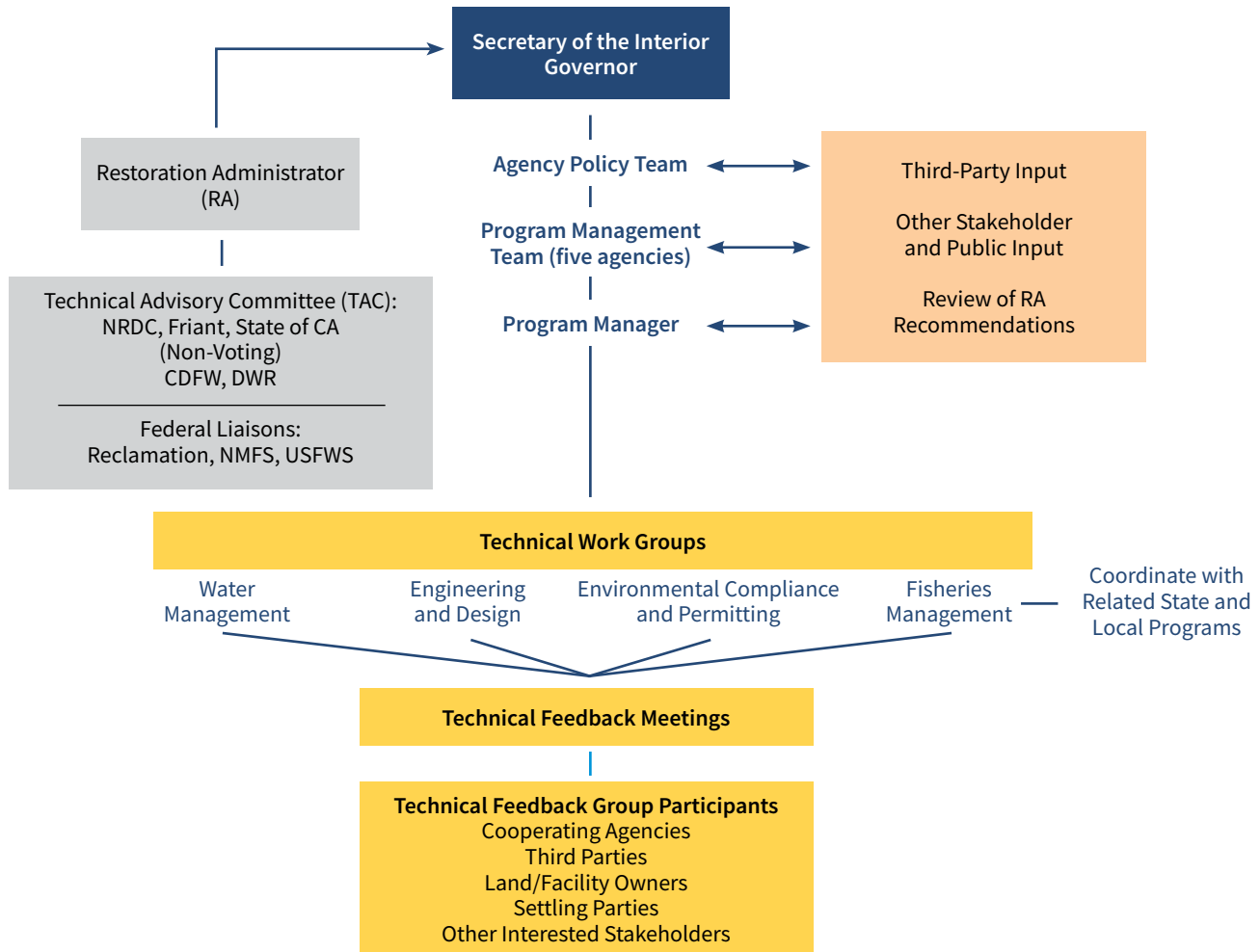
The State has committed its support to the Settlement by entering into a Memorandum of Understand (MOU) with the Settling Parties that outlines its collaborative role in the planning, design, funding, and implementation of the actions set forth in the Settlement. The State has committed to contribute approximately \$200 million for projects that directly contribute to the restoration efforts. California Propositions 84 and 1E, passed by the voters in 2006, provide a portion of these funds, including \$8.8 million obligated in State FY 2015.



The Program works collaboratively with agricultural interests.

5: PROGRAM COSTS AND FUNDING

Program structure and organizational chart that reflects the provisions of the Settlement and subsequent MOUs



THIRD-PARTY MOU SIGNATORIES		
ENTITIES ALONG THE SAN JOAQUIN RIVER <ul style="list-style-type: none"> • San Joaquin River Exchange Contractors Water Authority • Central California Irrigation District • Firebaugh Canal Water District • San Luis Canal Company • Columbia Canal Company • San Joaquin River Resource Management Coalition 	DOWNSTREAM TRIBUTARY WATER USERS <ul style="list-style-type: none"> • Merced Irrigation District • Turlock Irrigation District • Modesto Irrigation District • Oakdale Irrigation District • South San Joaquin Irrigation District • San Joaquin Tributaries Association 	OTHER CVP WATER USERS <ul style="list-style-type: none"> • Westlands Water District • San Luis & Delta-Mendota Water Authority

SJRRP ANNUAL REPORT: ANNUAL BUDGET TABLE FOR 2017-2018

SOURCE:	FEDERAL FUNDS	FISCAL YEAR 2017	FISCAL YEAR 2018
	Reclamation¹		
	San Joaquin River Restoration Fund	\$3,649,593.94	\$1,033,887.92
	Central Valley Project Restoration Fund	\$2,000,000	\$2,000,000
	Federal Appropriations	\$36,000,000	\$36,148,385.70
	FEDERAL SUB-TOTAL	\$41,481,676.93	\$39,182,273.62
	STATE OF CALIFORNIA FUNDS		
	Department of Fish and Wildlife		
	Proposition 13	\$0	\$0
	Proposition 84	\$3,096,296.12	\$2,171,752.79
	Proposition 1E	\$0	\$0
	Department of Water Resources		
	Proposition 13	\$0	\$0
	Proposition 84	\$2,301,309	\$2,635,639
	Proposition 1E	\$1,365,186	\$539,928
	Proposition 1	\$628,495	\$1,185,480
	STATE SUB-TOTAL	\$7,391,286.12	\$6,532,799.79
	TOTAL	\$48,872,963.05	\$45,715,073.41

NOTES: 1. Includes funding for USFWS and NMFS participation.

State Fiscal Year is from July 1 to June 30; Federal Fiscal Year is from October 1 to September 30.



PROGRAM MANAGEMENT STRUCTURE

The Settlement includes explicit commitments that the Settling Parties and downstream water and land interests (referred to as Third Parties) would be involved in developing and implementing plans by the Secretary. With court approval of the Settlement, the Settling Parties initiated MOUs with the State and the Third Parties. These MOUs form the basis of a program structure to provide for effective oversight, management, and transparency of the SJRRP.

STATE MOU: Signed at the same time as the Settlement, the State MOU recognizes that, through CDFW, DWR, the Natural Resources Agency, and the California Environmental Protection Agency (Cal/EPA), the State will play a major, collaborative role in the planning, design, funding, and implementation of the actions on the San Joaquin River called for by the Settlement.

THIRD-PARTY STAKEHOLDER MOU: Signed in February 2007, this MOU recognizes that the Third Parties will play a collaborative role in the planning, design, implementation, and potential adaptation of the actions on the San Joaquin River called for by the Settlement and in the implementing legislation.

THE SJRRP TEAM: The SJRRP team is a multi-tiered group that includes staff from the Implementing Agencies. Roles and responsibilities of this group include:

- **PROGRAM MANAGEMENT TEAM:** Includes executives from the Implementing Agencies and is responsible for overall direction and coordination of the SJRRP.
- **PROGRAM MANAGER:** Provides direction and management of the Technical Work Groups (TWGs) and serves as chair of the Program Management Team.
- **TECHNICAL WORK GROUPS:** The SJRRP includes four primary TWGs, each supported by various subject-matter-specific subgroups. The four TWGs are:
 - Water Management
 - Engineering and Design
 - Environmental Compliance and Permitting
 - Fisheries Management



Headwaters of the San Joaquin River.

SECTION 6: LOOKING FORWARD

Section 6 outlines the San Joaquin River Restoration Program's path forward for 2019 and beyond.

THE FUNDING CONSTRAINED FRAMEWORK AND THE FUTURE

With the advent of the Funding Constrained Framework, the Program has re-defined the available funding (presumed) and what can be accomplished with that funding through 2024. Having a clear and attainable path forward is the hallmark of the Funding Constrained Framework and one which will provide for the primary first stage goal of beginning the reestablishment of self-sustaining spring-run and fall-run Chinook salmon in the San Joaquin River between the Merced River and Friant Dam. Creating volitional fish passage, sufficient flows to manage temperatures and the basic habitat needs of the species will be integral to implementing the first stage of the Framework.

As key milestones are achieved for Restoration and Water Management goals, the Program will focus on implementation of Settlement activities as new funding becomes available. This includes the Reach 4B flow routing decisions and increased in-channel capacities.

Waiting for the Salmon

The Program met a major milestone in 2018: the advent of adult spring-run Chinook salmon spawning in the river for the first time in over 60 years. But with this milestone comes the quest for the next major benchmark: the natural return of spring-run. When will they return? How many will return? Since 2016, the Program has released nearly 520,000 juvenile and yearling spring-run Chinook salmon to the river. Given the 2 to 5-year ocean stay as part of the salmon lifecycle, biologists wait with great anticipation for the day spring-run Chinook finally return to the San Joaquin on their own volition. Limitations still exist within the river with regard to passage and habitat, but nature continues to move forward in its own capacity. The Program remains optimistic, as the science indicates, that spring-run Chinook will eventually return to complete their lifecycle in the river water where they were hatched. In the interim, scientist will continue to gather the data that helps to ensure that return will be as successful as possible.

Refuge Weir Removal

Two aged weirs located within the Eastside Bypass on the Merced National Wildlife Refuge are expected to be removed in 2019. The weirs, which are used to generate wetlands on the refuge, create migratory impediments for salmon. The effort will remove the weirs completely, regrade the surrounding channel and a new well will be drilled on the refuge to create an alternative water supply for the refuge.

Mendota Pool Bypass

Looking ahead two years, the Program expects to award the first construction contract for the Mendota Pool Bypass and Reach 2B Improvements Project in 2020. The project will create a new 3/4-mile bypass, to allow Chinook salmon to pass upstream around Mendota Dam and Mendota Pool water supply infrastructure. This construction project is expected to create about 100 construction jobs near Mendota and indirectly support more than 140 jobs over the anticipated construction period. The overall project will benefit multiple stakeholders, including farmers, cities, recreationalists, and the environment.



Reach 2B staff gage.

SECTION 6: LOOKING FORWARD



Additional focus projects for 2019 include, but are not limited to:

- Purchase of additional seepage easements to increase channel capacity and protect landowners.
- A draft of Version 2.1 of the Restoration Flow Guidelines to refine details of Restoration Flow operation and RWA impact accounting.
- Planning and design efforts to advance the Arroyo Canal Fish Screen and Sack Dam Fish Passage Project.
- Completion of the Eastside Bypass Improvements Project Initial Study/Environmental Assessment.

In addition to the milestone actions described above, the Program will continue its ongoing actions which include coordinating flow, fish, and seepage monitoring efforts; establishing channel capacity recommendations via the Channel Capacity Report; establishing Restoration Flows; and overseeing general administration of the Program. The integration of ongoing activities and upcoming milestone achievements will continue to move the Program closer to accomplishing the Five-Year Vision set forth in the Revised Framework.



Construction of new SCARF facility

SAN JOAQUIN RIVER
RESTORATION PROGRAM



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