

## **OBJECTIVE**

- Reduce extinction risk of Sacramento River winter-run Chinook salmon and mitigate for CVP water project operation effects.

## **PROJECT**

- A 10 year phased pilot program will evaluate long-term feasibility of reintroducing winter-run Chinook salmon into their historical holding, spawning, and rearing habitats above Shasta Dam, including providing necessary input for refining quantitative modeling and objectives. These habitats remain in relatively pristine conditions compared to habitats on the Central Valley floor.

## **BACKGROUND**

- Winter-run are endangered and cannot access historical holding, spawning, and rearing habitats.
- Absent reintroduction in watersheds above Shasta Dam, winter-run will remain at high extinction risk.
- Reintroductions are a high priority in NMFS's 2014 recovery plan and an RPA action in NMFS's 2009 OCAP BiOp.
- From 2010 through July, 2018, BOR led, and provided necessary funding for, the Shasta Dam Fish Passage Evaluation project to ensure they remained in compliance with RPA action V in NMFS's 2009, OCAP BiOp.

## **PROJECT STATUS**

- An Interagency Fish Passage Steering Committee comprised of BOR, DWR, NMFS, USFWS, CDFW, SWRCB has been in place for nearly a decade and serves as an umbrella for five subcommittees.
- The pilot program is focused on winter-run Chinook salmon since they no longer occupy natal habitats and are critically endangered.
- All key preliminary assessments for the pilot project have been completed (*e.g.*, habitat evaluations in the upper Sacramento and McCloud Rivers, disease risks to resident fish, water treatment options at Livingston Stone NFH).
- Livingston Stone NFH has installed additional winter-run Chinook salmon rearing facilities for the purpose of providing fish for initial test releases.
- Regulatory assurances were established for landowners and fishing interests which include: (1) California Forest Practice Rule exemptions in 2017; (2) California Endangered Species Act amendments in 2018 to assign these reintroduced populations into an "experimental" status; (3) confirmation in 2017 that California's Wild and Scenic River designation for the McCloud will not

affect the proposed project and; (4) clarifications to the Freshwater Fishing Regulations by the Fish and Game Commission in 2018.

### **PHASES OF THE PILOT PROJECT AND METHODS**

- Test releases will start with certified disease-free broodstock juveniles and scale up to certified disease-free broodstock adults from the Livingston Stone NFH. Once water treatment upgrades are installed at the Livingston Stone NFH, wild adult winter-run Chinook salmon from below Keswick Dam will be reintroduced.
- When wild adult winter-run Chinook salmon are used (at approximately year five of the pilot program) they would be collected at the Keswick Dam collection facility and transported to the lower McCloud for release for natural spawning and rearing.
- Out-migrating juveniles will be collected at two facilities; one in the lower McCloud River and the other in the upper McCloud arm of Shasta Lake. The purpose for two facilities is to determine a) which collection method (in-river or in-reservoir) is most efficient under the range of flows present in the McCloud River during the outmigration period and b) whether or not two facilities are necessary to achieve of a cohort replacement rate  $\geq 1$ .
- Juvenile salmon collection facilities, designed by agency engineers with input from fish passage experts familiar with similar projects in the Pacific Northwest, will be adaptively modified to ensure maximum collection efficiencies while also ensuring up/downstream movement of resident fish species (*e.g.*, brown trout) is not impeded.
- It is anticipated the pilot phase will need to occur over a 10-year period to ensure collection system work as anticipated under a range of flow conditions *and* rates of adult returns meet expectations (cohort replacement rate  $> 1$ ).
- This pilot program also informs and is closely tied to updates to the SWFSC winter-run life cycle model to develop and model “dynamic allotment” scenarios in which potential for positive cohort replacement rate is optimized in any given year based on forecasted habitat conditions and fish are allotted to in-river, hatchery supplementation, captive broodstock, Battle and/or McCloud based on pre-determined decision criteria.

### **NECESSARY REGULATORY PREREQUISITES FOR PILOT**

- Issuance of a final EIS by BOR for the pilot program. The draft EIS is ready for public release.
- Issuance of a final EA by NMFS for an experimental population designation pursuant to ESA 10(j) *and* 4(d) rule for winter-run Chinook when above Shasta Dam. The EA is ready for public comment.

- An internal section 7 consultation by NMFS on the experimental population designation.
- Issuance of a consistency determination by CDFW for NMFS’s experimental population designation.

**10-YEAR PILOT PROGRAM COST**

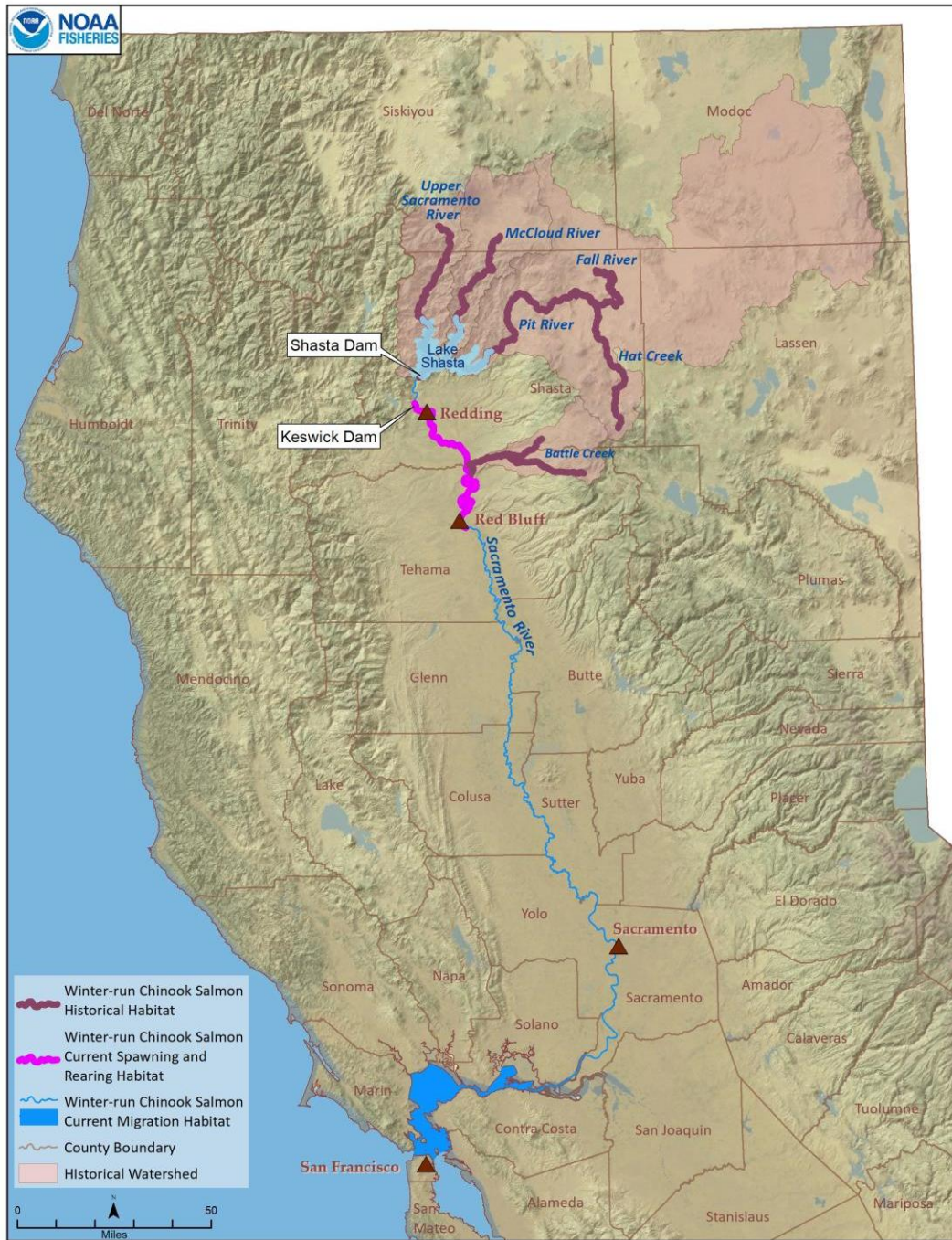
Estimated costs for a 10-year pilot program are outlined in the table below. These costs are approximate costs and most were derived from prior Steering Committee estimates and Reclamation contracts.

Actions	Cost/Yr or 1x Cost	Total/10 Yr
Ongoing design, construction/modification, installation, and repair of Juvenile Salmon Collection Facilities (traps, booms, nets, temperature, curtain)	\$7,000,000/1x	\$7,000,000
Fish from USFWS winter-run broodstock program at Livingston Stone NFH. These fish would be used until upgrades to water treatment occur (~5 years)	\$200,000/Yr for 5 yr	\$1,000,000
Biological monitoring, operation of collection facilities and release sites, and evaluation (USGS/USFWS)	\$1,500,000/Yr	\$15,000,000
Upgrades to water treatment facility at Livingston Stone NFH	\$2,800,000/1x	\$2,800,000
Southwest Fisheries Science Center stock selection and reintroduction guidance	\$50,000/Yr	\$500,000
Pit River Habitat Evaluation	\$450,000/1x	\$450,000
Final Report	\$300,000/1x	\$300,000
<b>Estimated Total Cost over 10 Years</b>		<b>\$27,050,000</b>

**NEEDS STATEMENT**

BOR to re-engage and fund the Shasta Dam Fish Passage Evaluation project. This includes:

- Re-engaging Interagency Fish Passage Steering Committee and associated subcommittees.
- Funding the listed Actions in the above table.
- Releasing their draft EIS for public comment.



Current holding and spawning habitat and historical holding and spawning habitat prior to construction of Shasta and Keswick Dams on mainstem Sacramento River and hydroelectric facilities on Battle Creek.