BUREAU OF RECLAMATION

Long-Term Operation – Biological Assessment

Appendix G – Specific Facility and Water Operations Deconstruction

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Appendix G Specific Facility and Water Operations Deconstruction

G.1 Introduction

This facility and water operations deconstruction appendix analyzes potential stressors and effects associated with Bureau of Reclamation (Reclamation) and California Department of Water Resources (DWR) actions for facility maintenance and for water supplies that are layered over an additive to the seasonal operations deconstruction described in Appendix D, *Seasonal Operations Deconstruction*. These actions include local effects from the maintenance of specific facilities not addressed in other Biological Opinions and specialized water operations from water transfers and new storage facilities that are not currently completed but may be completed and operated within the potential term of this action.

This appendix is organized first by action and then by species to maximize the modularity of effects analyses. Where effects are local to a facility, for example, herbicide application, those effects are addressed directly. Where effects include hydrologic alteration, Reclamation applied the same methodology as Appendix D for the appliable time periods. Effects addressed in seasonal operations are not repeated here. Facility and water operations actions include:

- **Clear Creek**
    - Spring Creek Debris Dam
- **Sacramento–San Joaquin Delta (Delta)**
    - Water Transfers
    - Agricultural Barriers
    - Delta Cross Channel Maintenance Addressed in Seasonal Operations
    - Barker Slough
    - Contra Costa Water Agency Facilities
    - Suisun Marsh Preservation Agreement

Where actions are intended to address effects on listed species and their critical habitats, and are a common component to all initial alternatives, those are addressed as conservation measures in Appendix H, *Conservation Measure Deconstruction*.

G.2 Spring Creek Debris Dam, Sacramento River

Operation of Spring Creek Debris Dam controls debris and contaminated runoff from Iron Mountain Mine before it enters the Spring Creek Power Plant tailrace and then Keswick Reservoir. The mine was designated a Superfund site in 1983. Reclamation actions protect the Sacramento River system from heavy metal pollution from Spring Creek and adjacent watersheds through dilution flows and avoiding buildup of metals within Keswick Reservoir.

G.2.1 Winter-Run Chinook Salmon

Adults may be migrating and holding in the Sacramento River.

Eggs are present in Sacramento River; however, undiluted releases are rare in the summer.

Juveniles are rearing and migrating in the Sacramento River.

G.2.2 Spring-Run Chinook Salmon

Adults are migrating, holding, and spawning in Clear Creek.

Eggs are present in Clear Creek.

Juveniles are rearing and migrating in Clear Creek.

Yearlings are rearing and migrating in Clear Creek.

G.2.3 Steelhead

Adults are migrating, holding, and spawning in the Sacramento River.

Eggs are present in the Sacramento River.

Juveniles are rearing and migrating in the Sacramento River.

G.2.4 Green Sturgeon

Adults are migrating, spawning, and holding in the upper Sacramento River.

Eggs are present in the upper Sacramento River.

Larvae are present in the upper Sacramento River.

Juveniles are present in the upper Sacramento River.

G.3 Agricultural Barriers, Delta

DWR installs agricultural barriers between April and July to improve water levels and support diversions for Delta water users while operating the State Water Project (SWP).

The barriers are installed using large angular rocks and include multiple 48-inch diameter corrugated metal culverts. The culverts are equipped with flap gates on their upstream ends that can be tidally operated. Tidal operation allows the culverts to be completely closed on ebb tides to retain water upstream of the barriers, and opened on flood tides to allow water to flow through them, to upstream. The barriers' large center section (weir) is lower than their abutments and allows water on flood tides to pass over them, to upstream. On ebb tides, water flows downstream over the large center section (weir) of the barriers until the upstream water elevation reaches the elevation of the barriers' weir, at which point the barriers behave as low head dams with only minimal river flow passing though the rock.

Middle River has been shown through acoustic telemetry studies to not be a migratory pathway for out migrants.

The Old River near Tracy Barrier has been installed since 1991, the Middle River Barrier since 1987, and the Grant Line Canal Barrier since 1996. The barriers were not installed in 1998, and only the Middle River Barrier was installed in 2017 due to high flows.

G.3.1 Winter-Run Chinook Salmon

Adults are present in the Delta.

Eggs are not present in the Delta.

Juveniles are present in the Delta.

G.3.2 Spring-Run Chinook Salmon

Adults are migrating in the Delta.

Eggs are not present in the Delta.

Juveniles are rearing and migrating in the Delta.

Yearlings are migrating in the Delta.

G.3.3 Steelhead

Adults are present in the Delta.

Eggs are not present in the Delta.

Juveniles are present in the Delta.

G.3.4 Green Sturgeon

Adults are present in the Delta.

Larvae are not present in the Delta.

Eggs are not present in the Delta.

Juveniles are rearing in the Delta.

G.3.5 Delta Smelt

Adults are present.

Eggs are not present, and **larvae** are present.

Juveniles are present.

G.3.6 Longfin Smelt

Adults are present.

Eggs and **larvae** are present.

Juveniles are present.

G.4 North Bay Aqueduct, Delta

The North Bay Aqueduct is an underground pipeline that runs from Barker Slough in the Delta to Cordelia Forebay in western Fairfield. From the Cordelia Forebay, water is pumped to Napa County, Vallejo, and Benicia. The size of the underground pipeline varies from 72 inches at Barker Slough to 54 inches at Cordelia Forebay. The purpose of the project is to support operational flexibility and to reduce effects on listed species and critical habitats in Barker Slough. The North Bay Aqueduct is operated by DWR.

Delta smelt are attracted to the favorable habitat conditions in the north Delta and have been found to inhabit this area year-round. Future Delta smelt supplementation efforts are also expected to occur, wholly or in part, in the north Delta. The operation of the Barker Slough Pumping Plant in combination with other diversions and losses can result in the net negative flow of water from the north Delta into Barker Slough, and these hydrodynamic conditions can lead to the entrainment of larval Delta smelt.

G.4.1 Winter-Run Chinook Salmon

Adults are present in the Delta.

Eggs are not present in the Delta.

Juveniles are present in the Delta.

G.4.2 Spring-Run Chinook Salmon

Adults are present in the Delta.

Eggs are not present in the Delta.

Juveniles are present in the Delta.

Yearlings are present in the Delta.

G.4.3 Steelhead

Adults are present in the Delta.

Eggs are not present in the Delta.

Juveniles are present in the Delta.

G.4.4 Green Sturgeon

Adults are present in the Delta.

Larvae are not present in the Delta.

Eggs are not present in the Delta.

Juveniles are rearing in the Delta.

G.4.5 Delta Smelt

Adults are present.

Eggs are not present, and **larvae** are present.

Juveniles are present.

G.4.6 Longfin Smelt

Adults are present.

Eggs and **larvae** are present.

Juveniles are present.

G.5 Clifton Court Forebay Weed Management, Delta

Aquatic weed management is needed to prevent potential damage to SWP equipment through cavitation at the pumps and excessive weight on the Skinner Delta Fish Protection louver array that could cause collapse of the structure. Additionally, dense stands of aquatic weeds provide cover for unwanted predators that prey on listed species within the Clifton Court Forebay.

G.5.1 Winter-Run Chinook Salmon

Adults are present in the Delta.

Eggs are not present in the Delta.

Juveniles are present in the Delta.

G.5.2 Spring-Run Chinook Salmon

Adults are present in the Delta.

Eggs are not present in the Delta.

Juveniles are present in the Delta.

Yearlings are present in the Delta.

G.5.3 Steelhead

Adults are present in the Delta.

Eggs are not present in the Delta.

Juveniles are present in the Delta.

G.5.4 Green Sturgeon

Adults are present in the Delta.

Larvae are not present in the Delta.

Eggs are not present in the Delta.

Juveniles are rearing in the Delta.

G.5.5 Delta Smelt

The U.S. Fish and Wildlife Service (USFWS) does not consider Clifton Court Forebay habitat for Delta smelt. Therefore, once Delta smelt enter the forebay, they are considered lost.

G.5.6 Longfin Smelt

Reclamation considers longfin smelt similar to Delta smelt.

G.6 Drought Toolkit

G.6.1 Temporary Urgency Change Petition

Reclamation and DWR reviewed the ability of the Central Valley Project (CVP) and SWP to meet existing regulatory standards and objectives contained in their water rights permits and licenses, as well as environmental laws and regulations, based on the current and projected hydrology, exceedance forecasts, reservoir levels, etc. This included consideration of the requirements of D-1641, and the 2008 USFWS and 2009 National Marine Fisheries Service (NMFS) Biological Opinions on the Coordinated Long-Term Operation of the CVP and SWP. Reclamation and DWR then jointly developed proposed modifications to D-1641 and operations consistent with the Biological Opinions and prepared appropriate documentation to support the permitting and consultation processes. This included preparation of a Temporary Urgency Change Petition for submittal to the State Water Resources Control Board (Water Board), and Endangered Species Act (ESA) and California Endangered Species Act consultation letters/memorandums for exchange with USFWS, NMFS, and California Department of Fish and Wildlife (CDFW). These documents typically included the following elements: (1) proposed action description, (2) hydrologic forecasts, (3) modeling output, and (4) biological review. The process relied heavily on on-going communication and coordination among six agencies (Reclamation, DWR, USFWS, NMFS, CDFW, and Water Board) through the Real Time Drought Operations Management Team and frequent meetings of the executive leadership of these agencies. State agencies also provided enhanced monitoring in the Delta. The effectiveness of the actions under the TUCP and Biological Opinions and results of the monitoring activities were reviewed and utilized, in light of the species responses, to inform the continued response to drought.

G.6.1.1 Winter-Run Chinook Salmon

Adults are present in the Delta.

Eggs are not present in the Delta.

Juveniles are present in the Delta.

G.6.1.2 Spring-Run Chinook Salmon

Adults are present in the Delta.

Eggs are not present in the Delta.

Juveniles are present in the Delta.

Yearlings are present in the Delta.

G.6.1.3 Steelhead

Adults are present in the Delta.

Eggs are not present in the Delta.

Juveniles are present in the Delta.

G.6.1.4 Green Sturgeon

Adults are present in the Delta.

Larvae are not present in the Delta.

Eggs are not present in the Delta.

Juveniles are present in the Delta.

G.6.1.5 Delta Smelt

Adults are present.

Eggs are not present, and **larvae** are present.

Juveniles are present.

G.6.1.6 Longfin Smelt

Adults are present.

Eggs and **larvae** are present.

Juveniles are present.

G.6.2 West False River Drought Barrier

DWR may install, with the assistance of Reclamation funding, a salinity barrier at West False River up to two times over a ten-year period if drought conditions occur. DWR would construct the barrier no sooner than April 1 and remove the barrier by November 30 of the subsequent year or the same year, when DWR determines the barrier is no longer needed based on hydrologic conditions. A barrier in the West False River would help protect the beneficial uses of the interior Sacramento-San Joaquin Delta water by reducing saltwater intrusion while preserving the use of critically needed reservoir water.

During recent droughts (2015, 2021, 2022), DWR has operated the West False River Temporary Drought Barrier (WFRTDB) between April and November. The WFRTDB is made of embankment rock placed across West False River from Jersey to Bradford Island in Contra Costa County. DWR is pursuing programmatic ESA coverage with the Army Corps of Engineers to install the WFRTDB for up to 20 months twice between 2023-2032 beginning in April with full removal not later than November 30 the same year or the following year when the barrier is installed.

G.6.2.1 Winter-Run Chinook Salmon

Adults are present in the Delta.

Eggs are not present in the Delta.

Juveniles are present in the Delta.

G.6.2.2 Spring-Run Chinook Salmon

Adults are present in the Delta.

Eggs are not present in the Delta.

Juveniles are present in the Delta.

Yearlings are present in the Delta.

G.6.2.3 Steelhead

Adults are present in the Delta.

Eggs are not present in the Delta.

Juveniles are present in the Delta.

G.6.2.4 Green Sturgeon

Adults are present in the Delta.

Larvae are not present in the Delta.

Eggs are not present in the Delta.

Juveniles are present in the Delta.

G.6.2.5 Delta Smelt

Adults are present.

Eggs are not present, and **larvae** are present.

Juveniles are present.

G.6.2.6 Longfin Smelt

Adults are present.

Eggs and **larvae** are present.

Juveniles are present.

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