



— BUREAU OF —
RECLAMATION

2021 Annual Operations Plan

**Klamath Project, Oregon-California
Interior Region 10, California-Great Basin**



Mission Statements

The Department of the Interior (DOI) conserves and manages the Nation's natural resources and cultural heritage for the benefit and enjoyment of the American people, provides scientific and other information about natural resources and natural hazards to address societal challenges and create opportunities for the American people, and honors the Nation's trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities to help them prosper.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Introduction

The Klamath Project (Project) delivers water for irrigation and related purposes to approximately 230,000 acres in southern Oregon and northern California. This 2021 Operations Plan (Plan) describes Project operations that are anticipated to occur between April 15 and September 30, 2021 (as further described below), based upon current and projected hydrologic conditions.

This Plan necessarily reflects and accounts for the current extreme drought conditions afflicting the Klamath Basin. Inflows to the Project's reservoirs are among the lowest on record, and these extraordinary conditions compel Reclamation to take exceptional measures in operating the Project this year.

Specifically, Reclamation has determined that hydrologic conditions are currently preventing and will continue to prevent Reclamation from operating the Project consistent with the conditions anticipated to occur for species listed as threatened or endangered under the Endangered Species Act (ESA) in Upper Klamath Lake (UKL) and the Klamath River, as specified in the National Marine Fisheries Service's (NMFS) *Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response* (2019 NMFS BiOp), issued on March 29, 2019, and the U.S. Fish and Wildlife Service's (USFWS; collectively Services) *Biological Opinion on the Effects of the Proposed Interim Klamath Project Operations Plan, effective April 1, 2020, through September 30, 2022, on the Lost River and Shortnose Sucker* (2020 USFWS BiOp), issued on April 10, 2020.

Under Term and Condition (T&C) 1A of the 2019 NMFS BiOp and T&C 1c of the 2020 USFWS BiOp, Reclamation is required to meet and confer with the Services in the event that hydrologic conditions in UKL and the Klamath River are anticipated to fall outside the scope of certain "boundary conditions" analyzed by the Services in their respective BiOps. Reclamation is further required to coordinate with the Services on the causative factors for such conditions and identify corrective actions and means by which Reclamation may adaptively manage to protect ESA listed species.

Consistent with the T&Cs in the Services' BiOps, Reclamation has been coordinating with the Services since early 2021 on observed and anticipated hydrologic conditions and corresponding Project operations. Through this meet-and-confer process Reclamation has developed temporary operating procedures, as further described below, to address immediate and temporary competing needs, including the needs of all threatened and endangered species, in a reasonable manner informed by real-time hydrological and biological data.

2021 Project Operations

Amidst the current extraordinary hydrologic conditions, Reclamation must operate the Project based on real-time monitoring and forecasting information. The information that Reclamation will use to guide Project operations will include observed hydrologic conditions, inflow forecasts, and biological

monitoring related to ESA-listed species and their critical habitat. Reclamation will continue to coordinate Project operations with the Services, and any deviations from the general operations described below will be addressed as they arise, in conference with the Services.

Upper Klamath Lake & Klamath River

For the reasons previously described, Reclamation has determined that meeting the specific UKL water surface elevations identified as “boundary conditions” in the 2020 USFWS BiOp is not obtainable in 2021. Specifically, the UKL water surface elevation is currently below 4,142.0 feet¹ (ft) and projections indicate that it is: 1) unlikely to reach 4,142.0 ft in April or May; 2) likely to fall below those observed in 2010 for portions of April and/or May 2021; and 3) likely to be less than 4,140.5 ft by July 15.

Reclamation currently projects that the lake’s water surface elevation will not exceed 4,140.5 ft on July 15, even without Project deliveries or a Surface Flushing Flow (SFF)² in the Klamath River. Simply expending the Environmental Water Account (EWA)³ to meet target flows in the Klamath River at Iron Gate Dam, coupled with evaporation and other consumptive losses from the lake, will likely preclude the water surface elevation from exceeding 4,140.5 ft on July 15.

For the Klamath River, Reclamation has determined that the EWA distribution may fall outside the thresholds identified in T&C 1A of the 2019 NMFS BiOp between March 1 and September 30, 2021, based on observed and projected river releases from UKL (for meeting Iron Gate Dam target flows).

Reclamation is not anticipating or proposing deviations to the minimum Klamath River target flows at Iron Gate Dam, analyzed in the 2019 NMFS BiOp, which consist of flows of 1,325 cubic feet per second (cfs) during the month of April; 1,175 cfs in May; 1,025 cfs in June; 900 cfs in July and August; and 1,000 cfs in September.

Reclamation is, however, extending the time period and triggering conditions for a SFF in the Klamath River in 2021, compared to those anticipated in the 2019 NMFS BiOp. A SFF may occur this year between April 15 and June 1, subject to the conditions for UKL water surface elevations described below:

UKL water surface elevation less than 4,141.6 ft – A SFF may occur based on real-time monitoring of salmon disease levels in the Klamath River and sucker spawning in UKL. Reclamation will coordinate with the Services and make decisions in response to evolving environmental conditions and projected risks to listed species. Key considerations include but are not limited to: *C. shasta* concentrations and infection rates, water temperatures in the Klamath River, spawning and refugial

¹ All elevations referenced in this document are per Reclamation’s established datum.

² A SFF is generally defined as an average flow in the Klamath River at Iron Gate Dam equal to or in excess of 6,030 cfs for 72 consecutive hours. The purpose of SFF is to mitigate the effects of *Ceratanova shasta* (*C. shasta*) infection rates in coho salmon and Chinook salmon below Iron Gate Dam.

³ EWA is the amount of water released or bypassed from UKL to meet Iron Gate Dam target flows during the spring/summer operational period between March 1 and September 30, inclusive of the volume used to produce a SFF.

habitat for suckers in UKL, hydrologic conditions throughout the basin, and Project irrigation deliveries.

To the extent a SFF is implemented, to the maximum extent feasible, it will be scheduled to avoid a decline in UKL water surface elevations of equal to or greater than 0.2 ft. Reclamation will attempt to avoid this condition by coinciding a SFF with a hydrologic event, borrowing water from PacifiCorp's hydroelectric reservoirs, reducing the magnitude and/or duration of a SFF, and accelerated ramp down rates at Iron Gate Dam following implementation of a SFF. The magnitude and duration of a SFF (see footnote 2) will vary as conditions allow.

UKL water surface elevation equal to or above 4,141.6 ft and below 4,141.8 ft – A SFF may occur subject to the real-time management considerations described above (e.g., *C. shasta* concentrations and infection rates, Klamath River water temperatures, UKL sucker spawning and refugial habitat, etc.). Again, Reclamation will coordinate with the Services and make any decision regarding a SFF in response to evolving environmental conditions and projected risks to listed species.

If implemented, to the maximum extent feasible, a SFF will be scheduled to avoid a decline in UKL water surface elevations of equal to or greater than 0.2 ft. Reclamation will utilize the strategies described above (e.g., PacifiCorp borrowing) to attempt to ensure this condition does not occur.

The peak SFF discharge will correspond with the maximum release capacity of Link River Dam and PacifiCorp's hydroelectric reservoirs for no less than 24 hours, unless a greater magnitude can be achieved in a shorter duration. Continued implementation of the SFF peak flow beyond 24 hours may occur as conditions allow.

UKL water surface elevation equal to or above 4,141.8 ft – A SFF may occur subject to the real-time management considerations previously described above (e.g., *C. shasta* concentrations and infection rates, sucker spawning and refugial habitat, etc.). Reclamation will coordinate with the Services and make any decision regarding a SFF in response to evolving environmental conditions and projected risks to listed species.

If implemented, to the maximum extent feasible, a SFF will be scheduled to avoid a decline in UKL water surface elevations of equal to or greater than 0.4 ft. Reclamation will utilize the strategies described above (e.g., PacifiCorp borrowing) to attempt to ensure this condition does not occur.

The peak SFF discharge will correspond with the maximum release capacity of Link River Dam and PacifiCorp's hydroelectric reservoirs for no less than 24 hours, unless a greater magnitude can be achieved in a shorter duration. Continued implementation of the SFF peak flow beyond 24 hours may occur as conditions allow.

Project Supply – Water for irrigation or charging canals will not be available prior to May 15, unless Reclamation determines and indicates in writing otherwise. By May 15, if a SFF has not been implemented, limited quantities of water will become available for charging canals and providing limited deliveries if Reclamation determines that such deliveries will not interfere with the potential implementation of a SFF prior to June 1.

Following June 1, Project deliveries for irrigation and related purposes may occur, consistent with the conditions described above. Rather than identifying a specific volume of water available through the remainder of the time period covered by this Plan, Reclamation intends to manage Project

diversions from UKL and the Klamath River to achieve a minimum annual water surface elevation in UKL greater than or equal to 4,138.3 ft. The total volume of water that this approach will amount to is presently uncertain, and will be influenced by, among other conditions, inflows to Upper Klamath Lake and EWA expenditures. At this time Reclamation anticipates the minimum Project supply to be available from UKL and the Klamath River to be 33,000 acre-feet (AF) of water. Reclamation further anticipates that Project diversions from UKL and the Klamath River will cease on or before September 30, 2021.

Reclamation will continue to coordinate with the Services and Project water users on Project diversions to address unforeseen circumstances that may arise this year. The estimated available water supply is tracked daily, with updates to Project water users occurring approximately every week during the irrigation season or as needed.

Clear Lake Reservoir

The estimated water supply available from Clear Lake Reservoir is based on several factors, including current hydrologic conditions and projected inflows for April through September, the end of September minimum elevation analyzed in the 2020 USFWS BiOp, as well as the rate and volume of irrigation releases and non-beneficial losses (e.g., evaporation and seepage). The estimated available water supply is tracked daily, with updates to Project water users occurring approximately every two weeks during the irrigation season or as needed.

As of April 1, 2021, the water surface elevation in Clear Lake Reservoir was 4525.54 ft, representing a total volume of 117,000 AF of stored water. The end of September minimum elevation in Clear Lake Reservoir analyzed under the 2020 USFWS BiOp is 4,520.60 ft. With the anticipated inflows and estimated evaporation and seepage rates, Reclamation estimates there to be 20,000 to 23,000 AF of Project water available from Clear Lake Reservoir during the 2021 spring-summer irrigation season. The average historic Project demand from Clear Lake Reservoir is approximately 35,000 AF, with a range of up to approximately 40,000 AF. Reclamation will coordinate with districts within the Project if and when water is available and needed from Clear Lake Reservoir to supplement the supply available from UKL and the Klamath River, consistent with Reclamation's existing contracts with water users.

Gerber Reservoir

Similar to Clear Lake Reservoir, the estimated Project water supply available from Gerber Reservoir is based on several factors, including current hydrologic conditions, projected inflows for April through September, the end of September minimum elevation analyzed under the FWS 2020 BiOp, as well as the rate and volume of irrigation releases and non-beneficial losses (e.g., evaporation and seepage). The estimated available water supply is tracked daily, with updates to Project water users occurring approximately every two weeks during the irrigation season or as needed.

The water surface elevation of Gerber Reservoir, as of April 1, 2021, was 4,815.15 ft, representing a total volume of 29,000 AF of stored water. The end of September minimum elevation in Gerber Reservoir analyzed in the 2020 USFWS BiOp is 4,798.10 ft. With the anticipated rates of evaporation and seepage, Reclamation estimates there will be 20,000 to 23,000 AF of Project water

available from Gerber Reservoir during the 2021 spring-summer irrigation season. The average historical Project demand from Gerber Reservoir is 35,000 AF, with a range of up to 40,000 AF. Reclamation will coordinate with districts within the Project if and when water is available and needed from Gerber Reservoir to supplement the supply available from UKL and the Klamath River, consistent with Reclamation's existing contracts with water users.

Lost River

Natural runoff and return flows in the Lost River may also be available at certain times for irrigation use within the Project. Diversions from the Lost River during the spring-summer irrigation season are not included in the calculation of the Project Supply available from UKL and the Klamath River. As such, the Project water supply from the Lost River is primarily constrained by the physical availability of water, primarily from return flows. Reclamation does not estimate the available supply from the Lost River during the spring-summer irrigation season, but rather allows Project water users to divert the supply as it becomes available, consistent with the terms of their respective contracts.

Other Operational Considerations

Lower Klamath National Wildlife Refuge Deliveries

In accordance with this Plan, water from Project Supply (as described above) is only available for delivery to Lower Klamath National Wildlife Refuge (LKNWR) when consistent with Reclamation's contractual and other legal obligations. Voluntary transfers, exchanges, or other arrangements can also make water available to LKNWR. Subject to these conditions, LKNWR, including Area K, can use any portion of Project Supply, when available to the rest of the Project, through November 30.

Any water rights transferred to LKNWR pursuant to Oregon or California law, such as those water rights originally appurtenant to the Agency Lake and Barnes Ranch properties upstream UKL, are separate from the water available to LKNWR from UKL under the Project Supply. USFWS has administrative discretion over the exercise of these non-Project water rights.

Voluntary Water Conservation

There are a number of active conservation efforts that Project water users can employ to conserve water and to extend available Project water supplies. Such strategies range from Project-wide actions, to district initiatives, to individual efforts at the farm or field level.

Reclamation works with districts and individuals to encourage independent initiatives aimed at conserving Project water supplies. District-level conservation initiatives may include rotating water use among irrigators that receive water from a particular canal or lateral, de-watering certain irrigation laterals when not in use, and limiting tailwater flows at the ends of canals and laterals.

Individual, on-field, efforts may include planting less water intensive crops, using high-efficiency irrigation systems such as sprinklers or gated pipes, and employing “deficit” irrigation techniques, where water is applied at less than the full consumptive use demand of a particular crop type. Reclamation encourages Project water users to employ all available tools to conserve water and keep demands at a minimum, especially when water shortages exist.

To assist in on-field conservation efforts, Reclamation operates AgriMet stations in the Klamath Basin, which use site-specific weather data to estimate evapotranspiration (i.e., crop water use) for various crop types typically grown within the Project. This information can be used to identify the required amount of water to apply to a crop based on current weather conditions and growth stage. AgriMet crop water use charts for the Klamath Basin are updated each morning, and can be found online at:

<https://www.usbr.gov/pn/agrimet/agrimetmap/agrimap.html>

For more information, please visit <http://www.usbr.gov/mp/kbao/> and or contact David Felstul, Chief, Division of Water Operations, at 541-880-2550 or dfelstul@usbr.gov.