

RECLAMATION

Managing Water in the West

2019 Annual Operations Plan

Klamath Project, Oregon-California Mid-Pacific Region



Mission Statements

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

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 2019 Operations Plan (Plan) describes Project operations that are anticipated to occur during the 2019 spring-summer irrigation season (March 1 to November 30), based upon current and projected hydrologic conditions. The Plan is consistent with Reclamation’s proposed action analyzed in the biological opinions issued by the National Oceanic and Atmospheric Administration’s National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) on March 29, 2019 (2019 BiOp).

2019 Project Water Supplies

Reclamation uses several water sources to meet irrigation demands within the Project, including: live flow into and stored water from Upper Klamath Lake (UKL), the Klamath River, Clear Lake Reservoir, Gerber Reservoir, and the Lost River. The estimated water supply available from each of these sources during the 2019 spring-summer irrigation season is discussed below.

Upper Klamath Lake

Consistent with the proposed action analyzed in the 2019 BiOp, Reclamation uses observed inflow and storage volumes in UKL coupled with the Natural Resources Conservation Service’s (NRCS) monthly inflow forecasts (at the 50 percent exceedance value) as the basis for Project operations for UKL during the spring-summer irrigation season.

For 2019, NRCS inflow forecasts must be adjusted to reflect new bathymetric data for UKL, which was used in the 2019 BiOp. (Beginning in 2020, NRCS will recalibrate its inflow forecast models based on the new bathymetric data.) Based on recommendations from NRCS, the April, May, and June 2019 UKL inflow forecasts issued by NRCS will be adjusted based on the following coefficients:

<u>Inflow Forecast Period</u>	<u>Adjustment Coefficient</u>
April-September	0.970903
May-September	0.948043
June-September	0.911147

The April through September UKL inflow forecast issued by NRCS on April 3, 2019, was 565 thousand acre-feet (TAF). After applying the adjustment coefficient shown above, the adjusted UKL inflow forecast for April through September is 549 TAF (rounded to the nearest TAF).

Actual observed inflows to UKL during the month of March were 128 TAF. Adding this value to the adjusted April through September inflow forecast value results in a total actual and projected inflow from March through September of 677 TAF. This volume (called the “Mar50vol” as used in the model) is used to determine the end of September storage target for UKL. Based on the calculated Mar50vol volume, the end of September storage target is 207 TAF.

Note that the end of September storage target is not a management target for UKL, but rather a volume used in calculating the amount of water scheduled for release from Link River Dam for meeting required flows in the Klamath River (called the Environmental Water Account or EWA) and the calculated amount of water available from UKL for diversion to the Project for irrigation purposes (called the Project Supply).

Another special condition applicable to 2019 that is associated with transitioning from the 2013 BiOp operations to the 2019 BiOp operations is the need to adjust the end of February storage volume in UKL to reflect the volume that would have been observed had Reclamation been operating to the 2019 BiOp prior to the current spring-summer period. This adjustment is necessary for actual hydrologic conditions to be consistent with those analyzed in the 2019 BiOp. With this adjustment, the end of February storage volume in UKL for purposes of calculating Project Supply and EWA is 438 TAF (compared to the observed volume of 412 TAF).

The Mar50vol (677 TAF) plus the end of February storage volume (438 TAF) minus the end of September storage target (207 AF) equals a figure called “UKL Supply”, which is used to determine EWA. Based on the reported values for the three variables, UKL Supply is currently calculated as 907 TAF, resulting in an initial EWA of 578 TAF.

The above calculated UKL Supply and EWA results in a Project Supply of 329 TAF (i.e., $907 - 578 = 329$).

One further adjustment is necessary to determine the volume of Project Supply available for diversion from UKL through the Project’s five main points of diversion (i.e., A Canal, Station 48, Miller Hill Pumping Plant, Ady Canal, and North Canal). Specifically, 7,436 AF is initially subtracted from Project Supply, to account for Project diversions from the Lost River Diversion Channel and Klamath River other than at Station 48, Miller Hill Pumping Plant, North Canal, and Ady Canal. To the extent that Reclamation determines and verifies that diversions of Project Supply at these other points of diversion are less than 7,436 AF, the difference will be added to the Project Supply available at the five main points of diversion identified above.

Accounting for these two further adjustments, the Project Supply at this time is 322 TAF. Under the 2019 BiOp, this April 1 Project Supply is “locked in” and cannot be reduced to the extent that Project operations are consistent with the 2019 BiOp.

UKL Supply, EWA, and Project Supply will be recalculated, consistent with the above methodology, based on the May and June inflow forecasts issued by NRCS, although Project Supply will not be reduced below 322 AF based on the subsequent calculations, but it may increase with these subsequent forecasts.

Project Supply is available for use within the Project from March 1 through November 30, except for lands within Klamath Drainage District (including Area K), where it is available from March 1 through October 31. Under the 2019 BiOp, there are no limitations on the rate at which Project Supply may be used, though such use may be constrained by applicable water right limitations under state law.

In addition to Project Supply, under the 2019 BiOp, any water released from the Lost River Diversion Channel and Klamath Straits Drain into the Klamath River between March 1 and September 30 is available for diversion to the Project without counting against Project Supply. Reclamation will coordinate with districts within the Project regarding the use of and accounting for such releases and associated diversions.

Finally, the 2019 BiOp allows for surface flushing flows, but the volume necessary for these flows is included in EWA and is not counted against Project Supply.

Clear Lake Reservoir

The estimated Project water supply available from Clear Lake Reservoir is based on several factors, including current hydrologic conditions and projected inflows over the end of September minimum elevation analyzed in the 2019 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, 2019, the water surface elevation in Clear Lake Reservoir was 4,531.32 feet above sea level (USBR datum), representing a total volume of 235 TAF of stored water. The end of September minimum elevation in Clear Lake Reservoir analyzed under the 2019 BiOp is 4,520.60 feet above sea level (USBR datum). With the anticipated inflows and estimated evaporation and seepage rates, Reclamation estimates there to be a full supply of Project water available from Clear Lake Reservoir during the 2019 spring-summer irrigation season. The

average historic Project demand from Clear Lake Reservoir is approximately 35 TAF.

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 2019 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, 2019, was 4,832.92 feet above sea level (USBR datum), representing a total volume of 85 TAF of stored water. The end of September minimum elevation in Gerber Reservoir analyzed in the 2019 BiOp is 4,798.10 feet above sea level (USBR datum). With the anticipated rates of evaporation and seepage, Reclamation estimates there will be a full supply of Project water available from Gerber Reservoir during the 2018 spring-summer irrigation season. The average historical Project demand from Gerber Reservoir is 35 TAF.

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 analyzed under the 2019 BiOp during the corresponding period. As such, the Project water supply from the Lost River is primarily constrained by the physical availability of water, primarily from return flows, as opposed to operational constraints within the analysis in the 2019 BiOp. 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.

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:

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

Other Operational Considerations

There are a number of other operational considerations that Reclamation and Project water users should take into account when operating the Project including voluntary water transfers within Project lands and refuge water deliveries.

Voluntary Project Water Transfers

Reclamation supports voluntary transfers of Project water as a means of promoting flexibility in managing water supplies and maximizing Project benefits. Accordingly, subject to its approval as described below, Reclamation will allow transfers of Project water, within the limits of applicable federal and state law.

Reclamation’s prior written approval is required to transfer Project water among Project lands, in accordance with existing contracts. Local irrigation, drainage,

and similar districts also have the discretion to approve transfer of Project water from within their designated service area, independent of Reclamation's approval process. Individual landowners who are interested in transferring Project water are advised to work with their respective districts, to obtain Reclamation's approval of Project water transfers. Transfers of Project water to LKNWR or TLNWR will also require the approval of USFWS. Compliance with other applicable federal laws may also be necessary.

Water transfers within the Project will also be contingent, in part, upon the ability to accurately measure corresponding water use, on both the transferring and receiving lands, in order to ensure that the amount of water used does not exceed the associated total available duty.

Finally, Reclamation may require that parties to a proposed transfer first demonstrate compliance with applicable state law. Reclamation will coordinate with Oregon Water Resources Department (OWRD) to facilitate any transfers approved by OWRD.

Lower Klamath National Wildlife Refuge Deliveries

Based on current hydrologic conditions, for the 2019 spring-summer irrigation season, water is only available from UKL to Lower Klamath National Wildlife Refuge (LKNWR) under the 2019 BiOp from Project Supply (as described above) when consistent with Reclamation's contractual and other legal obligations through November 30.

To determine if Project Supply is available for LKNWR, beginning in July, Reclamation will coordinate with USFWS and other Project water users to evaluate anticipated remaining irrigation demands outside of LKNWR through the remainder of the spring-summer irrigation season. Any volume of Project Supply over the anticipated remaining irrigation demands will be identified at that time as available for diversion by USFWS to LKNWR. Reclamation will continue to monitor irrigation demands and hydrologic conditions and may notify USFWS to cease diversions to LKNWR if necessary to meet Reclamation's contractual and other legal obligations. This process will be repeated in August, September, October, and November. Diversions to LKNWR will remain at the discretion of USFWS.

Any water rights transferred to LKNWR pursuant to state law, such as those water rights originally appurtenant to the Agency Lake and Barnes Ranch properties, are separate from the water available to LKNWR from UKL under the 2019 BiOp.

For more information, please visit <http://www.usbr.gov/mp/kbao/> and or contact Laura Williams at 541-883-6935 or ljwilliams@usbr.gov.