

Klamath Irrigation District Request

2023 Reconsultation – Klamath Basin Planning Model (KBPM) Scenario Questionnaire

*** Please answer all questions as completely as possible. It is unnecessary that all questions be answered or that each question be answered in its entirety for the scenario to be modeled. However, the more information the hydro team is given, the better we can model the action requested as intended by the requesting party.***

- 1) What management action would you like to see modeled? Please be specific.

Title: PA - KID FLOW THROUGH w/ % of NET INFLOW as described below.

Purpose: Attempt to replicate natural cycles of water flow with the Klamath Basin through the Klamath Reclamation Project infrastructure to restore and protect endangered C'waam and Kaptu critical habitat, ensure flows in the Klamath River for threatened coho migration, maintain a healthy ecosystem between the Keno Reef and the Wood River, while maintaining the economic, agricultural engine of the Klamath Basin to ensure food security in times of uncertainty.

Vision: A system where water "flows through" the Klamath Reclamation Project infrastructure into the historic lakes and wetlands with a constant flow that improves the quality of water entering the Klamath River at Keno, mitigates the adverse health effects of stagnant water, allows for groundwater recharge, promotes healthy walking wetland habitats, and facilitates investments in irrigation modernization.

Foundation: Each Water Year begins on 1 October; however, some practices described in this proposed action must be exercised in September to set conditions for the next water year.

The period when threatened and endangered fish are observed beginning their spawning activities through fry emergence is more critical than arbitrary dates on a calendar. The changes in climate and weather patterns appear to affect the timing of fish spawning activity significantly. While the dates below are mentioned for modeling purposes, the dates should be refined to match the cycles of observed fish spawning activities each year.

General Model Rules

- 1) Assume Keno Dam gates are set static at 4,083.4 USBR datum (near the original Keno Reef elevation) unless needed to be opened for flood control purposes.
- 2) Klamath Irrigation District operation of the A Canal Headworks, exercising water right certificate 94798 and water right claim KA1000, KA1002, and KA1004, **will not cause the minimum level of Upper Klamath Lake to go below 4,137.8 feet above mean sea level utilizing Reclamation datum.**
 - a. 4,137.8 is the historical level of the natural reef controlling the storage of water in

- Upper Klamath Lake;
 - b. this elevation is 1.8 feet above the water right of the Klamath Reclamation Project water users' KA1000 water rights claim;
 - c. this elevation acknowledges the US Fish and Wildlife Service's opine that at 4,137.7, the elevation of water above the Pelican Bay reef allows the endangered C'waam and Koptu (aka sucker fish or mullet) (which typically move across this reef in periods of darkness when pelicans are nesting) to traverse the reef without Pelican predation which naturally occurs during daylight hours when the C'waam and Koptu are feeding at other places (not at the entrance to Pelican Bay) at the bottom of the lake.
- 3) Assume the Normalized Wetness Index developed by Dunsmor and Easton is viable. **If not, then**
- a. Establish the "average year" as an average +/- 30% of cumulative UKL Net Inflow
 - b. Establish an "above average year" at 31% above average
 - c. Establish a "below average year" at 31% below average
 - d. Establish a "drought year" criteria at the bottom 7 years in the period of record 1992, 2021, 1994, 2022, 1991, 2020, 2014
- 4) **Assume 80% of historical daily average rates of consumptive use** for North, Ady, St. 48, Miller Hill, and A Canal as per historic water year type and usage between 1981 and 2000. (This data should show higher rates of consumptive use in dry years and less in wet years.)
- 5) Storage in the UKL will not exceed the ACFFOD annual storage limit for Reclamation in the UKL utilizing the net inflow model.
- 6) Project Irrigators will not divert water for irrigation or the refuges exceeding ACFFOD water right volumes or flow rates.
- 7) Assume the Agency Barnes dyke breach occurs.

Specific Model Rules based upon Event / Time

- 8) **Water Year Begins 1 October: Situation**
- a. **Chinook Salmon** are likely to begin spawning activities up the Klamath River.
 - b. **Threatened SONCC Coho salmon** are not yet ready to begin traveling to the tributaries of the Klamath River
 - c. **Endangered Juvenile C'waam and Koptu** in Upper Klamath Lake have "disappeared." Juveniles are found finding refuge in the A Canal forebay.
 - d. **Lower Refuges** need to be in a condition to receive migratory birds (some water needs to be in these areas by mid-September)
 - e. **A period of 2 consecutive drought years (s)** may require an agricultural land idling program in the lease lands in year 3 for ecological sustainment.
- 9) **1 October – 30 November Operations Focus: Chinook and Refuge habitat needs:**

- a. **Between 1 October and 30 November, Reclamation will store 25% of the daily net inflow in Upper Klamath Lake as part of water right claim 294.**
- b. **The minimum release from Link River Dam is 350cfs** (to be temporarily borrowed from storage if net inflow does not meet this number)
- c. **Additional flow through no less than 200cfs of stored water** is diverted through the A Canal under Water Right Certificate 94798 (which allows up to 700cfs) and KA1000. This water will be returned to the Klamath River after flow through the Tule Lake Refuge System, through the D Plant pumping station, through the Lower Klamath Lake Refuge into the Straights Drain, and pumped into the Klamath River at the E/EE or F/FF pumping station, or upon request returned directly into the LRDC **(for modeling purposes estimate 25% (50cfs minimum) loss to groundwater recharge and evaporation)**
- d. **For model purposes, assume historical irrigation average diversion rates for North, Ady, St. 48, Miller Hill, and A Canal per historic water year type and usage between 1991 and 1999 (at 80%)**
- e. ALL water in the Lost River system will remain in the natural Lost River system unless TID requests to be turned into the LRDC for flood control or an emergency. **(for model purposes, assume 0 to the LRDC)**
- f. Any water from the Lost River added to the LRDC (not diverted by the Klamath Reclamation Project irrigators) is first available to the Lower Klamath National Wildlife Refuge at USFWS request. **(for model purposes, assume 0 to the LRDC)**
- g. If any water from the Lost River from the LRDC is not diverted to the refuges and flows over the Keno reef, 50% of that amount of water is stored in UKL (increasing storage to 25%+) **(for model purposes, assume 0 following all below average years)**
- h. All water from the E/EE or F/FF pumps added to the Klamath River is stored in the UKL, increasing storage to 25%+) **(for model purposes, assume 0 following all below-average years)**
- i. Project irrigators have access to stored water in the UKL above 4,137.8, which can be requested for release over the Link River Dam through Reclamation.
- j. Any USFWS request for UKL elevations above 4,137.8 requires a negotiation with the Klamath Project irrigators for USFWS to purchase water from water rights holders.
- k. A Klamath Tribes winter water call increases storage in the UKL to 60% of net inflow until an elevation of 4,140' (Reclamation datum) is reached. **(for model purposes, assume this following all below average water years)**. A Klamath Tribes winter water call negates any water purchase for the refuges by USFWS.
- l. Between 1 September and 31 October, if there is no winter water called by the Klamath Tribes, and UKL levels are above 4,138', available stored water may be released over Link River Dam as requested by USFWS to support refuge needs not being met with the flow-through.
- m. Between 1 September and 31 October, Refuge managers may order water for delivery from the Klamath Project Districts.

10) **Coho Spawning Period Operations Focus: Situation through 31 January:** Coho typically travels up the Klamath River to the tributaries between November and early January. Reclamation will limit storage in Upper Klamath Lake to 30% of the daily net inflow to Upper Klamath Lake as part of water rights claim 294.

- a. The minimum release from Link River is 450cfs (to be temporarily borrowed from storage if net inflow does not meet this number)
- b. **Additional flow through No less than 200 cfs of stored water** is diverted through the A Canal under Water Right Certificate 94798 (which allows up to 700 cfs) and KA1000. This water will be returned to the Klamath River after flow through the Tule Lake Refuge System, through the D Plant pumping station, through the Lower Klamath Lake Refuge into the Straights Drain and pumped into the Klamath River at the E/EE pumping station, or upon request returned directly into the LRDC **(for modeling purposes estimate 25% (50cfs minimum) loss to groundwater recharge and evaporation)**
- c. Flood control releases from the UKL are authorized in the following priority: Lower Klamath Wildlife Refuge as requested by USFWS, Tule Lake Refuge as requested by USFWS, and then over Keno Reef.
- d. ALL water from the Lost River and F/FF pumps added to the Klamath River is stored in the UKL (increasing storage to 30%+)
- e. Project irrigators have access to live flow over Link River Dam as per ACFFOD, OWRD certificate, or permit.
- f. Klamath Tribes winter water call increases storage to 50% of net inflow stored in UKL until 4,141.3 is reached.
- g. For model purposes, assume historical average diversion rates for North, Ady, St. 48, Miller Hill, and A Canal per historic water year type and usage between 1991 and 1999.

11) **Sustain Over Winter Habitat / Prepare for C'waam Spawning / Set conditions for salmon outmigration to the Ocean:** Between 1 February and 15 April, Reclamation will increase storage in Upper Klamath Lake to 45% of the daily net inflow within Reclamation's updated flood control curves. Reclamation will release additional water if the elevation of Upper Klamath Lake is at or above the flood control curve.

- a. The minimum release from Link River is 450cfs (to be temporarily borrowed from storage if net inflow does not meet this number)
- b. **Additional flow through No less than 200 cfs of stored water** is diverted through the A Canal under Water Right Certificate 94798 (which allows up to 700 cfs) and KA1000. This water will be returned to the Klamath River after flow through the Tule Lake Refuge System, through the D Plant pumping station, through the Lower Klamath Lake Refuge into the Straights Drain and pumped into the Klamath River at the E/EE pumping station, or upon request returned directly into the LRDC **(for modeling purposes estimate 25% (50cfs minimum) loss to groundwater recharge and evaporation)**
- c. Flood control releases from the UKL are authorized in the following priority: Lower Klamath Wildlife Refuge, Tule Lake Refuge, and then over Keno Reef.
- d. ALL water from the Lost River and F/FF pumps added to the Klamath River is stored in the UKL (increasing storage to 30%+)
- e. Project irrigators have access to live flow over Link River Dam as per ACFFOD, OWRD certificate, or permit.
- f. Project irrigators have access to stored water through the A Canal
- g. Klamath Tribes winter water call increases storage to 50% of net inflow stored in UKL until 4,143 is reached.
- h. A minimum of 1 in 5 years should see a natural flushing event below Keno large enough to disrupt disease conditions with sediment movement.
- i. Suppose US Fish and Wildlife Service scientific evidence suggests that additional flows above a natural condition in the Klamath River below Keno are needed to

mitigate disease in out-migrating juvenile coho. In that case, US Fish and Wildlife Service may request from Klamath Irrigation District to have access to no more than 10,000 acre-feet of stored water for in-stream needs between 1 April and 30 May, Reclamation or USFWS may file for a limited license with the Oregon Water Resources Department to release up to 10,000 acre-feet of stored water, or USFWS may offer to purchase stored water from Klamath Reclamation Project irrigators through the Klamath Project Drought Response Agency.

- j. For model purposes, assume historical average diversion rates for North, Ady, St. 48, Miller Hill, and A Canal per historic water year type and usage between 1991 and 1999.

12) C'waam Spawning period in UKL / Salmon outmigration / early crop irrigation:

Between 16 April and 30 May, Reclamation may reduce storage to 40% of the daily net inflow if USFWS expresses the need for coho outmigration; otherwise, the storage will remain at 45%

- a. Flood control releases from the UKL are authorized in the following priority: A Canal, Lower Klamath Wildlife Refuge, Tule Lake Refuge, and Keno Reef.
- b. Project irrigators have access to live flow over the Link River Dam
- c. Project irrigators have access to stored water through the A Canal
- d. Project irrigators may request additional stored water to be released over Link River Dam if UKL elevations are adequate for sucker spawning
- e. Refuge managers may order water for delivery from the Klamath Project Districts
- f. Reclamation may request flushing of stored water over the Keno Dam to Project Irrigators, USFWS, and with approval from Project Irrigators and USFWS to OWRD. Purchase of stored water from irrigators is authorized. Reclamation will request a limited license to release stored water utilizing the procedures outlined by OWRD requiring public comment.
- g. The minimum release from Link River is 350cfs (to be temporarily borrowed from storage if net inflow does not meet this number and impact to C'waam spawning is not anticipated). Flows may be reduced further with a Klamath Tribes call for C'waam spawning lake elevations through 30 May.
- h. For model purposes, assume historical average diversion rates for North, Ady, St. 48, Miller Hill, and A Canal per historic water year type and usage between 1991 and 1999.
- i. Klamath Irrigation District operation of the A Canal Headworks will not cause the elevation of Upper Klamath Lake to decline by more than 0.3 feet while the endangered C'waam is spawning on the eastern shore of Upper Klamath Lake and for two weeks after the spawning is determined to have completed by technical monitoring.

13) Irrigation Operations Focus: Between 1 June and 30 September, Reclamation will reduce storage in the UKL to just 10% of the net daily inflow stored in Upper Klamath Lake.

- a. The minimum release from Link River is 300cfs (to be temporarily borrowed from storage if net inflow does not meet this number)
- b. Project irrigators have access to live flow over the Link River Dam
- c. Project irrigators have access to stored water through the A Canal
- d. Project irrigators may request additional stored water to be released over Link River Dam if UKL elevations are above 4,138 (USBR Datum)

- e. Refuge managers may order water for delivery from the Klamath Project Districts
- f. Flushing flow of stored water may be requested to Project Irrigators and OWRD by Reclamation. Purchase of stored water from irrigators is authorized. A license to release stored water may be obtained.
- g. USFWS may purchase stored water deemed necessary for irrigation demand through negotiation when low supply is anticipated during the fall periods.
- h. For model purposes, assume historical average diversion rates for North, Ady, St. 48, Miller Hill, and A Canal per historic water year type and usage between 1991 and 1999.
- i. Assume A Canal will return diverted water to the LRDC if elevation of UKL reaches 4,137.9 (near zero consumptive use)

2) What is the purpose of this action?

To evaluate KID's ALT KID FLOW THROUGH MODEL % of NET INFLOW proposed action provided to this group and Reclamation earlier this year to fulfill non-discretionary obligations, Oregon water law and comply not to create jeopardy for the endangered C'waam, Koptu, or threatened coho while they traverse the Klamath River.

3) Please identify the proposed means of conveyance for the requested amount of water (e.g., A Canal, Iron Gate Dam, etc.) and any potential obstacles to delivering the requested amount of water via this conveyance.

See #1 above.

4) During what time frame and on what dates would this action be implemented?

a. September 2024

5) What is the anticipated total volume of water needed and the distribution pattern of this action? Is there any possible flexibility in this amount? If so, please elaborate.

Not to exceed ACFFOD annual storage limit for Reclamation in UKL.

Not to exceed ACFFOD water rights for Project Irrigators.

6) What is this action's anticipated duration (i.e., how many days, weeks, months)? Is there any possible flexibility in this duration? If so, please elaborate.

The requested duration is as stated above, though there is flexibility to shorten or prolong this period as water availability dictates.

7) What is this action's anticipated frequency (e.g. annual, biannual, monthly, etc.)? Is there any possible flexibility in this frequency? If so, please elaborate.

This will be an annual action, and we expect some water to be available according to our stated needs yearly.

8) The Klamath Basin Planning Model is based upon a water mass balance in which all water is accounted for as accurately as possible. Tell us where you envision this amount of water coming from (e.g., the Project, Upper Klamath Lake, the Klamath River, Lower Klamath National Wildlife Refuge, redistribution of previously allocated water, etc.). If there are multiple sources, please state all of them and their relative proportions.

Water is calculated through the daily NET INFLOW to UKL.

- 9) What condition(s) would indicate the necessity for this action's implementation (e.g., flows above/below a certain threshold) if applicable? If multiple indicators must be evident, please state all of them and their relationship, if any, to one another.
- a. NA.
- 10) If applicable, what condition(s) would trigger cessation of this action before the specified duration's completion?
- Positive confirmation of a "fish kill" due to the stranding of threatened fish in the Klamath River based upon erratic releases over the Keno Dam.***
- 11) Is there further information regarding this management action, specifically of which the Tri-agency Hydro Team should be aware? Please feel free to provide here or direct us to any resources that might be pertinent.

DISCLAIMER: While the Tri-agency team appreciates this scenario and will try our best to integrate it into the model, the receipt of this request does not ensure that this action will be incorporated into future iterations of the KBPM. Please appreciate that each action modeled will have consequences on all other actions modeled. Furthermore, it is our job to model scenarios, not to make decisions on the scope or finality of scenario incorporation. Thank you again for your time and patience in helping us do our best work for all parties involved in this reconsultation.