

SYSTEM OPERATIONAL REQUEST: #2021-5

Walla Walla District

The following State, Federal, and Tribal Salmon Managers have participated in the preparation and support this SOR: Idaho Department of Fish and Game, Nez Perce Tribe, Washington Department of Fish and Wildlife, Columbia River Inter-Tribal Fish Commission/Confederated Tribes of the Umatilla Indian Reservation, National Oceanographic and Atmospheric Administration, Warm Springs Tribe.

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FROM: Jonathan Ebel, Idaho Department of Fish and Game

DATE: July 13, 2021

SUBJECT: Requested temporary change to water temperature criteria to conserve water in Dworshak Reservoir

SPECIFICATIONS: We request that the following action be implemented to conserve water in Dworshak Reservoir in order to extend temperature mitigation later into August:

- (1) increase water temperature criterion for the Lower Granite Tailrace from 68°F to 69.5°F beginning no earlier than July 23rd and no later than July 29th and ending on August 17th. As conditions warrant, FPAC will determine start and end dates and update TMT.

JUSTIFICATION:

Dworshak reservoir did not fill before drafting for temperature control in 2021. Current projections suggest the summer flow augmentation volume (end of August elevation of 1535') will be finished between August 20 - 24 depending on weather conditions and whether implementation of SOR 2021-3 continues into August (Roberts and Walker 2021) or other actions are taken (e.g. SOR 2021-4).

Such an early completion of the volume threatens steelhead and fall Chinook passage in the Lower Snake River and above Lower Granite Dam, Snake River fall Chinook salmon hatchery broodstock collection, and Nez Perce Tribal Hatchery (NPTH) operations during late August. Fall Chinook salmon broodstock collection typically begins August 17th and requires temperatures at the Lower Granite Dam adult fish trap to be below 70°F and ideally below 68°F. The potential to ramp down to minimum discharge from Dworshak Dam during the second half of August threatens trapping operations at LWG due to fish health related temperature restrictions. More importantly, reduced flow from the North Fork Clearwater River reduces the extent of cold water refuge immediately above Lower Granite Dam. Any additional days gained through Dworshak Reservoir water conservation for release during the end of August will benefit steelhead passage, fall Chinook passage, fall Chinook hatchery broodstock collection efforts, and ensure lower Clearwater River temperatures are at or below 66°F needed for NPTH operations and provide a much needed cold water refuge.

Raising the 2020 Biological Opinion temperature criterion for the Lower Granite Dam tailrace from 68°F to 69.5°F may provide an estimated two additional two days of summer flow augmentation water, from ~August 24 to ~August 26 when compared to current operations (Roberts and Walker 2021). Lower Granite tail water temperatures are predicted to reach 71-74°F if flow augmentation water runs out.

We acknowledge that temporarily increasing the temperature creates a more stressful environment for adult sockeye salmon, adult summer steelhead, and juvenile and adult fall Chinook salmon migrating during the specified period. Yet, the proportion of each species migrating from July 23 - ~August 07 is low (Figure 2) relative to the proportion of runs migrating from August 24 – September 07. In some years, the majority of sockeye passing Lower Granite Dam after July 26 are of Columbia River origin (Figure 3). However, in other years, the majority can be Snake River Origin (Table 1). The impact of elevating the temperature criterion on Snake River sockeye depends on run timing.

References:

Roberts, J. and W. Walker. 2021. Presentation to Technical Management Team July 09, 2021. http://pweb.crohms.org/tmt/agendas/2021/0709_Lower_Granite_Temperature_Alternatives_2021-07-09.pdf

National Oceanographic and Atmospheric Administration (NOAA). 2015. 2015 Adult Sockeye Passage Report. Prepared by NOAA Fisheries in collaboration with the U.S. Army Corps of Engineers and Idaho Department of Fish and Game.



COMPARISON OF FLOW AUGMENTATION END DATES

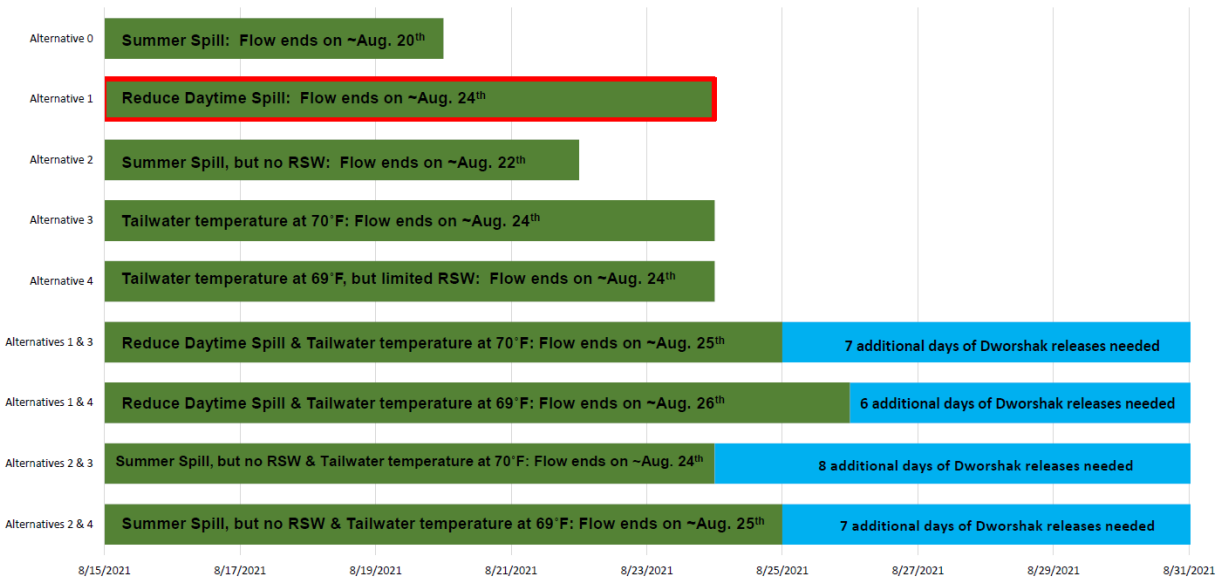


Figure 1. Projected Dworshak volume shortfall presented by Jonathan Roberts and Willow Walker (USACE) to the Technical Management Team on July 09, 2021.

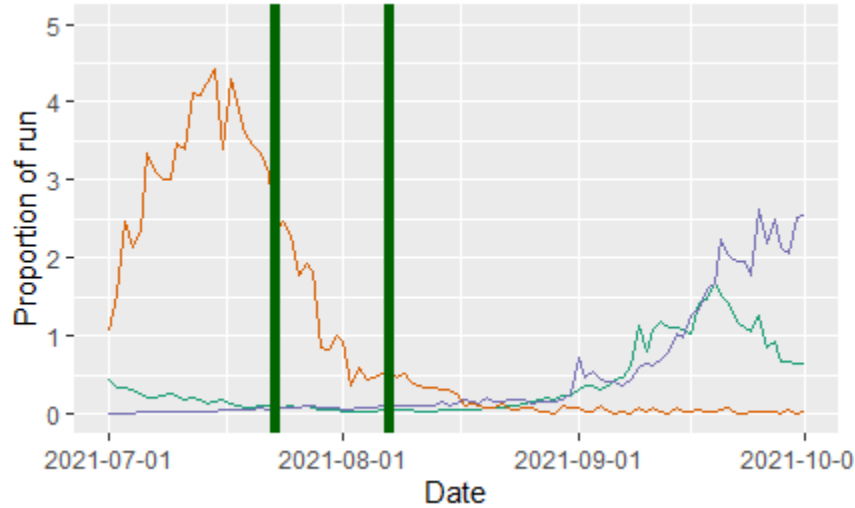


Figure 2. Ten-year average daily proportion of sockeye (orange), chinook (turquoise-ish), and steelhead (purplish) runs counted at the Lower Granite Dam counting station as exported by CBR DART. Elevated temperature criteria would be implemented between the two dark green vertical lines. Chinook daily proportion calculation includes spring/summer Chinook and fall Chinook. Chinook salmon are counted as fall Chinook at Lower Granite Dam after August 15 and therefore, the proportion of window count classified fall Chinook salmon impacted by the operation is zero; however, genetic sampling and visual identification of Snake River fall Chinook demonstrate that fall Chinook do arrive at Lower Granite Dam prior to August 15. Note the daily proportion of the sockeye run is misleading because after the week of July 26th, straying Columbia River sockeye make up a large proportion of daily passage (see Figure 3).

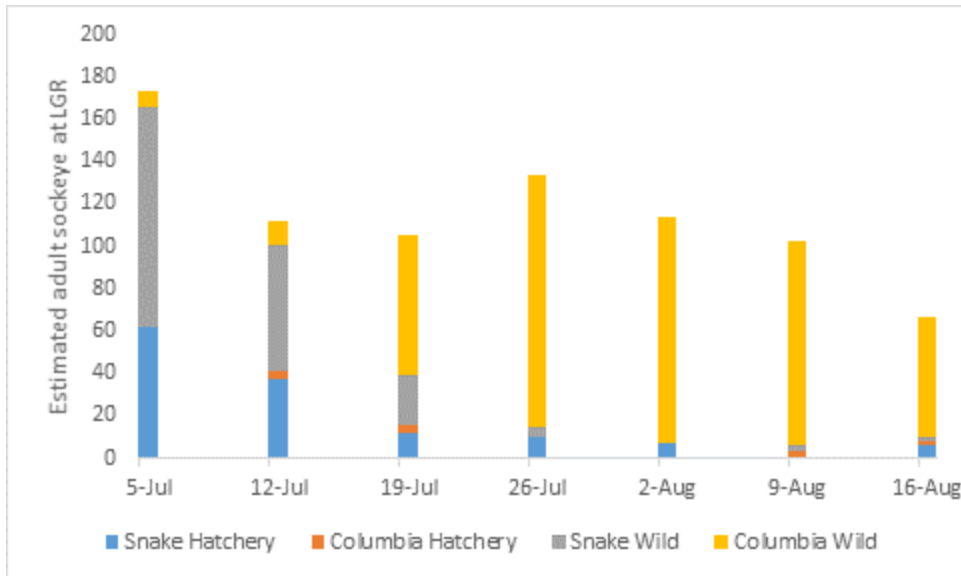


Figure 3. Decomposed window counts (adjusted for nighttime passage and fallback) at Lower Granite in 2020. Each bar, generally, represents a week at Lower Granite. Based on sample sizes three weeks (6/21-7/11) are collapsed into the first strata and 10 weeks (8/16-10/24) are collapsed into the final strata. Figure provided by J. Powell, IDFG, May 27, 2021 and should be considered preliminary data.

Table 1. Date of collection, total number of fish collected (N), number of fish collected on the juvenile bypass separator (NSEP) and in the adult trap (NTRAP) at Lower Granite Dam in 2015, number of fish genetically assigned to the Snake River sockeye broodstock (NSRS), and number of fish assigned to an out-of-basin genetic stock and culled (NCULLED). Adapted from Table 8 of NOAA (2015).

Collection Date	N	N _{SEP}	N _{TRAP}	N _{SRS}	N _{CULLED}
7/13/2015	1	0	1	1	0
7/14/2015	4	0	4	3	1
7/15/2015	4	0	4	3	1
7/16/2015	6	1	5	6	0
7/17/2015	2	1	1	1	1
7/20/2015	3	0	3	1	2
7/21/2015	6	0	6	3	3
7/22/2015	3	1	2	2	1
7/23/2015	3	0	3	2	1
7/24/2015	2	1	1	2	0
7/27/2015	3	0	3	3	0
7/28/2015	3	0	3	3	0
7/29/2015	3	0	3	3	0
7/30/2015	2	1	1	0	2
7/31/2015	2	0	2	0	2
8/10/2015	1	0	1	1	0
8/11/2015	2	0	2	1	1
8/13/2015	1	0	1	0	1
	51	5	46	35	16