OFFICIAL COORDINATION REQUEST FOR
NON-ROUTINE OPERATIONS AND MAINTENANCE

COORDINATION TITLE - JBS Early Shutdown for Maintenance
COORDINATION DATE - May 8, 2020
PROJECT- Ice Harbor Dam
RESPONSE DATE - May 22, 2020

Description of the problem
There are several upgrade/repair projects in the works for machinery and operating systems associated with juvenile bypass system (JBS). The intake gantry crane is a critical piece of equipment used to deploy submersible traveling screens (STSs), handle intake gates and maintenance bulkheads, and clear debris from the penstock intake trash racks. The intake gantry crane was constructed in 1994, and is in need of an upgrade to the operating control system, which is now obsolete. Should the control system fail, replacement parts would be difficult or impossible to obtain. In addition, other major crane components are needing replacement/rehabilitation, including the overhead trolley line conductor system, the tugger system, wire rope, geared couplings, gantry drives, and safety guard rails.

This work is planned for the upcoming 2020-2021 winter maintenance period and estimated to require at least four months. The typical JBS winter maintenance period is approximately three months (mid-December to mid-March) during which weather related delays are likely. An early start of the winter maintenance period by one month is anticipated to provide the contractor the time needed to accomplish the crane maintenance and upgrades. All of the STSs will need to be removed from the water by the crane prior to taking the crane out of service. Ice Harbor Project is proposing to pull STSs beginning November 16, followed by the unwatering of the JBS.

An extended winter maintenance period would also help accommodate project maintenance staff to complete other work in the juvenile fish channel. Four unwatering weirs in the channel are on the verge of failure and would be replaced with newly fabricated weirs, completing the replacement of all ten weirs and operating stem connection brackets. In addition, the air-burst cleaning system that is underneath the downstream end of the unwatering inclined floor screen will be expanded to be able to clean the entire floor screen. An expanded air-burst piping would provide a reliable, effective cleaning system for the floor screen, to complement or replace the aging mechanical screen cleaning system.

Type of outage required

Impact on facility operation (FPP deviations)
The STSs would be removed and the JBS would be unwatered November 16, one month early.

Impact on unit priority
None.
Impact on forebay/tailwater operation
None.
Impact on spill
None.

Dates of impacts/repairs
Begin JBS winter maintenance period on November 16, 2020, instead of December 16, 2020.

Length of time for repairs
November 16, 2020 to mid-March, 2021.

Analysis of potential impacts to fish

1. 10-year average passage by run during the period of impact for adults and juvenile listed species, as appropriate for the proposed action and time of year;

   Juvenile fish passage is not estimated after October 31 at any of the four lower Snake River Dams. Ice Harbor Juvenile Fish Facility conducts very limited sampling in the spring and early summer (4 hours twice per week), with no sampling occurring during other times of the year. Thus juvenile passage at Ice Harbor is typically based on passage at Lower Monumental. Presumably, these passage numbers are representative for Ice Harbor, since there are no tributaries draining into the Snake River between Ice Harbor and Lower Monumental Dams. During the proposed early shut down of the Ice Harbor JBS typically only subyearling Chinook salmon are passing the dam. The 10-year average subyearling Chinook salmon passage at Lower Monumental Dam are presented in Figure 1.

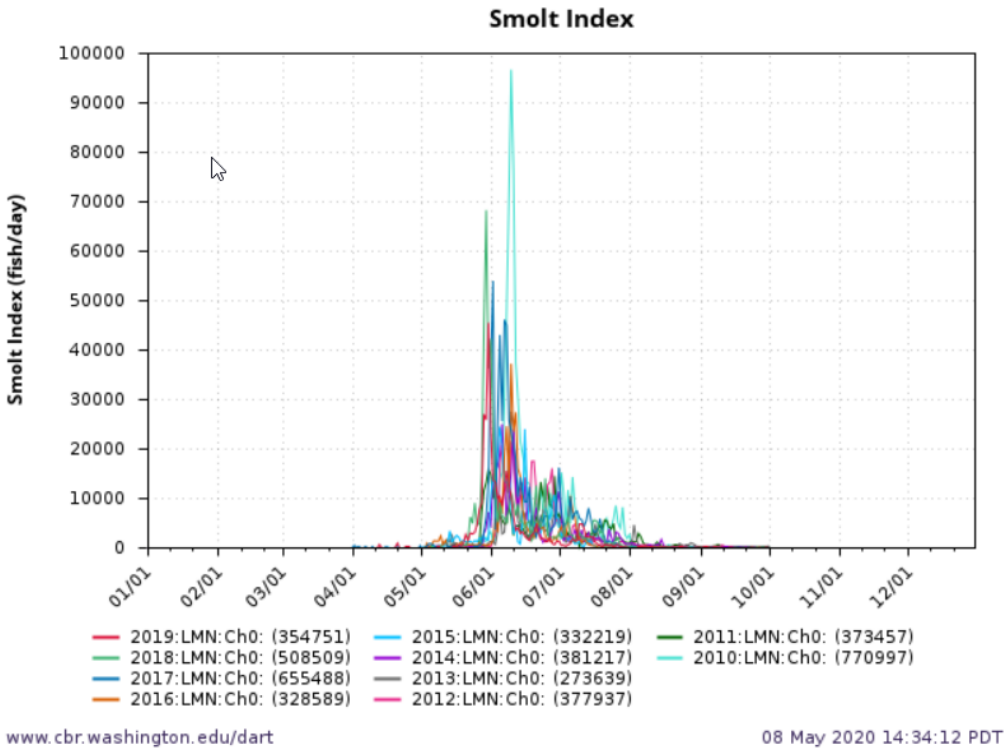

Figure 1. Annual fall Chinook salmon passage at Lower Monumental Dam from 2010-2019.

Adult fallback estimates through the Ice Harbor JBS is very limited because the separator is only operated 2 days per week for up to 4-hours prior to mid-July associated with juvenile fish sampling. Thus adult JBS fallback at Ice Harbor is typically based on fallback estimates at Lower Monumental. Average monthly adult fallbacks through the JBS at Lower Monumental for the last three years are shown in the Table 1.

Table 1. Average Monthly Totals of Adult Salmonids Released from the Juvenile Fish Separator at Lower Monumental Dam, 2017-2019

Month	Chinook	Jack Chinook	Clipped Steelhead	Unclipped Steelhead	Sockeye	Coho	Total
April	0	0	96	117	0	0	213
May	15	1	117	220	0	0	353
June	38	7	21	32	0	0	98
July	14	4	2	1	0	0	21
August	6	1	2	3	0	0	12
September[1]	20	16	13	17	0	0	67
Total	93	29	251	390	0	0	764

[1]September totals include fallbacks released from the separator on October 1, the last day of collecting fish.

The Ice Harbor JBS is typically unwatered after December 15 each year for annual winter maintenance. The adult salmonids that were recovered from the juvenile fish channel during these unwatering events are shown in Table 2 for the last three years. It is unknown if these fish fallback through the JBS recently or over a period of days or even weeks before the channel was unwatered.

Table 2. Number of Adult Salmonids Recovered During Unwatering of Ice Harbor JBS, 2017-2019

Date	Clipped Chinook	Unclipped Chinook	Clipped Steelhead	Unclipped Steelhead	Coho	Total
12/20/17	0	0	32	15	0	47
12/21/18	0	1	10	4	0	15
12/19/19	2	0	15	9	1	27

2. Statement about the current year's run (e.g., higher or lower than 10-year average);

Subyearling fall Chinook will be the predominant juvenile fish passing Ice Harbor during the late-season period. Based on the 2019 adult fall Chinook counts at Ice Harbor, which were below the 10-year average (Figure 2), the 2020 wild subyearling fall Chinook juvenile passage is anticipated to below the 10-year average. Hatchery fall Chinook numbers are anticipated to be similar to those from recent years.

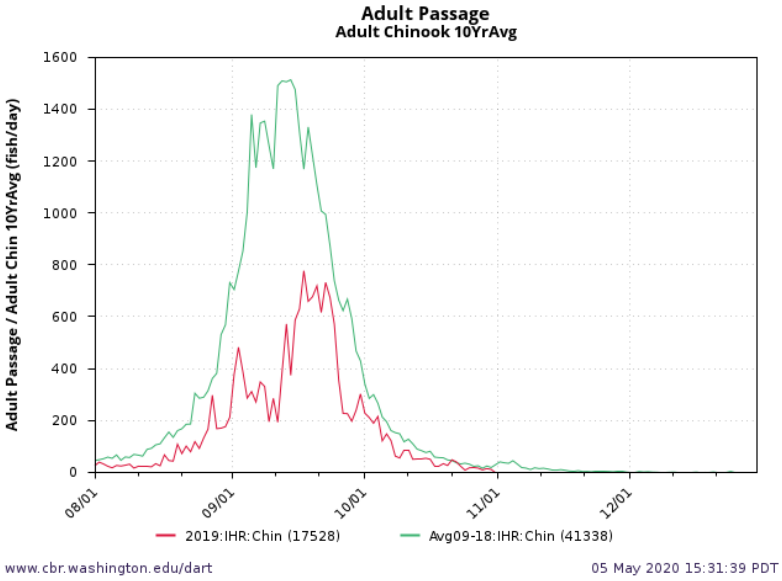

Figure 2. Ice Harbor adult fall Chinook salmon passage at Ice Harbor Dam in 2019 relative to the 10-year average.

State fishery agencies forecast that the 2020 Columbia and Snake River adult steelhead, fall Chinook, and coho runs will be well below the 10-year averages.

3. Estimated exposure to impact by species and age class (i.e., number or percentage of run exposed to an impact by the action);

   Juvenile fish passage is not estimated after October 31 at any of the four lower Snake River Dams. Ice Harbor Juvenile Fish Facility conducts very limited sampling in the spring and early summer (4 hours twice per week), with no sampling occurring during other times of the year. Thus impact for the early Ice Harbor JBS shutdown was estimated from Lower Monumental Dam JBS PIT-tag detections. Based on PIT-tag detection at Lower Monumental Dam, less than 0.5% of the subyearling population would be passing Ice Harbor November 15 through December 15 (Table 3). While a relatively small portion of the total juvenile abundance pass through the JBS from November 15 through December 15, these winter migrants are an important part of diversity and have exhibited high survival.

   Table 3. Past 5-years annual juvenile fall Chinook salmon PIT-tag detections, detection during the proposed Ice Harbor JBS outage, and percent of the run migrating during the proposed outage at Lower Monumental.

Year	Nov 15- Dec 15	Annual Total	% of the run
2015	4	3,644	0.1%
2016	24	7,413	0.3%
2017	59	13,824	0.4%
2018	9	13,717	0.1%
2019	4	11,921	0.0%
5-year Average	**20**	**10,104**	**0.2%**

4. Type of impact by species and age class (increased delay, exposure to predation, exposure to a route of higher injury/mortality rate, exposure to higher TDG, etc.);

   Voluntary spill for fish passage ends on August 31, and river flows are typically low in the late fall, so involuntary spill would most likely not be occurring. Fish that would be otherwise using the JBS during the last month of the season will instead follow the flow through the running turbines. Balloon tag juvenile fish passage survival through the fish-friendly turbine in unit 2 was estimated at 98%, while survival through conventional Kaplan turbines at Ice Harbor is approximately 87%. Subyearling Chinook survival through the Ice Harbor JBS has ranged from 96 to 99%.

Summary statement - expected impacts on:

Downstream migrants

Late-migrating wild juvenile fall Chinook which represent less than 0.5% of the population would be impacted by the early removal of the STSs. Passage survival

through the turbines may be similar to or slightly lower than that of the JBS for these fish. Other runs of juvenile fish are unlikely to be impacted, since their run timing is earlier.

Adult fallbacks that use the JBS during the late-season would also be impacted. These fish are presumed to be a small fraction of the total number of fallbacks that use the JBS over the entire season.

Upstream migrants (including Bull Trout)

None.

Lamprey

There are very few adult and juvenile lamprey moving during that time of year, so the percentage of the population affected would be very small.

Comments from agencies

Final coordination results

After Action update (After action statement stating what the effect of the action was on listed species. This statement could simply state that the MOC analysis was correct and the action went as expected, or it could explain how the actual action changed the expected effect (e.g., you didn't need to close that AWS valve after all, so there was no impact of the action). List any actual mortality noted as a result of the action)

Please email or call with questions or concerns.
Thank you,

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