OFFICIAL COORDINATION REQUEST FOR
NON-ROUTINE OPERATIONS AND MAINTENANCE

COORDINATION TITLE– 2021 IHR 11 MOC **-** JBS Early Shutdown for Maintenance
COORDINATION DATE – June 21, 2021
PROJECT- Ice Harbor Dam
RESPONSE DATE – August 4, 2021

Description of the problem

There are several upgrade/repair projects in the works for machinery and operating systems associated with the Ice Harbor Dam 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 the operating control system has become obsolete, making it difficult or impossible to find replacement parts. The control system was upgraded during the 2020-2021 winter maintenance period. However, the contractor ran out of time and was not able to complete replacement/rehabilitation of other major crane components, including the overhead trolley line conductor system which powers the crane, hoist shaft couplings, rail brakes, and painting. Once installed, all lifting devices associated with the crane will need to be certified. The contractor's initial assessment of the intake trash rake revealed that the rake does meet current engineering safety standards for "below the hook" devices. The trash rake will be repaired/modified to bring it up to current standards during the winter maintenance period. The lifting beams for the rake and STSs will also need to be modified to meet current engineering standards.

These tasks are planned for the upcoming 2021-2022 winter maintenance period and estimated to require four months to complete. 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 finish the crane maintenance and upgrades. The extra month will also allow more time for the Corps to get the trash rake and lifting beams modified. All 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 15, 2021, 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. The air-burst cleaning system that is underneath the downstream end of the unwatering inclined floor screen needs to be expanded 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 starting on November 15, 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 15, 2021, instead of December 16, 2021.

Length of time for repairs
November 15, 2021 to mid-March 2022.

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. During the proposed early shut down of the Ice Harbor JBS typically only subyearling Chinook salmon are passing the dam and their numbers are presumed to be low that time of year.

   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 until mid-July, for juvenile fish sampling. Thus, JBS fallback estimates at Ice Harbor are typically based on fallback estimates at Lower Monumental. Average monthly adult fallbacks through the JBS at Lower Monumental for the last four years are shown in Table 1.

   From 2010 to 2019, only 2 adult steelhead (1 each in 2010 and 2017) have been detected passing downstream through the Ice Harbor Dam JBS full flow PIT-tag detector between November 15 and the unwatering of the JBS in mid-December. In 2020, 1 PIT-tagged adult steelhead was detected in the Lower Monumental full-flow bypass between November 15 and the unwatering of the JBS.

Table 1. Average Monthly Totals of Adult Salmonids Released from the Juvenile Fish Separator at Lower Monumental Dam, 2017-2020

Month	Chinook	Jack Chinook	Clipped Steelhead	Unclipped Steelhead	Sockeye	Coho	Total
April	0	0	76	91	0	0	167
May	14	1	94	177	0	0	286
June	32	5	17	28	0	0	82
July	13	5	2	2	0	0	22
August	10	3	2	4	3	0	22
September[1]	22	19	17	20	3	2	83
Total	91	33	208	322	6	2	662

[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, except in 2020 when the JBS was unwatered in mid-November to accommodate the intake crane upgrade work. The adult salmonids that were recovered from the juvenile fish channel during these unwatering events are shown in Table 2 for the last four years. It is unknown if these fish fell back into the JBS shortly before 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, 2017-2020

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
11/23/20	0	0	16	8	1	25

The JBS full flow PIT-tag detection system at Ice Harbor Dam became operational in 2005. Over the past 16 years (2005-2020) only one PIT-tagged bull trout has been detected passing downstream through the Ice Harbor JBS full flow system. This fish was tagged in the Tuccannon River and passed through the JBS in June 2011. The numbers of PIT-tagged bull trout in the Columbia basin are relatively few compared to salmon and steelhead, however, the lack of detections over 16 years indicate bull trout are unlikely to be actively migrating downstream past Ice Harbor Dam through the JBS.

At Lower Monumental Dam bull trout observations on either the separator or in the sample over the past 10-years have ranged from 0 to 6 fish per year. Observations of bulltrout passing through the JBS at Lower Monumental Dam are inconsistent with no fish observed in 6 out of 10 years.

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 2020 adult fall Chinook counts at Ice Harbor, which were slightly below the 10-year average (Figure 1), the 2021 wild subyearling fall Chinook juvenile passage is anticipated to be similar to the 10-year average. Hatchery fall Chinook numbers are also anticipated to be similar to those from recent years.

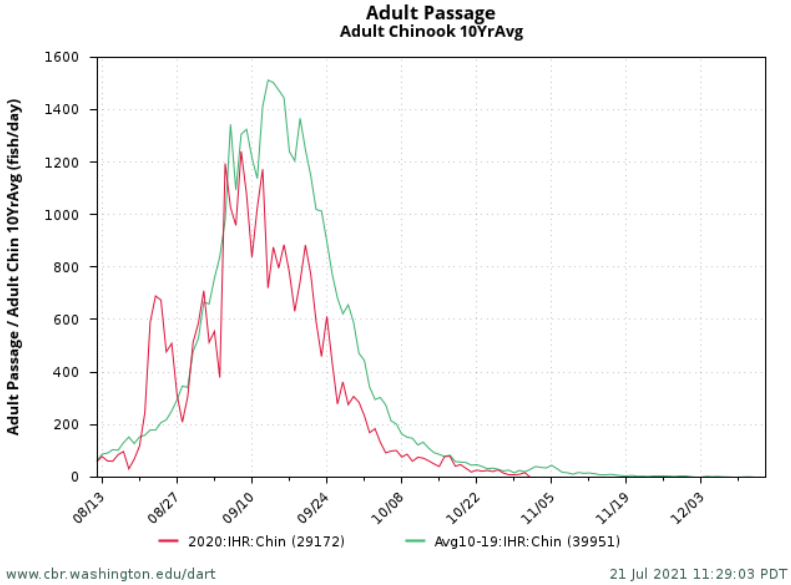

Figure 1. Ice Harbor adult fall Chinook salmon passage at Ice Harbor Dam in 2020 relative to the 10-year average.

Washington Department of Fish and Wildlife projects that the adult steelhead and fall chinook runs will be below the 10-year average. The coho run is predicted to be above the 10-year average.

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, the impact for the early Ice Harbor JBS shutdown was estimated from observations of PIT-tag detections in the JBS at Ice Harbor and Lower Monumental Dams. Based on PIT-tag detections, 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.

Based on fish salvage (Table 4) during the unwatering of the JBS over the past 4 years it is estimated that < 0.1% of the adult fall Chinook, adult coho, or adult steelhead would be passing downstream at Ice Harbor from November 15 through December 15.

Bulltrout are unlikely to be passing downstream at Ice Harbor Dam from November 15 through December 15.

Table 3. Annual juvenile fall Chinook salmon PIT-tag detections at Ice Harbor Dam (2015-2019) and Lower Monumental Dam (2020), as well as during the proposed Ice Harbor JBS outage, and percent of the run passing during the proposed outage.

Year	Nov 15- Dec 15	Annual Total	% of the run
2015	2	3,399	0.1%
2016	4	2,741	0.1%
2017	42	7,871	0.5%
2018	2	4,358	<0.1%
2019	1	4,643	<0.1%
2020	85	2,723	3.1
6-year Average	**23**	**4,289**	**0.5%**

Table 4. Ice Harbor annual adult passage and percent of the run encountered during JBS unwatering in December of 2017-2019, and in November of 2020.

	Fall Chinook Salmon				
	2017	**2018**	**2019**	**2020**	**4-year Ave**
Annual adult upstream passage	26,393	16,980	17,245	29,172	22,448
Salvage during JBS dewatering	0	1	2	0	1
% in the JBS during dewatering	0.0%	<0.1%	<0.1%	0.0%	<0.1%
	Coho Salmon				
Annual adult upstream passage	5,328	1,310	6,426	6,956	5,005
Salvage during JBS dewatering	0	0	1	1	1
% in the JBS during dewatering	0.0%	0.0%	<0.1%	<0.1%	<0.1%
	Steelhead				
Annual adult upstream passage	61,961	48,262	31,824	56,210	49,564
Salvage during JBS dewatering	47	14	24	24	27
% in the JBS during dewatering	0.1%	<0.1%	0.1%	<0.1%	<0.1%

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 steelhead overshoots ends on November 15, 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 approximately 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.

The combination of few bull trout observed passing downstream at Lower Monumental and Ice Harbor dams indicate bull trout are not regularly migrating downstream through the lower Snake River, so are unlikely to be impacted.

Upstream migrants (including bull trout)

The early shutting down of the Ice Harbor JBS would not impact upstream passage for any species of fish.

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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