

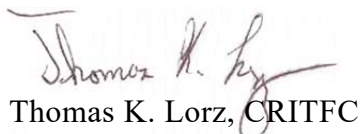
State, Federal and Tribal Fishery Agencies Joint Technical Staff Memorandum

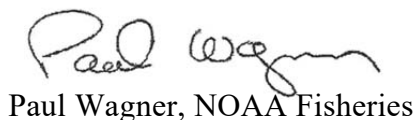
*Columbia River Inter-Tribal Fish Commission
Idaho Department of Fish and Game
NOAA National Marine Fisheries Service
Washington Department of Fish and Wildlife*

*Colville Tribes
Nez Perce Tribe
Oregon Department of Fish and Wildlife
U.S. Fish and Wildlife Service*

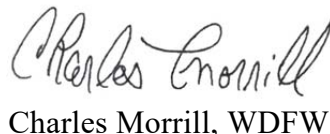
TO: Fish Passage Operations and Maintenance Coordination Team

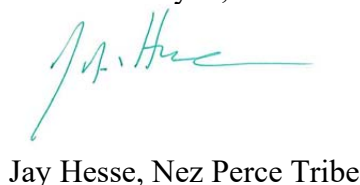
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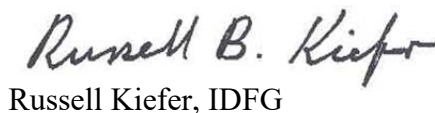

Thomas K. Lorz, CRITFC

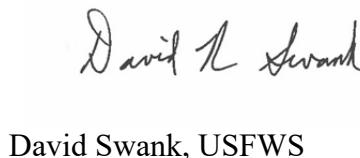

Paul Wagner, NOAA Fisheries

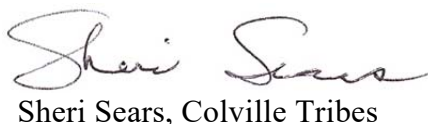

Erick Van Dyke, ODFW


Charles Morrill, WDFW


Jay Hesse, Nez Perce Tribe


Russell Kiefer, IDFG


David Swank, USFWS


Sheri Sears, Colville Tribes

SUBJECT: Early Juvenile Bypass System Operation Implementation – Updated Recommendation

DATE: October 10, 2017

On August 2, 2017 the Fish Passage Advisory Committee (FPAC) submitted a Joint Technical Staff (JTS) letter to the Fish Passage and Maintenance Coordination Team (FPOM) on recommendations for the early operation of the juvenile bypass systems at FCRPS projects in 2018. The August 2, 2017 JTS letter is attached for your reference. At the August 10, 2017 FPOM meeting, several committee members had questions for FPAC regarding our recommendations. On August 29, 2017, Ann Setter and Erin Kovalchuk attended the FPAC conference call to discuss and resolve their questions regarding early operations in 2018. This letter is being provided to FPOM as an overview of those discussions and the decisions that were

made for 2018 early monitoring, as well as provide an update to the recommendations for the out-years (2019-2021). As was originally highlighted in our letter from August 2nd, data from 2018 will be reviewed to inform operations in 2019-2021.

Below are the three questions that were discussed at the August 29, 2017 FPAC conference call and their resolution for 2018. In addition, Table 1 is provided as an update of the proposed implementation schedule, based on these discussions.

Can 2018 early monitoring occur at Little Goose instead of Lower Granite since there is a possibility that LGR would not be ready in time due to construction activities?

Yes. Although not the originally preferred alternative, FPAC is ok with sampling at Little Goose in 2018 instead of Lower Granite, as long as there is a commitment to early sampling Lower Granite in 2019.

Can 2018 early monitoring occur at John Day instead of McNary due to the work at McNary that will not allow an early start in 2018?

Yes. Although not the originally preferred alternative, FPAC is ok with sampling at John Day in 2018 instead of McNary, as long as there is a commitment to early sampling at McNary in 2019.

What data will be collected and how will it be used or compared to previous years? Will the data be collected in the same manner to allow comparison?

Data collected in March would be collected similarly to the way they are collected in April. At Little Goose and John Day, data in 2018 will be from a 24-hour sample, every-other-day. At Bonneville, data will be from a 24-hour sample, every day. The purpose of the original design was to allow for comparison. Although not the originally preferred alternative, this collection procedure should continue to provide for comparison.

Table 1. Second alternative (revised) juvenile bypass system implementation schedule for injunctive early (March) operations.¹

Project	2018	2019	2020	2021
BONN ²	X	X	X	X
TDA	N/A	N/A	N/A	N/A
JDA	X	X ³	X	X ³
MCN		X ⁴		X ⁴
ICH	N/A	N/A	N/A	N/A
LMN		X		X
LGO	X		X	
LGR		X		X

¹ The FCRPS injunction court order provides that “[i]n light of the importance of the tails of a run for diversity and species adaptation, the Court orders PIT tag monitoring begin on March 1 of each year of the remand period, beginning in 2018.” This implementation schedule covers a time frame that is designed to provide data on early migration and account for maintenance and funding needs.

² Juvenile bypass system operation at Bonneville Dam currently starts in early March; no change required for injunctive early migration monitoring.

³ Early operation of John Day JBS on odd years desirable (optional) to support Umatilla juvenile lamprey monitoring and Umatilla and John Day basin salmonid migration timing monitoring.

⁴ McNary turbine intake screen installation/operation should be delayed until mid-April.

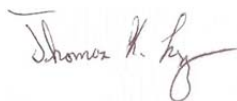
Since the August 29, 2017 FPAC meeting, there have been follow-up conversations regarding the possibility that not all powerhouse units will be screened at Little Goose and/or John Day dams by the time sampling begins on March 1st. While it is ideal for all units to be screened, FPAC has been informed by the U.S. Army Corps of Engineers that this may not be possible due to lock repair/maintenance schedules. Therefore, FPAC supports the proposal to prioritize screen installation to those units that are highest on the unit priority list. It is important to note that, while a lack of screens in some lower priority units may impact the accuracy of the estimates of passage magnitude, it should not affect our ability to assess whether the historical system operation (i.e., starting in April) fully considered the entire migration period, particularly the early portion of the run. Furthermore, it is important to note that the lack of screens in the lower priority units does not equate to increased turbine passage when compared to previous years. Under historical system operations, all units would be unscreened until late March or early April when sampling would have started.

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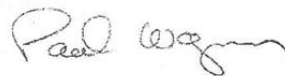
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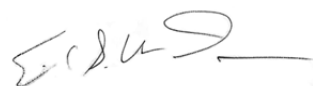
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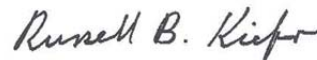
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Dave Swank, USFWS



Sheri Sears, Colville Tribes

SUBJECT: Early Juvenile Bypass System Operation Implementation Recommendation

DATE: August 2, 2017

In conjunction with the March 27, 2017 court ruling to provide PIT-tag monitoring at FCRPS projects beginning March 1, 2018, the Nez Perce Tribe, with input and support from the Fish Passage Advisory Committee (FPAC), has developed the following recommendation for the early operation of the juvenile bypass systems at FCRPS projects for 2018. Data from 2018 will be reviewed to inform operations in 2019-2021.

Background/Purpose:

The timing of juvenile bypass system start-up (late March) and hydro-system operations to aid juvenile passage (i.e. spill) have been structured around historical juvenile emigration patterns, which may not fully represent potential emigration timing shifts associated with climate change and/or other flow management practices. Evidence exists that the current system operation does not fully consider the entire emigration period. The early and late tails of a run are important for diversity and there is some evidence that fish are migrating earlier. With a question concerning the magnitude of earlier juvenile emigration, to and through the FCRPS hydro-system, estimates (or indices) of daily juvenile fish passage between March 1st and June 15 and 20th will provide data to inform decisions on hydro-system operations in the future.

Implementation Guidelines:

The following bullets are provided to address technical questions on how to effectively implement early “PIT tag monitoring” specific to 1) how many and which juvenile bypass systems should be operated, 2) should turbine intake screens be operated, and 3) need for concurrent smolt monitoring program juvenile fish sampling.

- Assessing juvenile emigration timing requires estimating or indexing daily juvenile passage at individual projects over the entire emigration (assessment) period.
- Monitoring juvenile emigration timing over variable conditions (multiple years) and through the entire FCRPS is preferred. However, acceptable alternatives for staggering early juvenile bypass operations are proposed below in Table 1. These alternatives were designed to:
 - Maintenance of Juvenile Bypass Systems (JBS),
 - Funding requirements of extended JBS operations, and
 - Robust estimates of juvenile emigration timing.
- Migration timing metrics include:
 - Juvenile Passage Index – Requires concurrent juvenile sampling by Smolt Monitoring Program (SMP) to expand sample counts by sample rate (i.e., proportion of hour actively sampling) and daily proportion of water passing through the powerhouse. This is currently conducted daily at Lower Granite Dam beginning March 26th and Bonneville Dam beginning approximately March 3rd. It is conducted every-other-day at Little Goose during April until transportation begins, then daily. At Lower Monumental, the SMP sampling schedule is every-third-day from April 1 to April 15, every-other-day from April 16 until transportation begins, and daily thereafter. SMP sampling is also conducted every-other-day at McNary and John Day dams, beginning April 1st. Ice Harbor Dam is not an SMP site and can’t support a passage index estimate, as sampling here is only two days per week, for a limited period (few hours to get enough fish for condition). Estimates are generated by project specific (standalone) sampling.
 - PIT Tag Detection Index – Assumes representative tagging and consistent PIT tag detection efficiency over migration period. Standalone estimate per project.
 - Juvenile Population Index - This is an estimate of daily passage based on integrated SMP sampling and predicted PIT-tag detection probabilities (as a

function of daily flow and spill data). It is believed to be more accurate than the passage index for estimating the magnitude of passage because it does not assume a 1:1 fish to water ratio that is inherent in the passage index expansion. Currently, the population index is generated for yearling Chinook, steelhead, and subyearling Chinook at Lower Granite and Little Goose dams.

- Priority monitoring focused on natural-origin juvenile emigration timing in response to environmental covariates; however hatchery-origin emigration timing also important.
- Standard operations (FCPRS BiOp requirement) of juvenile bypass systems utilize SMP fish condition sampling to monitor/detect bypass system operations and identify maintenance issues/needs.
- Juvenile bypass system operations typically include concurrent operation of turbine intake guidance screens. Delayed installation of screens at McNary Dam until mid-April, with intent to minimize juvenile lamprey mortality, can be continued, but may bias migration timing indices.

Table 1. Alternative Juvenile Bypass System implementation schedule for injunctive early (March) operations.¹

Project	2018	2019	2020	2021
BONN ²	X	X	X	X
TDA	NA	NA	NA	NA
JDA	X ³	X	X ³	X
MCN	X ⁴		X ⁴	
ICH		X		X
LMN	X		X	
LGO		X		X
LGR	X ⁵	altX ⁵	X	

¹ The FCPRS injunction court order provides that “[i]n light of the importance of the tails of a run for diversity and species adaptation, the Court orders PIT tag monitoring begin on March 1 of each year of the remand period, beginning in 2018.” This implementation schedule covers a time frame that is designed to provide data on early migration and account for maintenance and funding needs.

² Juvenile bypass system operation at Bonneville Dam currently starts in early March; no change required for injunctive early migration monitoring.

³ Early operation of John Day JBS on even years desirable (optional) to support Umatilla juvenile lamprey monitoring and Umatilla and John Day basin salmonid migration timing monitoring.

⁴ Delay installation of turbine intake screens until mid-April to be maintained.

⁵ Assumes that Lower Granite Juvenile Bypass rebuild is completed as scheduled (prior to March 2018); if delayed, Little Goose Juvenile Bypass System to be operated.

Recommendations:

- 1) Early operation (March 1st start up) of a subset of juvenile bypass systems (JBS) will provide additional data on juvenile emigration timing to and through the Federal Columbia River Power System. Priority projects for early operation in 2018 are: Lower Granite, Lower Monumental, McNary, and Bonneville dams. In addition, early operation of John Day Dam JBS would be beneficial to support Umatilla juvenile lamprey

monitoring and Umatilla and John Day basin salmonid migration timing monitoring. Out-year implementation should rotate across projects.

- 2) Turbine intake screens should be installed and operated concurrent with JBS operations, with the exception of McNary Dam, where intake screen installation/operation should be delayed until mid-April.
- 3) Early JBS operations should include concurrent Smolt Monitoring Program (SMP) juvenile fish sampling, applying existing sampling patterns (frequency) during early season operations.