FISH PASSAGE CENTER

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MEMORANDUM

TO: Ed Bowles, ODFW

FROM: Michele DeHart

DATE: December 10, 2007

RE: Review of the 2007 Draft Biological Opinion

In response to your request, the FPC staff has reviewed the 2007 Draft Biological Opinion relative to the 2000 Biological Opinion and the 2006-2007 Operations Agreement. Overall this Opinion reduces spill for fish passage, increases smolt transportation and reduces flow compared to the 2006 & 2007 operations agreement and the 2000 Biological Opinion. The Opinion also includes modification of regional management and collaboration framework that affects the state, and tribal fishery managers. The FPC did not provide comments on these or tributary and habitat sections of the Opinion. The following are our comments by section relating to mainstem passage.

1. **Hydropower Strategy 1- Hydro Actions.**

Dworshak Dam

The primary difference relative to the 2000 BiOp is the summer draft to 1535 feet by the end of August. The 2000 Biological Opinion contained a draft to 1520 feet by the end of August. The 2007 Draft BiOp will result in approximately 200 Kaf less flow Augmentation from Dworshak Dam between June 21 and August 31st (72 days). This loss of 200 Kaf over the 72 days between June 21st and August 31st will equate to an average daily loss of 1.4 Kcfs of flow over the summer flow period. Not included is any language regarding the potential to reduce winter drafts to assure the best possibility of reaching the April 10th rule curve. The Biological Opinion does not include any language regarding the Action Agencies consideration of trends in water supply when operating reservoir for flood control. For example, it would not seem logical to continue to draft to the end of month flood control elevations based on a moderate water supply forecast when month long conditions had been very dry causing the next month forecast to be drastically less causing flood control elevations to be drastically increased.

Libby and Hungry Horse

In dry water years (lowest 20%) the 2000 BiOp drafts Hungry Horse and Libby to 3540 feet and 2439 feet by the end of August. In comparison, in dry water years, the 2007 Draft BiOp drafts to the same elevations by the end of September. Assuming a linear summer draft, the 2007 Draft BiOp would draft Hungry Horse

and Libby to elevation 3547 feet and 2446 feet by the end of August. Overall, the 2007 Draft BiOp would result in approximately 440 Kaf less flow augmentation water over the summer period, this volume of water equates to a daily flow augmentation loss of 3.6 Kcfs (3,600 cfs) from Hungry Horse and Libby in dry water years over the 62 days of summer (July 1 to August 31).

In normal and wet water years (upper 80%) the 2000 BiOp also drafts Hungry Horse and Libby to 3540 feet and 2439 feet by the end of August. In comparison, in normal and wet water years, the 2007 Draft BiOp drafts to only 3550 and 2449 feet by the end of September. Assuming a linear summer draft, the 2007 Draft BiOp would draft Hungry Horse and Libby to elevation 3553 feet and 2452 feet by the end of August. The 2007 Draft BiOp would result in approximately 900 Kaf less flow augmentation water over the summer period in normal and wet water years, this volume of water equates to a daily flow augmentation loss of 7.3 Kcfs (7,300 cfs) from Hungry Horse and Libby over the 62 days of summer (July 1 to August 31).

The Opinion does not include language regarding the potential to reduce excessive winter drafts to assure the best possibility of reaching the April 10th rule curve. The Opinion language referring to "the 75% chance of meeting the URC" language is weak and could be strengthened by modifying the language such as" …. Operate to achieve the best possible chance of reaching the URC elevation on April 10th based on all available information…" Although this was discussed with NOAA and the agencies and tribes the Opinion does not address the variable end of December draft at Libby and the potential to modify this draft to affect the Libby late winter/early spring reservoir elevation. NOAA could have included language requiring that the COE reanalyze this draft operation by 2009, and work with the agencies and tribes to explore an agreement for potential modifications of this draft.

Grand Coulee

Some language also should be added about reducing excessive winter drafts to assure the best possibility of reaching the April 10th rule curve. Again the language regarding winter drafts is weak, the 85% chance of meeting the URC language could be strengthened by directing the action agencies to " …. Operate to achieve the best possible chance of reaching the URC elevation on April 10th based on all available information…"

The 2007 Draft Biological Opinion indicates that Grand Coulee must be drafted for drum gate maintenance, in a minimum of three times over seven years. This draft for drum gate maintenance will negatively impact spring flows especially in dry water years. The action agencies could explore other schedules for maintenance or options for less frequent maintenance to reduce the impact on salmon and steelhead migration conditions. Drum gate maintenance has impacted provision of flow augmentation for fish in three of seven years, the Opinion does not address the consideration of maintenance to avoid impacts on provision of fish protection measures.

Chum Spawning Flows

Bullet #1 under chum flows states that tailwater elevations below Bonneville of approximately 11.5 feet will be maintained beginning in November when chum are present and ending by December 31st. Previous BIOPS included flows for chum salmon through emergence in the spring.

Flow Objectives

There are no flow objectives that can be found in the 2007 Draft Biological Opinion. Previous Biological Opinions had flow objectives or flow targets for both spring and summer at McNary and Lower Granite Dam and spring flow objectives at Priest Rapids. Flow objectives were managed in terms of weekly averages in the past. This Opinion provides more flexibility to operators and regulators to manage flows for hydropower operations, and eliminates any emphasis on provision of flows for downstream migrating salmon and steelhead.

2. **Hydropower Strategy 2- Hydro Actions**

RPA #28 discusses investigating adult passage at Little Goose Dam and spill operations based upon 2007 operations. However NOAA does not completely consider events that occurred in 2007. In 2007, when an adult passage delay was noticed a change in spill pattern appeared to break up an eddy by the south shore adult entrance and immediately pass many adult fish. It should be noted that unit #1 had been out of service for four days previous to the spill pattern change and in fact was turned back on at the same time the spill pattern was changed. Unit #1 is the closest unit to the south shore entrance and would likely have large impact on the eddy that formed near the south exit. It is very possible that both the unit #1 outage and the bulk spill pattern contributed to the adult delay seen at LGS in 2007. NOAA has not fully considered these issues in their description of this RPA. This potentially impacts the spill level provided at Little Goose. The RPA should encompass all of the factors which occurred in 2007 at Little Goose.

3. **Hydropower Strategy 3 – Implement Spill and Juvenile Transportation Improvements at Columbia River and Snake River Dams.**

This Opinion reduces spill from the 2000 Opinion and the 2006 & 2007 operations agreement.

Duration of Voluntary Spill

- **The duration of spring spill at Snake and Lower Columbia River projects is shorter under the 2007 Draft BiOp than the 2006 Court Order and 2007 Agreement.**
  - Spring spill starts later at most Snake River projects. Under the 2007 Draft BiOp, spring spill at Snake River projects will have staggered start dates; where LGR starts April 3, LGS starts April 5, and LMN and IHR start April 7. Spring spill under 2006 Court Order and 2007 Agreement started April 3 at all Snake River projects.
  - Spring spill ends earlier at all Snake River projects. Under 2007 Draft BiOp, spring spill at Snake River transportation projects will end on May 15, when transportation is maximized with no spill will begin. Furthermore, the last day of spring spill at IHR is June 15 under the 2007 Draft BiOp. In 2006 and 2007, spring spill ran through June 20 at all Snake River projects.
  - Spring spill ends earlier at all Lower Columbia River projects. Under 2007 Draft BiOp, spring spill at Lower Columbia River projects will end on June 15. In 2006 and 2007, spring spill ran through June 30 at all Lower Columbia River projects.

- **The duration of summer spill at Snake River projects will likely be shorter under the 2007 Draft BiOp than the 2006 Court Order and 2007 Agreement.**
    - Although summer spill volumes will be initiated earlier at all projects (10-15 days on average), summer spill will be terminated much earlier than the August 31 date that was identified in the 2006 Court Order and 2007 Agreement. Based on data from recent years (2005-2007), the criteria for terminating summer spill would have been met by August 3 at all three Snake River collector projects. If spill were terminated on August 4, effectively 28 days of spill would be eliminated in August. This would result in a net loss of approximately 13-18 days of summer spill at these projects.
    - Summer spill at IHR will begin on June 15 under the 2007 Draft BiOp, which is 6 days earlier than the 2006 Court Order and 2007 Agreement. However, summer spill will terminate 2 days after LMN (early August), which results in a net loss of approximately 20 days of summer spill.

- **The duration of summer spill at Lower Columbia River projects is longer under the 2007 Draft BiOp than under the 2006 Court Order and 2007 Agreement.**
    - Under the 2007 Draft BiOp, summer spill volumes will be initiated on June 16 at all Lower Columbia Projects. The initiation of summer spill volumes was July 1 under the 2006 Court Order and 2007 Agreement.

Transportation:

- **Transportation at all Snake River projects initiated earlier under the 2007 Draft BiOp than the 2007 Agreement.**
    - Under the 2007 Draft BiOp, transportation at LGR, LGS, and LMN will begin on April 21. The 2007 Agreement allowed for transportation to be initiated at LGR as late as May 1 and staggered the initiation of transportation at LGS and LMN after LGR. In 2007, LGR initiated transportation on May 1, LGS on May 9, and LMN on May 12.

- **Proportion transported likely higher under 2007 Draft BiOp than 2006 Court Order and 2007 Agreement, for all species**
    - Combination of earlier initiation date and no spill/max transport operation at the end of May will result in a higher proportion of yearling Chinook, steelhead, Coho, and sockeye juveniles transported from Snake River projects.
    - Max transport/no spill operation in late May/early June and "Adaptive" operation in August (i.e., termination of spill and max transport) will result in higher proportion of subyearling Chinook transported from Snake River projects.

Spill Volumes:

- **Little Goose spring spill volume is lower under 2007 Draft BiOp than under 2007 Agreement.**
    - 2007 Agreement allowed for 14 nights of gas cap spill at LGS during tentative window of April 22 to May 15. 2007 Draft BiOp does not allow for any gas cap spill at LGS in the spring. Also, the project is restricted to 30% spill because of adult passage concerns. Spill amount has not been shown to be the primary culprit for the adult passage delay and definitive studies of spill levels must be included in RPA #28.

- **Changes in spill duration at Snake River projects will lead to less overall spill under 2007 Draft BiOp than what was provided under the 2006 Court Order and 2007 Agreement.**
    - Staggered start to implementation of spring spill, elimination of spill from mid-May to early-June (max transport operation), and elimination of spill in early August will all result in lower spill volumes at Snake River projects.
    - Overall spill volumes at LGR and LMN will be further reduced due to earlier implementation of summer spill volumes. Spring and summer spill at these projects are set amounts (Kcfs), which are reduced upon the implementation of summer spill (LGR: 20 Kcfs in spring vs. 18 Kcfs in summer; LMN: gas cap in spring vs. 17 Kcfs in summer). The spill volumes at Lower Monumental are based on data collected in the hydrosystem where forebay monitors are limited to 115% and tailrace to 120%. The forebay monitors often limit spill because the 115% limit is exceeded before the 120% is met. This is presently under discussion in the Adaptive Management Team process established under the State of Washington and Oregon's water quality agencies. The BIOP should recognize this process by using gas cap as limits, rather than the present Kcfs amounts.

- **Changes in spill duration at Lower Columbia projects will have variable effect on total spill volume under 2007 Draft BiOp compared to 2006 Court Order and 2007 Agreement.**
    - Instantaneous spill volumes at MCN are same between 2007 Draft BiOp and 2007 Agreement. If summer spill volume at MCN continues to be 40%/40% vs. 60%/60%, than total spill volume at MCN may be higher under 2007 Draft BiOp, given that summer spill is longer duration. However, if summer spill at MCN changes to 40%/40% after testing is completed, than there will be less spill under 2007 Draft BiOp. .
    - Instantaneous spill volumes at TDA are same between 2007 Draft BiOp and 2007 Agreement. Furthermore, spring and summer volumes at TDA are the same. Therefore, longer duration of summer spill will have no effect on total spill volume at TDA.
    - Instantaneous spill volumes at JDA are same between 2007 Draft BiOp and 2007 Agreement. 2007 Draft BiOp mentions the possibility of 24-hour spill at JDA in the spring. However, there is no mention of what the instantaneous spill level would be if this were to occur. Without this information, it is difficult to determine whether there will be any change in total spill volume at JDA over what has occurred in the past.
    - The 2007 Draft BiOp calls for spring spill of 100Kcfs/100Kcfs. There is some concern for daytime passage at higher spill levels so the daytime restriction to 100 Kcfs maybe justified. However, there is no biological reason to limit nighttime spill to 100 Kcfs. This was most likely related to the spill level near where the 115% was exceeded at Camas/Washougal. Camas/Washougal is no longer a point of compliance so all nighttime spill at Bonneville Dam should be to the gas cap. The 2007 Draft BiOp calls for 85 Kcfs/Gas Cap spill at BON from June 16 to July 31 and 75 Kcfs/Gas Cap from August 1 to August 31. This likely will result in an increase in the overall spill volume at BON over what has been provided in the past. However, the 85 Kcfs is the minimum spill level needed for good project conditions and there is no justification for reducing daytime spill after July 31.