State of Oregon
Comments on
Draft 2002 Water Management Plan, dated 11/07/01
January 23, 2002

The state of Oregon has reviewed the draft 2002 Water Management Plan (WMP) developed by the U.S. Army Corps of Engineers, Bureau of Reclamation, and Bonneville Power Administration (Action Agencies) and submits the following comments.

General Comments

In our review of the WMP, which is the Action Agencies' proposal to implement hydrosystem measures in the National Marine Fisheries Services' and U.S. Fish and Wildlife Services' Federal Columbia River Power System 2000 Biological Opinion (Biological Opinions), we raise many of the same concerns that we raised in our comments on the Biological Opinions. One new issue we raise is the notion of assigning priorities to hydrosystem operations, specifically assigning priorities to operations for bull trout and sturgeon, summer migrants, spring migrants, and chum spawning. This is troublesome for two reasons. First, there is no analytical basis in the plan for prioritizing the flow and storage objectives. All stocks affected by the attainment of these objectives are at critical population levels and require full protection. And second, the burden and risks of shortfalls in the hydrosystem are assigned solely to fish, whereas they should be shared equitably with "non-fish" uses such as flood control, irrigation, and power generation.

The Action Agencies should include measures in the WMP to improve water supply to better meet flow objectives. One of the major flaws in the Biological Opinions is the lack of provision of necessary volumes of water to meet the flow targets. In our comments on the 2000 Biological Opinion and briefly summarized below we identify specific measures to provide additional water to meet bull trout, sturgeon, spring, summer, and chum flow objectives. The Action Agencies also should explore other ways to improve water supply including use of system flexibility in flood control, irrigation, and power generation operations. As discussed below, the WMP should develop a mechanism for equitably assigning risks during shortfalls that includes non-fish uses of the hydrosystem. Currently, fish are shouldering the full burden of any shortfalls in the hydrosystem that make achievement of performance standards even more difficult.

Specific Comments

1.1 Preparation of Plans

Insert statement "This plan should not be construed as substituting for attainment of the performance standards contained in the 2000 Biological Opinions. In the event that monitoring and/or research shows that the measures contained herein are insufficient to meet the performance standards, such additional measures as may be necessary will be taken."

2.1 Priorities

Pages 2-3 (*Action Agencies' priorities for flow management*)- The WMP establishes priorities for hydrosystem operations that will compromise protection measures for listed fish species but not necessarily for non-fish uses. As discussed above, the WMP should be based on a fundamental operational strategy that sets the probability of meeting flow and storage objectives for fish equal to the probability of meeting flow and storage objectives for non-fish purposes. For example, the probabilistic risk of meeting April 10 flood control elevations should be the same as the probabilistic risk of meeting spring flow or summer refill targets. Risks of damage from floods and not meeting flow needs of fish, power, recreation, navigation, irrigation and other non-fish purposes should be equitably assigned. The Base Case modeling for the 2000 Biological Opinion by BPA was not done assuming equivalent probability of meeting fish and non-fish uses, i.e. flood control objectives were given higher priority than fish measures or power production.

In practical terms, the WMP should make a probabilistic estimate of the water available in 2002 to meet fish and non-fish purposes. It should capture the range of uncertainty in runoff forecasts and forecast error. Based on the range of water supply and runoff forecasts, the WMP should identify management alternatives that allocate available water supplies among the uses, minimizing the collective risks and maximizing the benefits to all stocks and uses. The WMP should quantify the attendant risks to fish and non-fish purposes for each management alternative.

The goal for in-season management should be to maximize the biological benefit and minimize the negative biological consequences of operations taking into account uncertainty and forecast error. Flow management and reservoir operation priorities should be managed based on the most up to date in-season probabilistic estimates of runoff forecast and flows and biological consequences including effects on meeting performance standards in the 2000 Biological Opinions. In-season management should more rigorously take into account errors in runoff forecasts and incorporate that uncertainty in water management decisions.

Near-term water management decisions should not only take into account the probability of meeting future needs, but also include contingency planning for reducing risks of an undesirable consequence later in the season. The contingencies may include an acknowledged acceptance of a greater risk in the longer term, or the transfer of that risk to another, lower priority purpose. For example, meeting chum spawning flow objectives in a marginal year may be acceptable if there is an acceptable probability that certain reservoirs would be drafted below their August 31 drafting limits if necessary to meet spring and summer flow objectives. This transfers some of the certain risk facing chum early in the water year, before certainty in runoff is known, to other reservoir uses later in the water year including incubation flows for chum.

It is premature to establish the priorities of water management on pages 2 and 3 before completion of an assessment of the risks to both fish and non-fish uses for operational alternatives. Base Case modeling of the 2000 Biological Opinions has shown that not all fish objectives will be met under average flows if the non-fish priorities and constraints assumed in the modeling are maintained as givens. For fish, the risk assessment should include conservation requirements for listed and other native fish species affected by operations and estimates of changes in survival from changes in operations. For flood control, the impacts from operating at higher flood control levels (above 450 kcfs at The Dalles) should be assessed. For power, the risk assessment should include impacts on power supply adequacy and reliability. Ultimately the WMP should equitably minimize the composite set of risks and maximize progress toward fish recovery among all the stocks.

After a more analytical assessment and equitable treatment of the fish and non-fish risks, the relative priorities for in-season water management objectives should be qualified. For example, if June 30 refill remains a higher priority than April flood control, the WMP should establish the relative priority. This might be done by establishing the relative value of the change in the probability of meeting each objective. For example, a 5 percent degradation in the probability of meeting the April target might be an acceptable tradeoff for a 20 percent increase in probability of meeting the June 30 target depending on the biological value of the operation for the stocks involved and the value of the increased risk from flood damage.

Pages 2-3 (*Spring and summer flow objectives*)- The objectives for summer and spring flows should not be stated in terms of refill by June 30 and achieving April 10 flood control elevations. Flow objectives for both the spring and summer can be met in years when these elevation targets are not met by drafting reservoirs deeper, i.e. going below the minimum elevations identified in the Biological Opinions.

Specifically, replace the second and third priority statements on pages 2 and 3 with:

"Provide volume of water needed to meet summer flow objectives."
"Provide volume of water needed to meet spring flow objectives."

Page 3 (*Chum and Hanford Reach flows*)- When attempting to achieve April flood control levels in storage reservoirs, the trade-offs should not be restricted to choices between achieving these levels and providing chum and Hanford Reach flows. Trade-offs between achieving April flood control levels and power generation and other non-fish uses should also be considered as viable alternatives.

Page 3 (*Interim draft limits*)- August 31 draft limits for storage reservoirs should not be assigned a higher priority than meeting spring, summer and chum flow objectives. Drafting storage reservoirs below these limits should be an option in years when volumes are needed to meet flow objectives.

Page 3 (*Adaptive management*)- Adaptive management should not only account for information on stock status, biological requirements and hydrologic and environmental conditions, but also power load, flood risks, etc. when considering decision alternatives for operations.

2.2 Conflicts

This section should also identify the conflicts between operations for fish and operations for other purposes including, power, flood, navigation, recreation etc. With regard to conflicts among operations for various stocks, the subsections should describe the relative value of the operations in terms of biological effectiveness.

2.2.1 Flood control draft versus project refill

The WMP should establish the tradeoffs of operating to achieve higher probabilities of being on flood control rule curves by April 10 at Grand Coulee (currently 85%) and Libby and Hungry Horse (75%) to improve spring and summer flows and set forth conditions under which such operations will maximize benefits and minimize risk to all stocks.

2.2.2 The provision of spring flows versus project refill and summer flow augmentation

The WMP should describe the degree to which operations to meet spring flow objectives should be constrained by a priority to refill storage reservoirs by June 30. Uncertainty in

forecasts should be hedged by a willingness and planned contingency to draft storage reservoirs as necessary so that a) the probability of being at, and not below, the April flood control elevations is greater than 75-90% and b) reservoir elevations are below August 31 draft limits.

2.2.3 Chum flows versus refill/spring flows

The WMP should describe the degree to which operations to meet chum flow objectives should be constrained by a priority to meet April flood control levels or refill storage reservoirs by June 30. Uncertainty in forecasts should be hedged by a willingness and planned contingency to draft storage reservoirs as necessary so that a) the probability of being at, and not below, the April flood control elevations is greater than 75-90% and b) reservoir elevations are below August 31 draft limits.

2.2.4 Sturgeon pulse versus summer flow augmentation

The amount of water released from Libby for sturgeon should not necessarily reduce the likelihood of meeting summer flow objectives. As discussed in our comments on the 2000 Biological Opinion, sturgeon operations can result in significant losses of water that could be used to improve flows for salmon. If conditions preclude storage of that water in Grand Coulee, contingency plans should be in place to operate these reservoirs below August 31 draft limits to meet summer objectives.

Table summarizing major fish-related reservoir and flow operations by project

Column 2 (*Flood Control & Refill*)- Include language that "Uncertainty in forecasts will be hedged by a willingness and planned contingency to draft storage reservoirs to have a greater than 75-90% probability of being at, and not below, the April 10 flood control elevations and/or to have a lesser probability of refilling the reservoirs by June 30."

Column 5 (*Spring Anadromous*)- Change heading to "Operate to meet flow objectives." and specify for all projects.

Column 6 (*Summer Anadromous*)- Include language for storage reservoirs that "Uncertainty in forecasts will be hedged by a willingness and planned contingency to draft below the stated draft limit, if necessary, to meet summer flow objectives." Revise summer flow objective at Lower Granite to range from 50-100 kcfs, instead of 50-55 kcfs. Revise language for Banks Lake to state that operate at elevation of five feet or more, if necessary, below full to provide more water for summer flow augmentation.

Column 7 (*Chum*)- Change to "Fall/winter storage used to support chum flows." Revise minimum flow below Bonneville to be 140kcfs, not 125 kcfs and add statement that operations will also maintain 12-13-ft. minimum tailwater depth.

Column 8 (*Kokanee*)- The fall/winter draw up for Lake Pend Oreille in fall/winter in 2002 is 2055 not 2051 ft. We encourage the U.S. Fish and Wildlife Service to resolve the issue of frequency of lake draw up in 2002 rather than 2003 as it constrains water availability for meeting chum flow objectives.

4.1 Flow Objectives

The purpose statement for flow objectives should state that the objectives are minimum flow levels that shall be achieved on a weekly [as well as seasonal] average basis.

4.1.1.2 Summer anadromous fish [Lower Granite]

The upper range of the flow objective for summer should be increased from 55 kcfs to 100 kcfs (see justification in Oregon's comments on Biological Opinion).

4.2 All Storage Projects

The basis and rationale for exceptions to operating storage projects to meet April 10 flood control elevations and June 30 refill should be generally described in this plan as a basis for deliberations by the Technical Management Team.

It should not be the preference of the Action Agencies to accept "modest reductions in spring flows to facilitate reservoir refill" (page 14). Instead, as discussed above when conditions necessitate missing refill targets to achieve spring flow objectives, contingencies should be put in place to draft reservoirs below their August 31 draft limits to meet summer flow objectives.

4.3.3, 4.4.3, 4.8.3, 4.10.3 Summer anadromous fish [Libby, Hungry Horse, Dworshak, Grand Coulee]

The following statement should be added to these sections to put the draft limits for each of the reservoirs in perspective relative to meeting summer flow objectives: "Uncertainty in forecasts will be hedged by a willingness and planned contingency to draft below the stated draft limit, if necessary, to meet summer flow objectives."

4.6 Upper Snake River Reservoir Operation for Flow Augmentation

The purpose statement should describe the intent as acquiring and providing at least 427 kaf from the upper Snake for delivery below Brownlee by August 31 without shaping.

4.7 Brownlee, Dworshak, and Grand Coulee Flood Control

The purpose should be expanded to secure at least 337 kaf of Brownlee water to meet summer flow objectives.

4.11 Banks Lake Summer Draft

Contingencies should be developed to provide additional water from other sources if NEPA as described in Section 7.8 is not completed to allow operating Banks Lake 5 ft from full. Operating Banks Lake at lower elevations than 1560 ft should be evaluated in the NEPA to improve summer flows.

4.13 Vernita Bar Protection Flows

The WMP should mention the need to revisit the Vernita Bar Agreement and determine what changes, if any, are needed to the agreement to enable fully meeting chum spawning flow objectives below Bonneville Dam beginning on or before November 1.

4.15 Bonneville Dam Chum Flows

The chum operation is part of the "NMFS' 2000 FCRPS RPA." There is no basis for a condition that the operation not "adversely affect implementation" of the RPA. As stated earlier under priorities, the chum operation should be afforded at least equal priority to other operations for listed fish as well as non-fish objectives. The minimum flow below Bonneville should be revised from 125 kcfs to 140 kcfs and a statement added that operations will also maintain 12-13-ft. minimum tailwater depth. Decisions to start chum spawning flows beginning no later than November 1 should not be based on highly inaccurate runoff predictions in the fall that indicate that flows cannot be maintained through emergence. If the Action Agencies choose not to continuously provide 125 kcfs for mainstem spawning, the proposal to provide intermittent flows to allow access to Hardy and Hamilton creeks should not be considered because it may also encourage some spawning to occur on the mainstem. Decisions to manage flows to discourage chum from spawning at higher elevations or dewatering of chum redds should be made only after it can be demonstrated greater risk to other fish and non-fish objectives. The WMP should include recommendations to minimize stranding of emergent chum. Hourly flow restrictions should be included to reduce stranding of chum during flows of 250-260 kcfs.

Recommendations for Lower Columbia River Bright fall chinook spawning below Bonneville (not a Biological Opinion requirement) should also be included similar to consideration given for Hanford Reach fall chinook under the Vernita Bar Agreement.

Table summarizing spill requirements (page 26)

The spill amount for The Dalles (column 6) should be changed from 40% of outflow to 64% of outflow to improve inriver survival by reducing passage through turbines and the sluiceway.

6.0 Sub-Strategy: Juvenile Fish Transport Actions to Enhance Fish Survival

The sub-strategy statement should include the intent to "spread the risk" and not transport more than 50% of juvenile salmon and steelhead arriving at collector projects.

7.3.2 Total Dissolved Gas Monitoring

This section confuses Quality Assurance/Quality Control (QA/QC) and the use of redundant instruments. These are two different issues, and should be addressed separately. Redundant monitors are required to address the persistent problem of instrument breakdowns. When instruments cease to operate, or give readings that are clearly outside normal parameters, they need to be replaced and/or recalibrated expeditiously.

The establishment of data quality objectives should assure quality assurance and quality control. These should not, however be established by the Action Agencies. They should be established either by the Water Quality Team in conjunction with the Action Agencies (note, the Action Agencies are represented on the Water Quality Team), or by adopting existing QA/QC criteria, as contained in the Oregon Plan for Salmon and Watersheds.

7.3.3 Total Dissolved Gas Monitoring Review

Delete the final sentence of the first paragraph. This sentence doesn't add anything. It carries the implication, which is also true, that spill can be reduced if current forebay monitors under-represent Total Dissolved Gas (TDG) levels.

7.3.4 Total Dissolved Gas Monitoring

The U.S. Army Corps of Engineers (Corps)' efforts under the Gas Abatement Study, and the development of the MASS 1, Mass 2, and SYSTDG spreadsheet models are to be

complemented. This study has greatly enhanced our understanding of TDG generation and dynamics. However, if these results are to be carried through into operational management, SYSTDG needs to be re-released with a full data set covering the period from 1994 to 2001. The current version is hard wired into 1996 data.

7.3.5 Temperature Model and Temperature Monitoring Needs

We are concerned that a further model development exercise is being suggested. Numerous temperature models exist. We would prefer to see the Action Agencies settle upon an existing model (and in this regard, we would suggest the EPA RBM-10 model), and work toward ensuring that it is a robust predictive tool. Additional new model development is a waste of resources that would be better spent on temperature monitoring, particularly the installation of tri-level thermographs in the reservoirs.

7.3.6 Water Quality Database

The Corps' efforts in coordinating data need are to be complemented. We believe that an evaluation of the existing StreamNet data management system should be undertaken to ensure that we are not duplicating an already existing function.

7.4 Canadian Storage for Flow Augmentation

Two additional tasks should be added regarding the pursuit of Canadian storage for flow augmentation that was required in the 1995 Biological Opinion. One is that a request be made to reallocate 1.5 MAF of flood control from Arrow to Mica. Another is to pursue, through negotiations with BC Hydro, installation of two turbines at Mica and Revelstoke to provide 1-2 MAF for summer flow augmentation. Also, it should be stated that the intent of seeking non-Treaty storage is to secure at least 1.0 MAF for flow augmentation.