

# State, Federal and Tribal Fishery Agencies Joint Technical Staff

*Columbia River Inter-Tribal Fish Commission  
Idaho Department of Fish and Game  
Nez Perce Tribe  
Shoshone-Bannock Tribes  
US Fish and Wildlife Service  
Washington Department of Fish and Wildlife*

February 13, 2006

Witt Anderson  
Chief District Support Team  
Northwest Division  
Corps of Engineers  
P.O. Box 2870  
Portland, OR 97208-2870

RE: Little Goose Dam Removable Spillway Weir

Dear Mr. Anderson:

This letter is to express our concern and disagreement with the Corps of Engineers (COE) proposal to delay installation of a Removable Spillway Weir (RSW) at Little Goose Dam (LGS) until at least 2009. We strongly recommend proceeding with surface bypass technology in the lower Snake River as soon as reasonably possible. We recognize the need to also provide surface passage technology for the lower Columbia River, but because of the greater size and complexity of lower Columbia River and projects, it will likely take several years to determine how to configure and operate surface bypass technologies that will provide the desired results.

For example, the effort to provide a surface passage route at John Day Dam was postponed in the late 1990s due to difficult technical issues which still need to be addressed as that effort is revived. To that end, we have consistently ranked as high priority research and design efforts for development of surface bypass technologies for the lower Columbia River, and believe investigating the potential benefits of Adjustable Spillway Weirs should be part of that program. However, we believe the region has invested significant research and design resources to develop surface bypass technology that works well at a lower Snake River project and we should complete implementation as soon as reasonably possible to achieve benefits there. For clarification, we have provided the following brief history of this issue from our perspective:

- When the System Configuration Team (SCT) was considering at which dam to install the second RSW, all of the SCT salmon manager representatives recommended LGS. However, consensus could not be reached in the Regional Forum Process on this issue, and the Federal Executives decided to install the second RSW at Ice Harbor Dam.
- During winter 2003/2004 when the SCT was considering at which project to install the third RSW, LGS or Lower Monumental Dam (LMO), all of the salmon manager SCT representatives once again recommended LGS. However, the Salmon Managers compromised on our desire to install the next RSW at LGS in order to reach a consensus agreement, per COE request, so that the COE representatives could demonstrate regional support for accelerated RSW installation in the Lower Snake River to their management. The COE representatives requested that this proposal be documented in a letter to adequately communicate SCT interests to their management. That letter was sent August 13, 2004 and is attached for reference. At subsequent SCT meetings, the COE's representatives stated that only one RSW could be built per year, and the planned remaining Snake River RSW installation schedule would be LMO in 2007 and LGS in 2008. This schedule was also identified in the National Oceanic and Atmospheric Administration's 2004 Federal Columbia River Power Systems Biological Opinion and the Action Agencies 2004 Updated Proposed Action.

We therefore assumed that the COE was in agreement with the Salmon Managers to finish RSW installation in the lower Snake River as soon as reasonably possible. Further, we assumed that the COE supported both the necessary feasibility and design work to begin installation of surface bypass technologies in the lower Columbia immediately following completion of the Lower Snake River RSWs. We were surprised and disappointed during the winter 2004/2005 when the COE proposed to defund RSW design work for LGS in 2005. In the end, SCT decided that the COE would concurrently fund research and design work for both the RSW at LGS and surface bypass technologies for the lower Columbia River projects. It should be noted that the concurrent effort to complete RSW installation in the lower Snake River and begin the research and design work for the lower Columbia River was explicitly described in our August 13, 2004 letter to the COE. Please review this letter on this subject to better understand the background and rationale for our position on this issue.

Since August 2004, there has been additional information obtained that further supports our position to move forward expeditiously with LGO RSW installation as a key passage measure. For example, the Anderson et al. 2005 Task 1 report to the Walla Walla District contains the following Summary and Recommendations that supports LGS RSW installation:

- 1) For all fish, in-river passage SAR was higher for nondetected fish than detected fish; multiple-detected fish had the lowest SARs among groups.
- 2) Wild spring/summer Chinook salmon transported from LWG and LGS returned at rates equal to only 80% of the in-river fish detected only once.

- 3) For fall Chinook salmon, the limited evidence suggests that nondetected fish return at higher rates than transported fish.
- 4) Because the seasonal trend in T:I was a result of declining in-river SARs, operational or structural improvements that are expected to benefit in-river migrants (such as removable spillway weirs), have the potential to change the trend in T:I.

The National Marine Fisheries Service 2005 Effects Technical Memo contains the following information that further supports the timely installation of a RSW at LGS:

- 1) Strategies such as “spread the risk” and promotion of diversity suggest we should allow more fish to migrate in the river whenever it appears migration might lead to reasonable return rates compared to the alternatives.
- 2) We note that transportation apparently has not provided any benefit to Snake River sockeye salmon.
- 3) Delayed migration, which reduces available energy reserves in smolts, could affect survival.
- 4) For wild spring-summer Chinook salmon, on an average annual basis, transportation provided no benefit.
- 5) The comparison of SAR from in-river migrants with different juvenile migration histories showed that, for some stocks in some years, multiple bypassed fish returned at significantly lower rates than fish that were never detected in a bypass system.

Further, the 2005 Comparative Survival Study (Berggren et al. 2005) found that Wild Snake River spring/summer Chinook salmon that migrated uncollected in-river (primarily via spill) in 2000 and 2002 had significantly higher SARs than those transported. This also supports the timely installation of an RSW at LGS.

Additionally, COE- funded study results from 2005 indicate that RSWs are an efficient method to provide spillway passage for summer migrants as well as spring migrants.

The COE concerns expressed by their SCT representatives are that: 1) we have little route specific survival or juvenile approach data from LGS and, 2) staying on the spring 2008 schedule does not allow for innovations in RSW design. We believe that there is adequate RSW biological and engineering information from LWG and LMO, which are very similar in configuration, hydraulics and biological concerns, to LGS to proceed with LGS installation in 2008. This information indicates that it is reasonable to assume that spillbay 1 adjacent to the powerhouse will be the best choice for locating the RSW at LGS, just like at LWG and LMO. The COE’s SCT representatives concur with the salmon managers that spillbay 1 at LGS will very likely be the best choice for RSW installation. There appears to be agreement in SCT that if the results from the upcoming 2006 studies indicate that spillbay 1 is not the best location for an RSW, the Corps may need additional time to design the RSW for an alternative spillbay.

We further believe the region has spent appropriate and adequate time and resources developing a surface bypass technology that works well for the lower Snake River projects. We believe that it is important to finish lower Snake RSW implementation to accrue salmon passage benefits and move on to RSW and/or other surface bypass structures in the lower Columbia. We support innovations in spillway weir designs as part of the development of surface bypass technologies for McNary and John Day dams, but do not believe it would be cost effective in time, resources, or fish to investigate potential changes to the current design that works well in the lower Snake River projects.

The risk of delaying LGS RSW installation is not that we will put the RSW in the wrong bay, but that there is a small chance that some of the \$1 million design work conducted in 2006 will not be used if the data collected in 2006 indicates spillbay 1 is not the best choice. The risk of delaying the LMO RSW installation decision is greater than simply the COE's proposed one year delay. In the past year there has been a COE attempt to eliminate the SCT funding for LGS RSW development, and another COE attempt to switch this funding to the development of an Adjustable Spillway Weir design which would also further delay implementation.

The 24-hour 30% spill level ordered by the court for 2006 may reduce spillway passage below the performance of nighttime gas cap spill directed by previous Biological Opinions. With highest juvenile survival rate through the spillway route, reduced spillway passage results in lower dam survival. The addition of an RSW to the 24-hour 30% spill at LGS is expected to increase spill passage and reduce forebay delay, similar to the performance of the RSW at LWG. Therefore, the delay of RSW installation to 2009 raises the biological risk to the 2008 out-migration at LGS, and will raise concerns regarding the comparison of in-river passage survival with transport survival in 2008.

In closing, the salmon managers strongly recommend that the COE proceed with LGS RSW installation by spring 2008 to complete surface bypass improvements for the Lower Snake River. Then the region can proceed to investigate appropriate surface bypass technologies for the Lower Columbia dams. We appreciate the opportunity to work with the COE on these issues and welcome to further technical discussions regarding specific biological and engineering criteria leading to RSW installation in 2008.

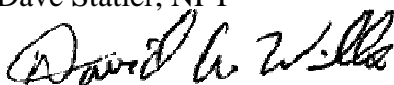
Sincerely,



Bob Heinith, CRITFC



Dave Statler, NPT




Dave Wills, USFWS



Russ Kiefer, IDFG



Keith Kutchins, SBT



Washington Department of Fish & Wildlife

## References

- Anderson, J.J., R.A. Hinrichsen, C. Van Holmes and K.D. Ham. 2005. Historical analysis of PIT Tag data for transportation of fish at Lower Granite, Little Goose, Lower Monumental and McNary Dams. Task 1: Analysis of In-river Environmental Conditions. Contract DACW68-02-D-0001 to Walla Walla District, Corps of Engineers. By Battelle Northwest. Richland, WA.
- Berggren, T., H. Franzoni, L. Basham, P. Wilson, H. Schaller, C. Petrosky, E. Weber and R. Boyce. 2005. Comparative survival study (CSS) of PIT-tagged spring/summer chinook and PIT-tagged summer steelhead. 2005 Annual Report. Mark/Recapture Activities and Bootstrap Analysis. BPA Contract #19960200. Fish Passage Center and Comparative Survival Study Oversight Committee. Portland, Oregon.
- Williams, J.G., S.G. Smith, R.W. Zabel, W.D. Muir, M.D. Scheuerell, B.P. Sandford, D.M. Marsh, R.A. McNatt, and S. Achord. 2005. Effects of the federal Columbia River power system on salmonid populations. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-63, 150 p. Available at <<[http://www.nwfsc.noaa.gov/assets/25/6061\\_04142005\\_152601\\_effectstechmemo63final.pdf](http://www.nwfsc.noaa.gov/assets/25/6061_04142005_152601_effectstechmemo63final.pdf)>>.

**Attachment**

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NOAA Fisheries  
Nez Perce Tribe  
Oregon Department of Fish and Wildlife  
Shoshone-Bannock Tribes  
US Fish and Wildlife Service  
Washington Department of Fish and Wildlife*

August 13, 2004

Dana Knudtson  
Walla Walla District, Corps of Engineers  
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Walla Walla, WA 99362

John Kranda  
Portland District, Corps of Engineers  
PO Box 2870  
Portland, OR 97208-2870

Dear Sirs:

The multi-year development schedule for installation of removable spillway weirs (RSWs) has been discussed during the past several monthly System Configuration Team (SCT) meetings. During the May 26<sup>th</sup> meeting, in culmination to those several months of consideration on the schedule, the SCT salmon manager representatives proposed an RSW implementation schedule that was supported by all agencies represented at the meeting, with the exception of the Corps, who needed time to internally deliberate on whether or not the proposed accelerated schedule was both feasible and cost effective. The Corps' representatives requested this proposal be documented in a letter to adequately communicate the SCT interests to their management. This letter details the proposal in the following four elements and also mentions supporting rationale.

## **Overall Goal and Implementation Strategy:**

Our overall goal is to more effectively provide spillway passage when information indicates this passage route could improve juvenile salmonid in-river survival and smolt-to-adult return rates. Initial testing at Lower Granite Dam indicates RSWs have considerable promise to increase spillway passage efficiency (increased number of fish spilled for amount of water used) and

survival. Because planning is further along for the remaining two lower Snake River projects, we have prioritized installation of RSWs at these two projects. However, there is also high potential for increasing spillway efficiency with RSWs in the lower Columbia River because of great abundance of juveniles and diversity of fish stocks present and higher levels of conventional spill required. Our recommendation for installation of RSWs in the lower Snake River first should not be interpreted as indicating a lower priority for RSWs in the lower Columbia River. Because of the size and complexity of lower Columbia projects, it will likely take several years to determine how to configure RSWs, training spill and biological guidance systems to provide the desired results. It is therefore critical that feasibility studies for RSW implementation at lower Columbia River projects be initiated and accelerated so that installation can be phased in with completion of installation at the four lower Snake River projects.

### **Proposed RSW Investigation and Implementation Schedule:**

- 1) It is our preference to have one RSW installed and operable at both Lower Monumental and Little Goose spillways by April 1, 2007. We recognize that this schedule is contingent upon continued positive results of existing RSW evaluations (particularly summer evaluations), the feasibility of completing necessary planning, designs, and construction to meet this schedule, and availability of funds.

Over the past several months SCT and FFDRWG members have deliberated whether the next RSW (after Ice Harbor) should be installed at either Lower Monumental or Little Goose Dam. While SCT did not reach agreement on which project should proceed first, SCT did agree that there were potentially significant biological and spill efficiency benefits to be gained from RSW installation at both projects. This understanding expedited the salmon managers' proposal, whose focus is an accelerated RSW installation schedule at both dams rather than which dam should be first. Within this proposal the Corps has the flexibility to install at either dam first or install at both on a parallel track. If the RSW at Lower Granite performs well for summer migrants, the installation of RSWs at all lower Snake dams may be critical for future operations.

- 2) Evaluation of the concept and feasibility of RSW installation at lower Columbia River projects should begin in 2005.

In recent SCT meetings there has been strong interest voiced to explore whether one or perhaps several RSWs could perform as well at lower Columbia River projects as the RSW has performed at Lower Granite dam. Given the larger powerhouses, spillways, higher river flows, and diversity of fish stocks, development of RSWs that are as efficient as in the Snake River may be more difficult and take longer to design for lower Columbia River projects. Hence, initiating the preliminary phase of RSW development at lower Columbia River projects in 2005 is timely, given the possibility of an extended development time line. We acknowledge that future passage improvements at the lower Columbia dams are as (or possibly more) important as our proposed RSW implementation schedule for the lower Snake dams; however we concur with the Corps that feasibility and other studies need to be completed to identify which configurations will meet spillway passage goals. The proposed multi-year RSW schedule for lower Columbia projects is considered a high priority "place holder" in the CRFM budget to be modified as site specific studies are conducted. The relative benefits and priorities of

passage improvements and research at all eight dams will still need to be considered on an annual basis to ensure the best use of limited CRFM funding.

- 3) Evaluation of RSWs effectiveness for subyearling summer and fall Chinook is critically important and should begin in 2005. As additional RSWs are installed we support both spring and summer tests. However, the lack of information on the effectiveness of RSWs for summer migrants should not impede the accelerated installation schedule based on their effectiveness for spring migrants.

The demonstrated benefits of RSW operation at Lower Granite for spring migrants; high spillway survival, strong forebay attraction, reduced forebay delay, improved water quality, and increased spill effectiveness are significant. These benefits to spring migrants, along with summer migrant evaluations, qualify as justification for RSW installation at all four lower Snake River dams, and lessons learned in the Snake River will provide the basis for RSW development for the lower Columbia River projects. It is likely that RSWs designs or project operations may have to be adapted to fit the needs of summer migrating fish. This emphasizes the need for initiating a summer test in 2005 to incorporate the results in future designs.

**Supporting Rationale and Background:** Removable spillway weir installation and operation at all eight lower Snake River and Columbia River projects could substantially help meet the Columbia River Fish Mitigation Program's objective of improving anadromous fish passage survival and smolt-to-adult return rates, as well as improving the effectiveness and efficiency of the spill mitigation program.

Adult returns of PIT-tagged Snake River wild spring/summer Chinook salmon smolts indicate that under current conditions, smolts that pass uncollected (non detected) at the collector dams have SARs as high as transported smolts in all but very low flow years (Harza 1994, Newman 1997, Sandford and Smith 2002, Berggren et al. 2003, Williams et al. 2004, and Anderson et al. 2004). Sandford and Smith (2002) concluded, "Passage routes of non detected fish (through spill and turbines) may represent optimal passage conditions". The population of uncollected (non detected) smolts includes both spillway and turbine passage routes at each of the collector dams. Since the turbine route is known to have lower direct survival, these results suggest that smolts that migrate in-river through spillways may have the highest SARs possible with current dam configuration and operations. The May 6<sup>th</sup> NOAA Fisheries draft technical memo on the effects of the FCRPS on salmon populations concluded that transportation may not provide an adult return rate benefit vs. current in-river passage for Snake River sockeye, fall Chinook, and wild spring/summer Chinook. The NOAA authors of this tech memo further conclude that for wild spring/summer Chinook (the group in this category with the most data available) transportation may be detrimental early in the migration season and beneficial later in the migration season.

Action 51 of the 2000 FCRPS BiOp states that if results of Snake River studies indicate that survival of juvenile salmon and steelhead collected and transported during any segment of the juvenile migration is no better than the survival of juvenile salmon that migrate in-river, the Corps and BPA, in coordination with NMFS through the annual planning process, shall identify and implement appropriate measures to optimize in-river passage at the collector dams during those periods. The August 4, 2004 letter from Witt Anderson (Corps) to David Wills (USFWS)



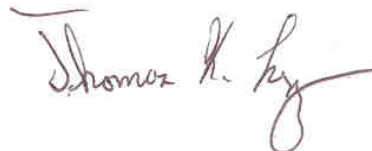
indicates interest in pursuing collaboration with the Salmon Managers on a research design that would evaluate transportation versus in-river migration for summer migrants. Installation of RSWs at all eight lower Snake River and Columbia River projects could allow for the implementation of Action 51, in a more efficient manner.

**Summary:** Test results indicate that for spring migrants, the installation of RSWs allows more flexibility in providing greater spillway passage for the run-at-large and may provide improved in-river migration conditions for transportation evaluation in-river comparison groups. (However, it remains to be demonstrated that RSWs improve smolt-to-adult survival.) Depending on the results of summer migrant evaluations, we envision operating all RSWs in concert to provide both fish survival improvements and increase the efficiency of the spill mitigation program.

Sincerely,



Russ Kiefer, IDFG



Tom Lorz, CRITFC



Dave Statler, NPT



Rod Woodin, WDFW



Ron Boyce, ODFW



Dave Wills, USFWS



Keith Kutchins, SBT



Paul Wagner, NOAA Fisheries