

Memorandum

To: Aaron Penvose, Washington Rivers Conservancy From: Casey Baldwin, RTT Chair (509-664-3148 baldwcmb@dfw.wa.gov) Date: 20 February 2009 Subject: RTT product review of Pioneer Water Users Association

Aaron,

The RTT appreciated the opportunity to conduct a review of the potential project that entails efficiency improvements on the Pioneer Ditch and a point of diversion (POD) change for the Pioneer Water Users Association (PWUA). We commend the PWUA for considering benefits to fish and flow conditions in the lower Wenatchee River as part of their project objectives. Water user cooperation is critical to achieving recovery of habitat conditions necessary to improve survival of salmonids. Such an effort demonstrates exceptional commitment to the preservation and enhancement of natural resources. We reviewed the information provided to evaluate the potential benefits and risks to salmonids and hope that our evaluation of the proposal/project plan is helpful.

RTT comments respond specifically to information in your January 13th, 2009 memo as well as to the first draft of that memo. Our comments address expected benefits resulting from the relocation of PWUA POD from just above the Monitor Bridge on the Wenatchee River to 5th Street in the City of Wenatchee on the Columbia River. The RTT has reviewed the additional material provided and discussed the proposal at a workgroup in January and early February 2009. We have divided this memo into three sections: our review summary statement and more detailed technical responses.

RTT Review Summary Statement:

We believe this potential project has merit as an important contribution to increasing instream flow, which has been identified as a limiting factor in the Wenatchee River basin. The benefits to fish habitat and survival based on improvements in physical habitat and water quality of this project are difficult to quantify with modeling efforts (such as PHABSIM). We stress that this project has potential important implications for increasing instream flow in the future (by "paving the way" for other interests to do similar projects). The risks of a project like this are low, it will increase instream flow, and it is an important component of an overall restoration strategy for the lower Wenatchee River. However, by itself, this project may not score high in a formal review of biological benefits by the RTT because of the difficulties of demonstrating a benefit of 2-5% increases in instream flow. As stated above, this proposal more likely has greater implications for future water conservation efforts. One option may be to develop this proposal as an innovative pilot approach on the Wenatchee River that could "pioneer" the way for future projects that collectively would have a demonstrable effect on instream conditions for fish, habitat, and water quality.

Please review our technical responses below that we hope will increase the likelihood of this project being successful.

Technical responses to information provided:

Fish responses to proposed flow additions:

- Given the location of the affected reach, it is reasonable to assess flow effects on bull trout rearing, spring Chinook rearing, steelhead rearing and spawning, and summer Chinook spawning and rearing.
- We suggest not claiming benefits to a species or life stage that is not using that area in the flow conditions that were modeled.
 - The WUA tables appear to be for Chinook in general, rather than for one of the separate races of Chinook that are found in the Wenatchee River. We recommend the authors acknowledge that there may be different suitability curves for spring and summer Chinook spawning and rearing.
 - The assessment of spring Chinook spawning habitat in this reach is not applicable because spring Chinook do not spawn in the lower Wenatchee River.
 - The low flow WUA results for steelhead presented are not applicable because steelhead do not spawn during the low flow period.
 - Steelhead spawn in the Wenatchee River from April to June; peak spawning occurs from mid to late April.
 - Flows in the Wenatchee during this period are considerably higher than those modeled.
 - Given that the WUA for steelhead spawning habitat decreases with increasing flow (12% to 2% from 300-315 to 800-815 cfs, respectively), it is reasonable to assume that the amount of WUA gain with an increase of 15 cfs during April and May will be less than 1%. Table 3 of Appendix A (of the WRC memo provided to the RTT) shows that WUA for steelhead spawning actually decreases when flows increase from 3,000 to 3,015 cfs, which represent flows near the lower end of flows experienced by steelhead spawning in the Wenatchee River during April. Thus, there will probably be little or no benefit to steelhead spawning habitat with a 15 cfs increase.

Stream flows: It appears that the range of low flows modeled were appropriate to represent a near worst case (300 cfs) and a more typical (800) low flow condition. For example, the lowest flows in the lower Wenatchee River are typically in the month of September, when the mean daily mean flows range between 722-903 cfs with the average for the month being 788 cfs. We also appreciated the effort to conduct and include an additional model run at flow levels (3000) more consistent with steelhead spawning.

It should also be noted that in table 1 of the WRC memo it appears that the minimum flow for the period of record in the month of September is 301 cfs (August 2005). However, our download of the data from that gauge revealed 28 instances of less than 300 cfs including 5 daily average flows between 247 and 252 cfs in August of 2005. In addition, during the relatively short period of record flows as low as 243 cfs in September and as low as 253 cfs in October have been measured at this gauge.

Future efforts to describe the potential benefits to flow should be mindful that flows less than 400 cfs represent only 1.4 % of the available flow recordings at that gauge. One sentence from the memorandum from the WRC (dated 1/13/09) that led to some confusion during our review stated that the "instream flows in the benefited reach often range from 300-400 cfs during low flow years". By using qualitative terms such as "often" and not defining what constitutes "low flow years" there could be alternative interpretations. For clarity, it might be helpful if future efforts to characterize the flow conditions were specific about the date range and frequency of occurrence of particular flow levels. For example, we recommend a statement such as "x% of the recorded daily-mean flows during the August to October time period were between x and y cfs, therefore we modeled z cfs as a minimum flow level".

We also appreciated that the authors included other considerations of flow effects beyond WUA. However, some of the information included in that section probably does not apply to the lower Wenatchee River. For example, references to "severe reductions" should be quantified or at least qualified, especially given flow data available. Also, "dewatering" is not applicable to the lower Wenatchee, as this does not occur.

Models: The project, as described, intends to return 15 cfs to the Wenatchee River, which is 5% of 300 cfs, 3.75% of 400 cfs, and 2.1% of 700 cfs. When these small percent increases are modeled the WUA increases or decreases were also quite small. These small percent changes may be outside of the error tolerance for hydraulic and/or biometric models, making it difficult to determine potential benefits of the action.

Rearing habitat may increase measurably if the combination of sidechannel habitat restoration and increased flows are considered.

- We suspect the WUA calculations were based on transects that did not include offchannel habitat or side channels. Including side channels in future PHABSIM modeling might show greater benefit than existing results.
- If data exists to support it, some emphasis could be added regarding the potential for the additional water to increase the frequency of inundating side channels or increasing the length of time that side channels remain watered.
- If the potential benefits of adding 15 cfs are minimal, as they were for WUA, it would still be useful to know how this project could be the beginning of building towards a quantity of increased instream flow that would have measurable benefits to sidechannels or structural diversity such as in channel large woody debris.

Other: It might be beneficial to link this project to other projects that would target restoration of natural stream channel processes. For example, the maintenance of the diversion would be eliminated thereby reducing disturbance in the Wenatchee River and the side-channel that is currently being used as the diversion could be rehabilitated (if needed).