Quinault Indian Nation

June 7, 2019

Annie Sawabini
Department of Ecology
Water Resources Program
PO Box 47600
Olympia, WA 98504-7600

Dear Ms. Sawabini,

On the behalf of Quinault Indian Nation (QIN or Quinault), we are submitting the following technical comments on the *Final Guidance for Determining Net Ecological Benefit* document:

A. Guidance Document Body

1. **Metrics for describing benefit and impacts.** Metrics for quantifying benefits and impacts are not provided or suggested. Ecology indicates that it does not have a technical basis for establishing metrics because Net Ecological Benefits (NEB) is not a scientific term (page 3, Section 1, paragraph 4). Whether or not NEB is a scientific term is irrelevant for defining metrics as metrics are routinely defined and used to describe non-scientific processes and systems. Given that RCW 90.94.020(4)(a) states that "*Qualifying projects must be specifically designed to enhance streamflows and not result in negative impacts to ecological functions or critical habitat*," it would seem obvious that the metrics should describe streamflow, ecological function, and critical habitat. Without measurable standards, decisions are likely to be construed as arbitrary.

   Example metrics should be included in the Guidance document. These metrics should describe instream resources and watershed functions that support the recovery of threatened and endangered salmonids, including those associated with streamflow rates and streamflow temperatures.

2. **Factors of safety.** Although Ecology refuses to define or describe metrics for quantifying benefits and impacts, they expect that "local expertise" will be used to determine the appropriate amount that benefits must exceed impacts (page 3, Section 1, paragraph 4). Metrics are required to compare benefits and impacts and example metrics should be included in the Guidance, as noted above. Safety margins or factors-of-safety should also be defined in the Guidance and the Guidance should describe how these

safety margins or factors-of-safety should be related to uncertainty (i.e., larger uncertainties should translate into greater safety margins). Example uses of safety margins and factors-of-safety should be included in the Guidance and reasonable ranges should be presented.

3. **Definition of New Consumptive Water Use.** Consumptive use is defined as "*water that is evaporated, transpired, consumed by humans, or otherwise removed from an immediate water environment*" (page 6, bullet 2). The term "immediate water environment" must be defined to know how consumptive water use is defined. It is not clear why the definition from Policy 1020 is not included in this definition. Is the proposed definition meant to be different from or consistent with the Policy 1020 definition? If it is meant to be different from the Policy 1020 definition, what is the rationale for changing the definition?

4. **Higher and lower priority projects.** Chapter 90.94 RCW explicitly differentiates between higher- and lower-priority projects and defines the difference between these two categories. Guidance should be provided on how to compare and evaluate these different types of projects. For example, can a lower-priority project be rated higher than a higher-priority project? How important is this distinction between lower- and higher-priority projects? How much additional benefit must a lower-priority project provide to equal a higher-priority project?

5. **Offset projects that exceed impacts.** Ecology states in Section 3.2.3.5 that planning groups "*should be very cautious to understand that any work undertaken beyond the specific planning minimums increase risk that time, and funds, are spent on matters that will not necessarily yield a locally approvable or adoptable plan within the very tight timeframes of the law.*" Section 3.2.3.5 could be interpreted as recommending that the benefits of offset projects should not exceed estimated impacts. The Guidance should clarify that achieving NEB requires that benefits exceed impacts. The effects of uncertainties require that estimated benefits must exceed estimated impacts by some margin of safety or factor-of-safety. Factors-of-safety, defined as estimated benefit divided by estimated impact, in the range of 1.5 to 3.0 would likely be appropriate, depending on the degree of uncertainty associated with estimates of benefits and impacts.

B. Appendix A. Recommendations for Water Use Estimates

1. **Septic return flow should be an offset**. The Guidance (page 16) implicitly assumes that water that is extracted from an aquifer, used in a house, and then discharged to a septic system is not a consumptive water use, regardless of site-specific hydrologic and hydrogeologic factors. Groundwater extraction from an aquifer is a consumptive water use – it diminishes the source at the point of appropriation. Septic return flow should be considered a potential offset to this consumptive water use, and not a non-consumptive water use.

There are uncertainties associated with this offset (including its temporal and spatial distribution and whether it can be relied upon in perpetuity because of future sewer system expansions). Because of these uncertainties, a factor-of-safety approach should be used when applying this septic-return offset to counteract the impact associated with the groundwater extraction. For example, if a factor of safety of 2 is used, then 2 acre-feet of septic return flow would offset 1 acre-foot of groundwater extraction.

The value of septic return flow as an offset for groundwater extraction should include water quality considerations. Septic systems are prone to failure, particularly those associated with single-family residences. Periodic maintenance should be required for all septic systems if return flows from these systems are to be considered as offsets.

2. **Consumption due to outdoor water use should reflect drought years.** The Guidance suggests that crop-use estimates such as those available in Appendix A in the Washington Irrigation Guide (WAIG) can be used to estimate outdoor water use (pages 18-19). It is important to note that the water use estimates from WAIG are based on an average precipitation year. Water use rates during drought years will be significantly greater than the average-year values and would occur when stresses on streamflow are greatest. Again, a factor-of-safety approach should be used when estimating the consumption associated with outdoor water use. The factor-of-safety should reflect the greater water use rates associated with drought years.

C. Appendix B Considerations for Evaluating Hydrologic Impacts by and Offsets for Permit-Exempt Domestic Wells

1. **Steady-state impacts should not be the default assumption.** The Guidance states that "*in most instances*" it is reasonable to ignore the seasonality of water use and instead assume steady-state or average extraction rates (page 22). Graphs that relate to a very specific hydrogeologic condition are used to support this recommendation. For example, the graphs assume that the well is constructed in a water table aquifer. Confined aquifers have a much lower storativity (and therefore a much larger diffusivity). The impacts of pumping on wells in confined aquifers will propagate to streams much more quickly than in water table aquifers.

   The requirements for streamflow by fish ARE seasonal. Reducing flows in the summer will result in reducing production of coho, and perhaps steelhead. Assuming steady-state extraction rates will result in the predicted effects being severely reduced, and thus, underestimated.

   Ignoring the seasonality of water use will minimize estimated impacts – actual impacts will be greater than this estimate in all instances. Recommending an approach that knowingly under-estimates impacts is concerning and not acceptable to the QIN. A defensible approach that would be more protective of the resource would be to estimate

summer impacts using average summer-time pumping rates. This may over-estimate impacts under some conditions and would provide a factor-of-safety in those situations.

2. **The spatial distribution of impacts**. The Guidance states that, except in rare instances, the impact of wells should be assumed to be distributed evenly among all water bodies in a sub-basin (page 25). This approach again will underestimate impacts – actual impacts will be greater than this estimate in all instances, thus resulting in inadequate mitigation and likely reductions in salmon production. A defensible approach that would likely be more protective of the resource would be to assume impacts from a well will affect closer streams more than distant streams. Geographic Information System (GIS) software can be used to assign impacts to streams based on proximity to the well. For example, the two closest water bodies can be identified for each well and the impacts can be allocated between these water bodies based on the relative distances from the well.

3. **The importance of factors-of-safety**. The Guidance states that "*Since most pumping effects will be quite small, very dispersed, and steady state with respect to streams, in most cases it is unnecessary to evaluate with precision the effects of pumping at single locations*" (page 26). There is no basis for stating that most effects are very dispersed or steady-state. In fact, most effects will not be truly steady-state and most will not be very dispersed. These statements ignore the cumulative impacts of exempt wells on streamflows and fish habitat. These are non-conservative assumptions (i.e., they under-estimate actual impacts) that are made to simplify the analysis. While this might seem a reasonable approach, factors-of-safety must be used to address the uncertainties and impact minimizations associated with the assumptions.

This Final NEB guidance document will have important implications for how the ESSB 6091 legislation is implemented, and so we thank you for your consideration of these additional comments.

Sincerely,

David E. Bingaman, Director
Quinault Division of Natural Resources
Quinault Indian Nation