DEPARTMENT OF ECOLOGY
State of Washington

Interim Guidance for Determining Net Ecological Benefit

for streamflow restoration planning and water permit mitigation pilots under the 2018 Streamflow Restoration Act

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Background

The 2018 Streamflow Restoration Act (Engrossed Substitute Senate Bill (ESSB) 6091) requires the Department of Ecology (Ecology) to determine that a Net Ecological Benefit (NEB) will result when adopting and approving:

- Watershed plan updates, as required under Section 202.
- Watershed restoration and enhancement plans under Section 203.
- Water resource mitigation pilot projects under Section 301.

This interim guidance will be used to evaluate plans that are completed within the next twelve months, or later if there is prior agreement with Ecology, and for pilot projects being conducted under Section 301. To convert this interim guidance to final guidance, Ecology will seek input from tribes, other resource managers, and an academic research team affiliated with the Washington Water Research Center at Washington State University, along with feedback from groups preparing plans under ESSB 6091. The final NEB guidance will be used to evaluate the remaining plans submitted to Ecology later in 2019 through 2021.

The plans completed under Sections 202 and 203[1] must, at a minimum, recommend actions to offset the potential consumptive impacts of new permit-exempt domestic water uses to instream flows.[2] Before plans are adopted, Ecology must determine that actions identified in a plan, after accounting for new projected domestic uses of water within a water resource inventory area (WRIA) over the next twenty years, will result in a NEB to instream resources within that WRIA.

Section 301 authorizes Ecology to issue permit decisions for up to five water resource mitigation pilot projects. The decisions may rely on providing NEB to mitigate and compensate for any impacts the pilot projects would have on instream flows and closed surface water bodies.

> *A Net Ecological Benefit determination means anticipated benefits to instream resources from actions designed to restore streamflow will offset and exceed the projected impacts to instream resources from new water use.*

Information on local conditions is crucial to understanding how to achieve NEB for individual watersheds. NEB evaluations should make use of available information on watershed-specific factors including: hydrogeology, stream flow conditions, fish populations and life histories, current habitat conditions, water use demand, and local salmon-recovery efforts. Ecology's evaluation of NEB will incorporate existing information on watershed-specific factors that are addressed during the planning process and rely heavily on input from local, state, federal and tribal resource managers, and water resources stakeholders participating in the planning process.

[1] Section 202 updated watershed plans and Section 203 watershed restoration and enhancement plans are collectively referred to as "plans" throughout this document.
[2] Referring to instream flows that have been set through Ecology rulemaking.

NEB evaluation of plans under Sections 202 and 203 of ESSB 6091

Sections 202(4)(a) and 203(3)(a) of ESSB 6091 state that prior to adoption of updated watershed plans or new watershed restoration and enhancement plans:

> "…the department must determine that actions identified in the watershed plan, after accounting for new projected uses of water over the subsequent twenty years, will result in a net ecological benefit to instream resources within the water resource inventory area."

Ecology's NEB determination must occur within the deadlines for plan adoption prescribed in Sections 202(7) and 203(3) by the legislature to prevent triggering other actions identified in the new law, including requirements for rulemaking.

Ecology interprets "instream resources" in the context of this provision of ESSB 6091 to include the instream resources and values protected under RCW 90.22.010 and RCW 90.54.020(3)(a), with an emphasis on measures to support the recovery of threatened and endangered salmonids.

The law requires that plans address potential impacts to instream flows from the consumptive portion of permit-exempt domestic water use over the subsequent 20 years. Element 1 below provides guidance on calculating consumptive domestic permit-exempt water use impacts. The starting point, or baseline, for the 20-year period that must be accounted for is the date ESSB 6091 was signed into law—January 19, 2018.

ESSB 6091 establishes a hierarchy of priority for actions (projects) aimed at offsetting the impacts of consumptive domestic permit-exempt well use:

- Highest priority are projects that replace consumptive domestic water use impacts during the same time and in the same subbasin as the impacts occur.
- Lower priority are projects that replace consumptive domestic water use impacts elsewhere within the WRIA or only during critical flow periods.

Planning groups will be responsible for developing and submitting plans to Ecology. Ecology will provide guidance during this process. Ecology strongly recommends that planning group members attempt to reach agreement on NEB.

Plans submitted for approval should provide structured and transparent accounting that itemizes and compares projected impacts against recommended offsetting projects for use in the NEB evaluation. The impacts from future domestic permit-exempt water use and the effects of planned offset projects should be quantified whenever possible. When necessary, the benefits of some types of offsets may be evaluated qualitatively. Uncertainty of benefits should be identified and quantified to the extent possible. Plans should demonstrate scientific rigor, and include documentation and justification of key scientific methods used.

When addressing NEB, plans should address the following elements, as discussed in more detail below:

1. Characterize and quantify potential impacts to instream resources from the projected 20-year new domestic permit-exempt water use at a scale that allows meaningful determinations of whether the proposed offset is in-time and/or in the same subbasin.
2. Describe and evaluate individual offset projects.
3. Explain how the planned projects are linked or coordinated with other existing plans and actions underway to address existing factors impacting instream resources.
4. Provide a narrative description and quantitative evaluation (to the extent practical) of the net ecological effect of the plan.

Element 1

Characterize and quantify potential impacts to instream resources from the proposed 20-year new domestic permit-exempt water use at a scale that allows meaningful determinations of whether proposed offsets will be in-time and/or in the same subbasin.

Plans should provide a quantitative evaluation of the consumptive water use associated with all projected new domestic permit-exempt uses that will start over the next 20 years. Methods for estimating consumptive domestic permit exempt use are described in "*ESSB 6091 - Recommendations for Water Use Estimates.*"

To determine the benefit of highest priority and lower priority water offset projects, estimates of the consumptive impact of new domestic permit-exempt water use should be calculated for discreet areas. This approach requires partitioning the WRIA into suitably-sized subbasins or sections of subbasins. This partitioning will provide clarity when describing impacts and the offsetting beneficial projects. For example, if a plan proposes offsetting or partially offsetting the consumptive impact of new domestic permit-exempt water use with a high priority project within a subbasin, it should be accompanied by an evaluation of the effects of new domestic permit-exempt water use for that subbasin.

Where information is readily available, estimated impacts should be quantified or described for individual rivers or stream reaches, so that the miles of diminished stream channel habitat can be calculated. However, the number of affected reaches could be extensive. Therefore, bearing in mind the intent of Sections 202 and 203 to improve ecological benefit on a WRIA-scale basis, instead of analyzing individual impacts, plans may provide generalized information about affected reaches.

Calculating the consumptive impact of new domestic permit-exempt water use at the smaller subbasin scale will inform the extent to which impacts to specific reaches will adversely affect target species with a documented presence (e.g., spawning and rearing of individual salmonid species listed under ESA). Descriptions of the projected consumptive impact of new domestic permit-exempt water use calculated at such scales can address fish presence, distribution, and life stages. If available, data on consumptive domestic permit exempt use impacts should be used to characterize:

- Timing or location of impacts
- Sensitivity of individual streams to new withdrawals
- The proportion of flow impacted
- Whether stream flow is identified as a limiting factor for recovery in a local salmon recovery plan.

Element 2

Describe and evaluate individual offset projects.

Projects proposed to offset impacts to stream flows and achieve NEB generally fall under the categories of water offset projects and non-water offset projects. Water offset projects include water right acquisition projects and other projects that provide flow benefits. Non-water offset projects provide ecological benefits by enhancing aquatic systems to improve capacity to support viable populations of native species.

Water Offset Projects

Plans should include accurate calculations of water offsets so Ecology can effectively evaluate whether statutory requirements have been met. Using the best information available, plans should quantify the amount, location and timing of benefits for all of the water offset projects.

There are two major types of water offset projects: (1) water right acquisitions, and (2) other projects that provide flow benefits. Proposed water right acquisitions must be coordinated with Ecology to ensure that the water rights being considered provide actual stream flow benefits. Depending on the circumstances, other projects that may provide stream flow benefits include:

- Shallow aquifer recharge
- Floodplain restoration/levee removal
- Switching the source of withdrawal from surface to groundwater, or other beneficial source exchange
- Streamflow augmentation
- Off-channel storage

Some flow benefits such as those associated with surface water right acquisitions will be straightforward to analyze, because water rights include specific attributes (such as period of use, instantaneous and annual limits, and source location) and the benefits are immediate. However, calculating the benefits may be more complicated for other types of water offset projects. The plan will need to document the assumptions and methods used to calculate benefits. Some examples of projects that may require additional analysis include:

- Groundwater water right acquisitions where the benefit to streams may be delayed. For example, where the hydrogeology has led to a historic lag before pumping effects reached a stream and/or the effects of groundwater pumping were distributed over a large area (e.g. confined aquifers).
- Off-channel storage and shallow aquifer recharge projects where water will be captured and stored during one portion of the year, then released at other times.

- Floodplain restoration/levee removal projects where the benefits to flow will depend on conditions that vary from year to year. For these projects, estimates of water offset quantity should be provided over the entire water year for a range of average and low precipitation years.

Descriptions of water offset quantity, location, and timing are needed to accurately evaluate whether a water offset project can be considered a high priority project. Those water offset attributes can then be evaluated against available information or documented assumptions about the amount and location of the projected consumptive impact of new domestic permit-exempt water use within a subbasin.

Where highest priority projects are not feasible, ESSB 6091 authorizes plans to include lower priority projects—those that do not occur in the same subbasin or tributary (but are within the same WRIA) or only replace water during critical flow periods. To determine the viability of a lower priority water offset project, planning groups will need to determine critical flow periods. The critical flow period determinations should consider fish presence and distribution, and the historic hydrograph (synthesized hydrograph if necessary).

Non-water Offset Projects

Plans may include projects that protect or improve instream resources without replacing the consumptive quantity of water. Non-water offset projects must be in addition to water offset projects the planning group determines necessary to offset consumptive domestic permit exempt use impacts to instream flows associated with new domestic permit-exempt water use on a watershed-wide basis.

Non-water offset projects should focus on actions that improve the composition, structure, and function of aquatic systems. These projects should support the recovery of threatened or endangered salmonids and/or native species.

Examples of non-water offset projects that are eligible for funding under ESSB 6091 are listed in the *Interim Funding Guidelines for Streamflow Restoration Grants*. In addition, plans may recommend other actions that may or may not be eligible for funding under 6091 to protect instream resources or offset potential impacts to instream flows such as:

- Specific conservation requirements for new water users to be adopted by local or state permitting authorities.
- Requesting rulemaking to establish standards for water use quantities that are less than authorized under RCW 90.44.050, or more or less than authorized under ESSB 6091.
- Requesting rulemaking to modify fees established under ESSB 6091.
- Subbasin scale stormwater management strategies to protect or restore hydrologic processes.

Whenever complex mechanisms are at play and analyses require incorporating a series of assumptions, plans should thoroughly document the assumptions and methods used. This allows Ecology to accurately assess ecological benefit. Overall, evaluating the benefits of non-water projects should be based on objective criteria such as timing, location, and ecological value to instream resources.

Descriptions of All Water and Non-Water Offset Projects

To properly characterize benefits to instream resources, plans should list and describe each habitat project with the following information when available:

- Information on the proposed project that includes a narrative description and a quantitative and/or qualitative assessment of how the project will contribute to NEB.
- Maps and drawings of the proposal.
- Performance goals and measures (e.g. success rates, duration of expected benefits, desired future conditions, etc.).
- The species, life stages and specific ecosystem structure, composition, or function addressed by the project.
- The length of stream or river reaches affected and the relative importance of the affected reach as habitat for focal species.
- Whether the project addresses threats and limiting factors identified in the local salmon recovery plan or other recovery plans.
- Documentation of scientific sources, methods, and assumptions.

In addition, plans should address factors that inform the ecological effects of the consumptive impacts and project benefits and the likelihood of projects being implemented. For example:

- What is the estimated cost of completing planned projects? Is the plan financially viable? What other funding sources are available to support planned projects, and what additional funding is required?
- Are the projects in the plan achievable? Are there significant barriers to completion?
- How long will the positive impacts from planned projects extend as compared to the duration of the impacts being mitigated for?
- Will the plan include metrics and monitoring plans for evaluating plan success?
- Is maintenance needed to ensure lasting benefits? Is there a commitment to provide long-term maintenance?
- Are there contingency plans to address project uncertainties, including corrective actions that will be taken in the event projects fails to provide the proposed benefit in perpetuity?

Element 3

Explain how the planned projects are linked or coordinated with other existing plans and actions underway to address factors impacting instream resources.

Planning efforts under ESSB 6091 should be coordinated with other assessments and plans for water resource management and the protection and restoration of instream resources. Plans should also be consistent with existing land use regulations. Ecological benefits are greater when projects and plans build on previous efforts by leveraging resources and collaborating with partners.

Plans with projects based on improving watershed functions and historical impacts will ensure alignment between ongoing restoration efforts and maximize successful outcomes. This approach may also increase the likelihood of demonstrating NEB.

Element 4

Provide a narrative description and quantitative evaluation (to the extent practical) of the net ecological effect of the plan.

Ecology's expectation is that plans will provide a transparent, structured evaluation to be used in Ecology's NEB analysis to determine whether the requirement in ESSB 6091 has been met. If the planning group concludes that the planned projects recommended in the plan will achieve NEB, the plan should include a clear explanation and justification for that conclusion.

Plan components to be used in the NEB analysis:

- May be structured in the form of a ledger or matrix that describes all the impacts and offsets in detail and sums up the net ecological effect.
- Should describe the scale at which the plan is designed to achieve success (e.g., subbasin or WRIA).
- Should include a description of the projected impact to instream flows that will not be offset through replacement of water. To the extent possible, describe this projected flow impact in terms of ecological impact to instream resources.
- Should include a description of how the recommended projects and actions will offset the total projected new consumptive domestic permit-exempt water use over the subsequent 20 years throughout the watershed.
- Should address the feasibility of plan implementation. This includes what is known about funding available under ESSB 6091 and other funding sources. The plan should also prioritize projects for funding and clearly identify the group of projects and actions that must be funded to achieve NEB.

Ecology strongly recommends that the planning group attempt to reach consensus on NEB. In cases where full agreement or consensus is not reached, the different opinions and rationale from planning participants should be provided in the transmittal of the plan to Ecology.

Section 301 of ESSB 6091

Section 301 of ESSB 6091 establishes a joint legislative task force to (1) review the treatment of surface water and groundwater appropriations as they relate to instream flows and fish habitat, (2) develop and recommend a mitigation sequencing process and scoring system to address such appropriations, and (3) review the Washington Supreme Court decision in *Foster v. Department of Ecology*. This section also establishes five pilot projects, and authorizes Ecology to issue permit decisions in reliance upon water resource mitigation projects under a prescribed mitigation sequence. Proposals for each of the five pilot projects need to meet or exceed a NEB threshold, as described in Section 301(8)(C) that states:

> "Where avoidance and minimization are not reasonably attainable, compensating for impacts by providing net ecological benefits to fish and related aquatic resources in the water resource inventory area through in-kind or out-of-kind mitigation or a combination thereof, that improves the function and productivity of affected fish populations and related aquatic habitat. Out-of-kind mitigation may include instream or out-of-stream measures that improve or enhance existing water quality, riparian habitat, or other instream functions and values for which minimum instream flows or closures were established in that watershed."

Elements of NEB Analyses in Section 301 Pilot Project Proposals

First, Section 301 NEB evaluations will need to demonstrate that water offset projects were not reasonably attainable. Then, Section 301 pilot projects must provide a structured and transparent analysis for Ecology to use as the basis for making a NEB determination. This analysis should quantitatively compare the negative habitat and instream resource impacts of the proposed withdrawal project(s) or water resource management action to the benefits to be obtained from proposed mitigation. All consumptive use impacts to instream resources must be quantified. Proposals must quantify the amount, location and timing of all of the water being provided through water offset projects. Benefits from proposed mitigation projects must be described in detail and quantified to the maximum extent practicable.

The water permit application and NEB analysis should contain the following elements:

- Demonstrate that complete avoidance and minimization of impacts is not reasonably attainable with water offset projects.
- Structure the analysis in the form of a ledger or matrix that describes all the impacts and offsets in detail and sums up the net benefits in a quantitative or semi-quantitative manner.
- Describe any ecological impacts that are not offset through in-place and in-kind replacement of consumptive water use.
- Include an evaluation of impacts and offsets based on a detailed hydrological analysis, conceptual model, or numerical model.
- Document financial and other assurances that the mitigation will be fully implemented and remain in place for the full duration of the new water use (likely in perpetuity).

- Include monitoring and evaluation plans that describe or detail maintenance needed to ensure lasting benefits.
- Include contingency plans or corrective actions to be taken if goals and measures are not achieved.
- Include information that describes the level of support for the proposed mitigation pilot from tribal, state and local resource managers (which may be in the form of letters of support or agreement).
- Identify and document scientific sources and methods of analysis.

Conclusion

Ecology will determine that a plan or pilot project meets the ESSB 6091 Net Ecological Benefit (NEB) requirement if anticipated benefits to instream resources from actions designed to restore streamflow will offset or exceed the projected impacts to instream resources from new water use. NEB should be identified at appropriate basin or sub-basin scale based on as much existing local information as possible. Scientific rigor should be demonstrated. Quantitative analysis of impacts, water and non-water offsets, and NEB should be provided, with clearly identifiable methodology. If quantitative analysis is not possible, any qualitative analyses should be thoroughly explained in detail. Local consensus and support should be attained if possible, and transmitted to Ecology with plans and pilot project applications.

Applicability of this Interim Guidance

This document is intended to provide only interim guidance to assist groups planning under section 202 and 203 of ESSB 6091 with near-term completion deadlines, and pilot projects being completed under Section 301. Ecology will continue its work to produce final guidance for use early in 2019. The final guidance will provide a summary of available scientific resources and analytical tools, along with more detailed implementation guidance such as a comparison of data needs, outputs, and relative strengths and weaknesses of different available methods to evaluate NEB. Planning groups proceeding in the near-term may rely upon this Interim Guidance to complete and submit their plans for adoption. Water permit pilot project applications likewise may rely upon this Interim Guidance. Plans and pilot project applicants submitted later, after issuance of final guidance, should rely on that final guidance.