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Robbie O'Donnell, Large Scale TMDL Lead
Washington Dept. of Ecology
P.O. Box 47600
Olympia, WA 98504-7600

Sent via email to: rodo461@ecy.wa.gov

Re: Addressing heat pollution from dams and reservoirs in the Columbia and Lower Snake Rivers Temperature TMDL Implementation Plan.

Dear Mr. O'Donnell,

Thank you, and others on your team, for Ecology's work to develop the Columbia and Lower Snake Rivers Temperature TMDL Implementation Plan and incorporate input from the Advisory Committee and the public. Columbia Riverkeeper continues to believe that the Implementation Plan should, and will, serve as a critical roadmap for restoring the temperature regimes of the Columbia and Lower Snake rivers that are necessary for salmon survival and recovery. At this juncture, we have suggestions for how the Implementation Plan should address heat pollution from Columbia and Lower Snake river dams.

The TMDL definitively explains the impacts of the Columbia and Lower Snake river dams on temperatures, and we greatly appreciate Ecology and WDFW's unequivocal support for the TMDL's conclusions — despite persistent attempts by a few Advisory Committee members to re-litigate the TMDL. There is no question that the changes to the physical conditions of the river caused by the dams are the most significant driver of the failure to meet water quality standards, and that the water temperature regime created by the hydrosystem has an overwhelmingly negative impact on salmon. Table 6-9 on page 58 of the TMDL is a strong illustration of this. The "Allocation Exceedance" for dams at all locations on the Columbia River are 1.6 to 2.2 degrees C, and on the Snake River vary from 0.2 to 1.5 degrees C. No other source of heat pollution in the TMDL approaches this magnitude of exceedance.

Accordingly, a comprehensive suite of measures must be identified and optimized to address heat pollution from Columbia and Lower Snake river dams and reservoirs. The Implementation Plan would be incomplete without a comprehensive, holistic analysis of all of dam-related measures that could provide meaningfull temperature benefits, including variable withdrawal from upstream storage reservoirs, seasonal reservoir drawdown, and Lower Snake River dam removal.

Reservoir Drawdown

At as Ecology explained at the December 2025 Advisory Group meeting, reducing a reservoir's pool elevation, sometimes called "drawdown," is a potentially important tool for reducing heat pollution. Drawdown reduces both water transit time and, in some instances, meaningfully decreases the surface area of a reservoir, leading to decreased heating from solar radiation. The Columbia River System Operations Draft Environmental Impact Statement of February 2020 mentions drawdowns to minimum operating pool, primarily to speed the passage of out-migrating juvenile salmonids, but also to benefit temperature. Similarly, two recent Fish Passage Center memos document of the interaction between water transit time and temperature in the Lower Snake and Lower Columbia, as well as within the John Day reservoir.

The Implementation Plan should study and optimize the temperature impacts of multiple reservoir drawdown scenarios, especially during the summer and fall. Ecology should take the Implementation Plan as an opportunity to model how operating all, or a subset, of reservoirs at spillway crest and minimum operating pool (and potentially other reservoir heights) would impact temperatures and attainment of water quality standards. While operating at spillway crest would likely affect various other reservoir uses, **Columbia Riverkeeper believes that modeling all reservoirs at spillway crest throughout the summer and fall would serve as a helpful sensitivity analysis with regard to what temperature improvements could theoretically be achieved through drawdown.** Additionally, Columbia Riverkeeper suggests that the temperature impacts of reservoir drawdowns be analyzed and optimized in conjunction with other temperature-reduction measures, including those described below.

Dam Removal

The Implementation Plan should examine the potential for selective dam removal to help meet water quality standards and meet the total allocation of heat pollution to dams in the TMDL. The recent removal of four Klamath River dams has given us a real-life example of the temperature benefits of dam removal, and modeling by Columbia Riverkeeper (using the model that created the TMDL) showed that a free-flowing Lower Snake River would have remained cool enough for fish migration in the summer of 2015, when hot water resulted in extremely high mortality of adult sockeye salmon. Therefore, the Implementation Plan should investigate whether Lower Snake River dam removal — alone or in conjunction with other strategies — could result in meaningful progress toward the dams' load allocations in the Lower Snake River, and in the Columbia River downstream.

While the Implementation Plan cannot independently require Lower Snake River dam removal, we note that precedent exists for Ecology to address, and even recommend, dam breaching in a TMDL implementation plan. The *Budd Inlet Dissolved Oxygen TMDL Water Quality Improvement Report and Implementation Plan* includes several recommendations regarding removal of Capitol Lake Dam:

- Page 55: *"The modeling shows that when the dam is removed, WQS can be met as long as stakeholders take additional action to reduce pollution from other sources within the watershed. Ecology has not determined whether any draft lake design and management scenarios can meet water quality standards if the dam and Capitol Lake are redesigned but kept in place. Therefore, Ecology recommends the removal of Capitol Lake Dam as the single most important action to restore water quality in Budd Inlet."*
- Page 61: *"While this selection has not been finalized, DES identified the removal of the Capitol Lake Dam as its 'likely preferred alternative' in March 2022."*
- Page 91: *"The most significant action identified by Ecology with the highest impact on meeting water quality standards is the removal of the Capitol Lake Dam."*
- Page 93: *"The estuary alternative would restore Capitol Lake to its former estuarine condition and requires the removal of Capitol Lake Dam. It is to-date the only option identified by Ecology's modeling that is capable of meeting WQS, and is thus the management alternative supported by Ecology."*
- Page 92:

Table 40. Estimated costs by implementation sector.

Implementation Sector	Description	Estimated Cost ($M)
Long-term Management of Capitol Lake	This cost includes the initial removal of Capitol Lake Dam, as well as estimated maintenance and dredging costs for the next 30 years.	$179 – $336

Accordingly, there is both precedent and good reason for considering Lower Snake River dam removal as a potential temperature reduction strategy in this Implementation Plan.

Releasing Cold Water from Stratified Reservoirs

At the December 2025 Advisory Committee meeting, Ecology provided examples of selective water withdrawals from stratified storage reservoirs being used to reduce downstream water temperatures. Columbia Riverkeeper strongly supports exploring, in the Implementation Plan, how selective water withdrawals from Dworshak and Grand Coulee could help meet the TMDL's goals — likely in conjunction with other structural or operational changes to the hydrosystem.

With respect to Dworshak, the dam's existing structure allows for selective withdrawals of cold water. Over the last decade, the Army Corps has released cold water at various times with the stated goal of meeting temperature water quality standards at Lower Granite Dam (but not downstream) and improving migratory conditions for sockeye, steelhead, and fall Chinook in the Lower Snake. The Implementation Plan should determine the optimal use of Dworshak's existing water withdrawal infrastructure (and storage capacity) to help meet water quality standards and load allocations throughout summer and fall in the Lower Snake River and beyond. The Implementation Plan should also explore the potential impacts of optimizing Dworshak selective withdrawal in conjunction with reservoir drawdown or Lower Snake River dam removal.

Ecology should undertake as similar project with respect to Lake Roosevelt, even though Grand Coulee dam currently lacks selective withdrawal infrastructure. The Implementation Plan should include an evaluation of the benefits of selective withdrawal at Grand Coulee dam based on existing data, which could include:

- Historical temperature monitoring at Grand Coulee Dam and Lake Roosevelt
- Existing 2-dimensional modeling with CE-Qual-W2 of Lake Roosevelt.
- Any other existing studies of thermal stratification in Lake Roosevelt and potential selective withdrawal options.

The Implementation Plan should also piggy-back on data generated pursuant to the WQAP for Grand Coulee and use RBM-10 to examine the potential for variable withdrawal (and seasonal flow changes) at Grand Coulee to help meet TMDL load allocations throughout the Mid- and Lower Columbia. The Implementation Plan should also explore the potential impacts of optimizing selective withdrawal and flow changes from Grand Coulee <u>in conjunction with</u> reservoir drawdowns (including to spillway crest) at some or all downstream mainstem Columbia dams. For Lower Columbia dams, this exploration should be combined with the results of investigations into the impact of Dworshak selective withdrawal in conjunction with Lower Snake River dam removal or drawdown.

We recognize and respect that the measures that we are recommending for study could, if implemented, potentially impact a wide range of interests and communities. In particular, we note that increasing selective withdrawal from Dworshak to meet load allocations in the Lower Snake at certain times of the year could expend the available reserve of cold water before the end of the fall salmon and steelhead migration season. Similarly, selective withdrawal from Grand Coulee could potentially exacerbate water temperature and fisheries issues in Lake Roosevelt. Columbia Riverkeeper is not advocating for meeting water quality standards in one time and place though measures that lead to water quality violations elsewhere. In keeping with Ecology's policy and regulations, we strongly support Ecology first doing a comprehensive study to

optimize and describe what is *potentially* achievable (or not) for water temperature. That knowledge can inform future policy decisions to adopt, or reject, certain measures; but without a baseline understanding of what is possible, our region will likely perpetuate a status quo that violates the Clean Water Act and prevents the recovery of healthy and abundant salmon.

Meeting Water Quality Standards in Fish Ladders

While Columbia Riverkeeper commends and appreciates Ecology's focus on reducing *average* river temperatures, we note that the TMDL also expressly applies to water temperatures within fish passage facilities. The events of 2025 were a stark reminder that the Army Corps' fish passage facilities can result in water temperatures that are extremely harmful to salmon. Specifically, fall Chinook survival through the hydrosystem in 2025 was the worst in recent history, driven by high high overall water temperatures, and even higher temperatures in the fish ladders at John Day Dam. As a result, fall Chinook migration ground to a halt at John Day in August, and a significant portion of the run died because of hot water. Given the well-documented potential for fish passage facilities to exacerbate temperature problems and lead to migration blockages and fish kills, we hope that the Implementation Plan will include recommendations to address these localized violations of Washington's water quality standards and the TMDL. We understand that individual actions to address each dam's unique fish passage systems may be best addressed in the WQAP for that dam.

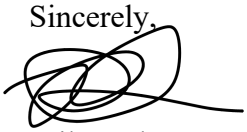
Relationship Between the Implementation Plan and WQAPs

We appreciate that Ecology is working to implement the TMDL and meet water quality standards by developing Water Quality Attainment Plans (WQAPs) for each dam while also writing the overarching TMDL Implementation Plan. Both tools are important, and given the severity and implications of temperature issues in the Columbia and Lower Snake rivers, we support these processes proceeding simultaneously and as quickly as possible. We also believe that the Implementation Plan presents a unique opportunity — not available at the WQAP-level — to explore wholistic solutions for meeting Washington's water quality standards and the TMDL's load allocations for the hydrosystem. **In short, achieving meaningful main-stem temperature reductions may only be possible by operating the *entire* hydrosystem in a coordinated (and potentially much different) manner. The Implementation Plan is the best place to identify and study the suite of system-wide changes necessary to provide temperature conditions that will allow adequate salmon migration.** If the Implementation Plan identifies changes or operations at a particular dam that are necessary to meet the overarching goals or strategy of the Implementation Plan — but are not currently part of that dam's WQAP — those measures could be added to that WQAP in the future if necessary to implement the TMDL and meet water quality standards elsewhere in the basin.

Conclusion

At the December 2025 Advisory Committee meeting, Ecology presented a variety of temperature improvement options. We strongly encourage Ecology to put all options on the table when developing the Implementation Plan — both the measures discussed at that meeting and what we have discussed above. A comprehensive and visionary Implementation Plan for addressing the hot water crisis in the Columbia and Lower Snake river is an essential part of recovering healthy and abundant salmon and other fisheries. Thank you for your dedication to implementing the Clean Water Act and working to restore clean, cool rivers that support healthy and abundant salmon.

Sincerely,



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