

*American Rivers* ♦ *Association of Northwest Steelheaders* ♦ *Columbia Riverkeeper*  
*Coastal Trollers Association* ♦ *Earthjustice* ♦ *Institute for Fisheries Resources*  
*The Lands Council* ♦ *National Wildlife Federation*  
*Natural Resources Defense Council* ♦ *Nimiipuu Protecting the Environment*  
*Northwest Guides and Anglers Association* ♦ *Northwest Sportfishing Industry Association*  
*Orca Conservancy* ♦ *Pacific Coast Federation of Fishermen's Association*  
*Pacific Rivers* ♦ *Save Our wild Salmon* ♦ *Sierra Club*  
*Washington Wildlife Federation* ♦ *Wild Steelhead Coalition*

September 24, 2019

Maia Bellon, Director  
Heather Bartlett, Water Quality Program Manager  
Washington State Department of Ecology  
P.O. Box 47600  
Olympia, WA 98504-7600

**RE: Draft Environmental Impact Statement (DEIS) dated July 2019, for Changes to Total Dissolved Gas Water Quality Standards and Other Matters**

Dear Director Bellon and Program Manager Bartlett:

**The 19 undersigned conservation, fishing and orca advocacy organizations and their many members offer these comments on the DEIS for changes to the water quality standards to allow Total Dissolved Gas (TDG) up to 125 percent based off a 12-hour average TDG in the tailrace of dams on the Columbia and Snake Rivers, on a permanent basis and under certain circumstances, in order to better support juvenile salmonid passage survival and to increase adult returns.**

**The TDG standard change Ecology is considering in the DEIS would replace the current TDG standard for dams on the lower Snake and Columbia Rivers with a tailrace TDG standard of 125 percent of saturation subject to biological limitations (e.g., triggers for gas bubble trauma or GBT) and monitoring. Under Ecology's proposed rule, which tracks Alternative 3 in the DEIS, this would be a permanent change in the water quality standards for TDG, not a limited, short-term modification such as the one Ecology adopted for the Spring of 2019 or the one considered in Alternative 4 of the DEIS.**

#### **SPECIFIC COMMENTS ON LANGUAGE OF PROPOSED RULE**

We strongly support permanent modification of Washington State's water quality standard to allow levels up to 125 percent TDG, using a 12-hour average TDG criterion, at any time that will aid juvenile dam passage survival. We support the language of the proposed rule (Alternative 3) with one critical exception – the language in the draft proposed rule which states:

*In addition to complying with the requirements of this chapter, the tailrace maximum TDG criteria applied at dams operated by the U.S. Army Corps of Engineers must be in accordance with legally valid Endangered Species Act consultation documents on Columbia River system operations, including operations for fish passage.*

This language requiring a “legally valid Endangered Species Act consultation” must be eliminated to avoid any unintended consequences in the future. This language is neither necessary nor appropriate in this water quality standard. It is unclear what Ecology hopes to accomplish by this reference to the Endangered Species Act since the federal agencies have an independent duty to comply with that law and Ecology can neither add to nor subtract from that responsibility by including a reference to the Endangered Species Act in its water quality standards. To the extent Ecology is concerned about compliance with the ESA, there are other ways to address that concern that do not pose the risk of unintended consequences posed by the above language.

## **GENERAL COMMENTS ON DEIS**

A number of organizations, including some of the organizations signing this letter, submitted to you a request for a change to the TDG standards on September 13, 2018. We believe that request continues to describe the legal and scientific basis for modification of the TDG standards at the lower Snake and lower Columbia river dams to allow voluntary spill to benefit salmon up to 125 percent TDG. We believe this TDG standard is biologically appropriate for both the spring and summer voluntary spill seasons, should be adopted as a permanent, year-around standard, measured on a 12-hour average, and could be safely implemented on a 24/7 basis during the juvenile salmon migration seasons without adverse effects, although the current proposed rule does not require spill to this level and would allow implementation of other more flexible spill regimes.

The proposed change in the water quality standards for TDG also is entirely consistent with the current *Interim Spill Agreement* and would allow dam operations during the spring juvenile salmon migration season that are contemplated by that agreement.

The DEIS proposes to base the TDG criteria on a 2-hour average, whereas all previous Flex Spill operations have been based off a 12-hour average. There is no technical rationale to support this. The change will diminish the predicted benefits that spill to 125 percent will have. To adequately evaluate the impacts of these adaptive management measures, it is critical that the TDG criterion calculation remains consistent with that of previous operations.

As explained in prior letters and comments, there is compelling evidence and a sound legal basis for Ecology to eliminate the current 115 percent forebay TDG limit for dam operations and replace the existing 120 percent tailrace TDG limit with a limit of 125 percent.

We believe that upon examination of the best currently available scientific information about the effects of TDG levels up to 125 percent in the dam tailraces in light of the other alternatives considered in the DEIS, you will continue to conclude that modification of the TDG standards to allow TDG up to 125 percent in the dam tailraces on a permanent basis beginning in 2020 is the best alternative to protect beneficial uses in the lower Snake and lower Columbia rivers and that such a standard poses minimal or no risks to any designated use. It also will not have significant adverse environmental impacts.

We do not believe Alternatives 1 and 2 in the DEIS meet this test and, while Alternative 4 may be consistent with the *Interim Spill Agreement*, it is both temporary and needlessly restrictive.

## SPECIFIC COMMENTS ON DEIS

We offer the following comments and observations in support of our view that Ecology should proceed to adopt the regulatory language it has proposed to implement Alternative 3 in the DEIS, measured on a 12-hour average, with the critical and necessary modification of that language discussed above. Without that modification, we do not support adoption of the proposed regulatory language and would only support Alternative 4 even though it would needlessly require further rulemaking on this issue.

First, as noted above, a modification of the TDG standards to allow levels up to 125 percent in the tailrace at each dam is consistent with the current *Interim Spill Agreement* and important to support alternatives for dam operations that the federal agencies are considering and may select in their on-going CRSO EIS process. The *Interim Spill Agreement* is based on elimination of Washington's 115 percent forebay TDG standard starting in 2019 and continuing through 2021, flexible spill to a 120 percent tailrace TDG standard in 2019, and flexible spill to a 125 percent TDG tailrace standard in 2020 and 2021 (or until the federal agencies complete new records of decision for dam operations). It is important to recognize that the *Agreement* does not purport to limit in any way Ecology's authority to consider and adopt a permanent change to water quality standards that would allow spill to a 125 percent tailrace TDG standard starting in 2020, nor would such a permanent modification conflict with the *Interim Spill Agreement*.

Second, the long-running Comparative Survival Study (CSS) provides a sound biological basis for setting a TDG standard of 125 percent of saturation during voluntary spill operations at the dams. Ecology's description of this extensive study and analysis in the DEIS (and the FEIS for the current short-term modification), however, understates the level of support the CSS analyses provide for a 125 percent tailrace TDG standard in potentially significant ways. First, while the CSS analyses focus on reducing "powerhouse encounters" through increased spill, the analyses omits at least two additional benefits of increased spill: (1) reduced predation of juvenile migrants in reservoirs due to shorter migration travel time and reduced holding time above dams; and, (2) reduced exposure to high water temperatures as a result of reduced water transit time, especially as the spring season progresses, in summer, and in lower water years in spring and summer. While the CSS analysis does not attempt to quantify these survival benefits, they do exist as the analyses recognize, and they may be significant. Second, in the past, Ecology has also suggested that the only benefit of increased spill addressed by CSS is a reduction in "delayed mortality." This is very likely not the only benefit of increased spill for downstream juvenile migrants. And this characterization of the CSS study is potentially confusing and unreasonably limiting given the long-standing discussion of the precise amount of "delayed mortality" that occurs.

Third, the CSS analyses are based on decades of empirical evidence about the effects of spill and TDG levels on juvenile spring migrants, including effects at TDG levels well above 125 percent (during, for example, frequent periods of involuntary spring spill). This empirical evidence includes results measured against well-established "action levels" for Gas Bubble Trauma (GBT). As the DEIS recognizes, e.g., at page 51, this empirical evidence on GBT indicates that spill to 125 percent TDG is safe for juvenile salmon. All of this evidence makes it clear that establishing a 125 percent TDG water quality standard would be both legally and biologically appropriate.

Fourth, there is extensive evidence of the effects of spill and the incidence of GBT at TDG levels well above 125 percent. This evidence comes from actual data collected during frequent periods of involuntary spring spill over many years. This evidence shows quite clearly that the incidence of GBT in juvenile salmonids is well below existing action levels (which are quite conservative) at spill that causes TDG up to 125 percent. Above 125 percent, the incidence of GBT increases somewhat in some circumstances but usually does not reach levels of concern until TDG is at or above 130 percent. This evidence confirms that a TDG standard of 125 percent at the dam tailraces would be appropriate.

Fifth, Ecology still does not acknowledge in the DEIS the difference between laboratory studies with extended exposures and no depth compensation and field studies and other empirical evidence about the effects of spill and TDG levels up to 125 percent on salmonids or other aquatic life. This may leave the potentially misleading impression that there is considerably more uncertainty about the benefits and risks of spill than the data warrants. For example, in the past, Ecology has described a number of laboratory studies reporting high incidences of GBT but failed to discuss how these conditions relate to conditions juvenile salmon are likely to experience in the Snake and Columbia rivers during periods of voluntary spill. Many of these studies involve continuous exposure to elevated levels of TDG for extended periods and provide limited opportunities for depth compensation. It is not clear that this kind of continuous exposure to TDG in laboratory conditions is likely to occur during actual voluntary spill operations.

Sixth, in the past, Ecology has also said that NOAA Fisheries' COMPASS model is "less optimistic about the benefits of additional spill" and attributes this to Ecology's understanding that the COMPASS model "does not factor in the same assumptions about delayed mortality as the CSS model." It is not immediately apparent that the CSS model makes any assumptions about delayed mortality. It is based on empirical data about juvenile downstream survival and associated smolt-to-adult return rates. Similar statements about the CSS model that may reflect a misunderstanding of it have appeared in other places in Ecology's past analyses and also should be checked and corrected as appropriate.

Seventh, in the DEIS (and in its prior EIS for a short-term modification of the TDG standards), Ecology described a number of what it apparently considers relevant areas of uncertainty regarding the effects of allowing voluntary spill at levels of to 125 percent TDG. As with most areas of scientific inquiry, there are always areas of uncertainty that can be identified. The issue is how relevant are these uncertainties to the decision at hand. Ecology's prior discussion of uncertainty does not address this and similar questions, or describe the extent to which the CSS analyses (and other available information) indicate that the existing areas of uncertainty are not actually material to a decision about whether to adopt a 125 percent tailrace TDG standard. For example, Ecology has stated that "further research may be necessary" to determine whether current levels of TDG are having an adverse impact on mainstem salmonid spawning but Ecology fails to identify where such spawning occurs and how and why a modification of tailrace TDG limits would affect TDG levels in these areas. As noted above, one of the most significant such areas is chum spawning below Bonneville Dam where mitigation for potential TDG impacts is already in place.

Eighth, Ecology says in the DEIS that eliminating the 115 percent forebay TDG standard and implementing a 120 percent TDG standard for 2019 on a flexible basis as proposed in the *Interim Spill Agreement* would lead to a miniscule reduction in power house encounters (and hence

presumably a miniscule improvement in survival) as compared to 2018 spill and TDG levels. At the same time Ecology reports that eliminating the forebay standard and allowing tailrace TDG up to 125 percent on a 24/7 basis would considerably reduce powerhouse encounters, a larger change that should lead to correspondingly larger survival improvements. The Fish Passage Center has recently released an analysis of the effects of spring spill in 2019 under the *Interim Spill Agreement* on downstream migrating juvenile and it indicates that the miniscule improvements in powerhouse encounters predicted for flexible spill to 120 percent did not materialize as expected. The reason for this appears to be related to the way the *Interim Spill Agreement* was implemented by the Corps in 2019. In any event, the fact that the predicted improvement for 2019 was minor provides even more urgency to adopt a modification of the TDG standards to allow TDG levels up to 125 percent in the dam tailraces, and correspondingly increased spill at each dam, to better protect downstream migrating juveniles.

## CONCLUSION

Voluntarily spilling water over the dams on the Snake and Columbia rivers during the juvenile migration seasons undeniably benefits salmon and steelhead. While spill can pose a risk to salmonids if TDG levels are too high, biological monitoring conducted over the last decade and more, as well as anecdotal evidence, demonstrates that tailrace TDG levels up to 125 percent do not negatively impact migrating salmonids, resident fish, or invertebrates. By contrast, the TDG levels currently allowed under Washington's water quality standards unnecessarily limit the benefits of spill for juvenile salmon and steelhead migrating downstream in the spring.

We thus urge Ecology to adopt a modification of its water quality standard for TDG as proposed in DEIS Alternative 3 to eliminate any forebay TDG limit and allow TDG levels up to 125 percent of saturation based off a 12-hour average TDG criterion in the tail race of each of the eight dams on the lower Snake and lower Columbia rivers beginning in 2020 provided, however, that Ecology also removes the language in its proposed rule regarding the ESA as discussed at the beginning of this comment letter.

Thank you for your consideration of these comments.

Sincerely,

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