Save Our Wild Salmon * American Rivers * Northwest Sportfishing Industry Association * Association of Northwest Steelheaders * Idaho Rivers United * Berkley Conservation Institute * Citizens For Progress * Pacific Coast Federation of Fishermen's Associations

June 19, 2009

Jerry Thielen
Rules Coordinator, Department of Ecology
PO Box 47600
Olympia, WA 98504-7600

RE: Petition to amend WAC 173-201A-200(1)(f)(ii)

Dear Mr. Thielen,

Pursuant to RCW 34.05.330, Save Our Wild Salmon and its undersigned coalition members (hereinafter collectively referred to as "petitioner" or "SOS") hereby petitions the Washington State Department of Ecology ("Ecology") to amend WAC 173-201A-200(1)(f)(ii), which Ecology promulgated pursuant to RCW 90.48.035.[1] This rule sets water quality standards ("WQSs") for total dissolved gas ("TDG") in Washington's fresh surface waters. Generally, the rule requires that TDG levels not exceed 110 percent of saturation at any point in the sample collection. However, the rule includes exemptions to facilitate fish passage through the federal dams on the Snake and Columbia Rivers:

> The following special fish passage exemptions for the Snake and Columbia rivers apply when spilling water at dams is necessary to aid fish passage:
> - TDG must not exceed an average of one hundred fifteen percent as measured in the forebays of the next downstream dams and must not exceed an average of one hundred twenty percent as measured in the tailraces of each dam (these averages are measured as an average of the twelve highest consecutive hourly readings in any one day, relative to atmospheric pressure); and
> - A maximum TDG one hour average of one hundred twenty-five percent must not be exceeded during spillage for fish passage.[2]

Petitioner agrees that an exemption to the 110 percent TDG limit is necessary to ensure safe salmonid passage on the Snake and Columbia Rivers; however, the

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[1] Save Our Wild Salmon previously filed a petition similar to this one in March 2007. That petition was later withdrawn so that SOS could enter into discussions with Ecology about TDG in the Columbia and Snake Rivers. As a result of those conversations and a decision from the Oregon Environmental Quality Commission in June 2007, Ecology convened an Adaptive Management Team ("AMT") as prescribed by the Lower Columbia River Total Dissolved Gas Total Maximum Daily Load ("TMDL"). Petitioner was a member of the AMT, which met approximately monthly from November 2007 through September 2008.

[2] WAC 173-201A-200(1)(f)(ii)

requirement that TDG not exceed 115 percent in the forebays is unduly restrictive, at odds with sound science, and contrary to federal and state law.

Under the Clean Water Act ("CWA"), states have the authority to adopt water quality standards. 33 U.S.C. § 1313. State water quality standards include three central elements: (1) designated uses, (2) water quality criteria, and (3) antidegradation rules. 40 C.F.R. § 131.6(a)-(d); 40 C.F.R. §§ 131.10-.13. Water quality standards must include criteria that will protect each designated use. 40 C.F.R. § 131.11(a)(1). These criteria may be expressed in numeric or narrative form. 40 C.F.R. § 131.11(b)(1), (2). Washington State has set the designated use for the Snake and Columbia Rivers to include "aquatic life uses," including salmonid habitat, spawning, rearing, and migration. WAC 173-201A-200(1)(a)(ii)-(iv).

I. Spill is a vital salmon and steelhead protection measure

For juvenile salmon and steelhead migrating in the Snake and Columbia Rivers, spill indisputably provides the safest passage through the Federal Columbia River Power System ("FCRPS") dams.[3] There is also substantial evidence that spill is the safest route of passage for adult salmon and steelhead through dams.[4] Allowing increased water over the spillways at these dams allows juvenile salmon to avoid traveling through the power turbines – a passage route that increases mortality of these fish by subjecting them to rapid pressure changes and direct impacts with turbine blades.[5] Increased spill also results in lower mortality than the practice of diverting fish from the turbine intakes and "bypassing" them through a series of screens, pipes, and tunnels to be ejected at the lower side of the dam, which is the only other method available to ensure that fish migrating in-river are not forced to pass through the turbines.

Recent experience underscores the beneficial effects of increased spill. Court injunctions have required the U.S. Army Corps of Engineers (Corps) to spill additional water at the FCRPS dams to aid downstream fish passage, which resulted in some of the highest in-river juvenile survival rates in years and allowed more juvenile salmon to migrate in the river under better conditions. These in-river survivals have translated into increased adult returns. For example, the 2008 adult return of sockeye salmon to the Columbia and Snake Rivers (fish that had out-migrated in 2006 and 2007) shattered recent records. According to an analysis of these increased adult returns by the Fish Passage Center (FPC), survival through the hydrosystem in the years these fish migrated to the ocean was better than any year since the late-1990s:

> [J]uvenile sockeye from the Mid-Columbia had a reach survival from Rock Island to John Day dam of approximately 0.88, which was the

[3] See NMFS 2000 Federal Columbia River Power System Biological Opinion (2000 BiOp) at 6-17.
[4] See CRITFC July 3, 2008 memorandum to the AMT, *Review of Adult Passage Through Different Dam Passage Routes.*
[5] 2000 BiOp at 9-83.

> highest survival among the years analyzed. Reach survival in 2007 was 0.56, the second highest among the years analyzed.[6]

Critically endangered Snake River sockeye salmon experienced similarly high reach survival:

> [J]uvenile sockeye from the Snake River had a reach survival from Lower Granite to John Day dam of approximately 0.86, which was the highest survival among the years analyzed. Reach survival for migration year 2007 was 0.62.[7]

These high reach survivals were due in large measure to good river conditions produced by adequate rivers flows and court-ordered spill levels.[8] FPC's conclusions were questioned by the National Marine Fisheries Service/NOAA Fisheries ("NOAA"), which conducted a separate review concluding that the high sockeye returns in 2008 were generally due to favorable ocean conditions. In response, FPC reviewed NOAA's analysis, carefully reexamined its own findings, and concluded that:

> There is no doubt that ocean conditions are important, but this does not reduce the importance of migration conditions and fish survival in-river . . . . The NOAA conclusion that attributes the 2008 high return of sockeye salmon to marine/estuary conditions while discounting the effect of higher in-river survival, lower proportion transported and improved in-river conditions, is flawed because it fails to recognize that fish must reach the ocean/estuary alive to benefit from good ocean conditions. Even the best ocean conditions will not resurrect dead fish.[9]

Indeed, NOAA has previously acknowledged that, along with removable spillway weirs, "[h]igher survival for in-river migrants in 2006 was likely the result of higher flows and greater volumes of water spilled."[10] NOAA had also concluded as long ago as 2000 that "measures that increase juvenile fish passage over FCRPS spillways are the highest priority" for passage improvements.[11]

In short, spill provides the best and safest route of passage for juvenile and adult salmon and steelhead by allowing them to avoid higher turbine and screen bypass mortalities, reducing passage delay, and dispersing predators. At the same time, spill can cause excessive TDG levels, which can be harmful to fish by causing gas

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[6] FPC Memo (July 14, 2008) at 1. A copy of this analysis is available from: http://www.fpc.org/documents/memos/109-08.pdf
[7] FPC Memo (July 14, 2008) at 2. The "years analyzed" in FPC's analysis were 1998-2007.
[8] Id. at 2.
[9] FPC Memo (Feb. 18, 2009) at 1. A copy of this analysis is available from: http://www.fpc.org/documents/memos/18-09.pdf
[10] NMFS, Northwest Fisheries Science Center, Preliminary Survival Estimates 2006 Spring Juvenile Migration at 1-4 (Aug. 30, 2006).
[11] 2000 BiOp at 9-82.

bubble trauma ("GBT"). State and federal laws require Ecology to set TDG limits that maximize salmon survival by balancing the benefits of spill with the risks of GBT. The 115 percent forebay TDG limit does not properly achieve this balance in light of the available evidence.

II. The 115 percent forebay TDG limit does not have a sound scientific basis.

A state's water quality criteria "must be based on sound scientific rationale . . . ." 40 C.F.R. § 131.11(a)(1). Similarly, the Washington Legislature requires Ecology to use "credible data" when it determines "whether any surface water of the state is supporting its designated use . . . ." RCW 90.48.580(2)(c). In order to be considered "credible" the data must be "representative of water quality conditions at the time the data was collected." RCW 90.48.585(1)(b). The 115 percent forebay limit violates the CWA and Washington law because it is not based on sound science.

The AMT looked in detail at the relationship between increased TDG levels due to spill and the incidence of gas bubble trauma in aquatic organisms. As Ecology notes in the January 2009 joint decision with the Oregon Department of Environmental Quality (ODEQ), the various reviews of the relationship of TDG to GBT show that the incidence of GBT in juvenile and adult chinook and steelhead, in resident fish, and in invertebrates is negligible when TDG levels meet the 120 percent tailrace criteria.[12] The percentage of fish afflicted with GBT does not exceed 1 percent until TDG levels surpass 120 percent, at which point it begins to increase substantially, especially as it approaches 125 percent and above.[13]

Accordingly, as was recognized by ODEQ in its January 2009 decision and its June 2009 formal modification of its TDG waiver, there is no scientific basis for limiting TDG in the forebays to 115 percent.[14]

III. Forebay monitors do not provide credible data necessary for monitoring compliance with water quality standards.

Moreover, it is well documented that forebay monitoring is unreliable. As described in the joint Ecology/ODEQ Evaluation from January 2009, there is a long history of concern about the validity of data from forebay monitoring, particularly the Camas-Washougal gauge. In its 2000 BiOp, NMFS acknowledged the concerns over the adequacy of forebay monitors because of their tendency to produce thermally-induced and seemingly non-representative spiking of TDG. For this reason, that BiOp included a reasonable and prudent alternative (RPA 132) directing federal

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[12] Washington Department of Ecology/Oregon Department of Environmental Quality, Adaptive Management Team Total Dissolved Gas in the Columbia and Snake Rivers: *Evaluation of the 115 Percent Total Dissolved Gas Forebay Requirement* (January 2009) at p. 53, citing analyses from the FPC GBT Monitoring Program, Ecology's *Evaluation of Total Dissolved Gas Criteria (TDG) Biological Effects Research*, NOAA Fisheries' *Washington and Oregon State – Adaptive Management Team Resident Fish Literature Review*, and the Don Weitkamp/Parametrix *Total Dissolved Gas Supersaturation Biological Effects, Review of Literature 1980-2007.*

[13] Ecology/ODEQ Evaluation at pp. 51-52.

[14] Id. at p. 61.

agencies to conduct a systematic review of the TDG monitoring stations in the forebays of all the mainstem Snake and Columbia River dams. Based on that review, the Corps concluded that routine spikes in daily water temperature were strongly associated with the daily spikes in TDG and subsequently relocated several of the forebay monitors to see if that would remedy the inaccuracies.[15]

The Fish Passage Center included an extensive review of the utility of forebay monitors in a 2006 memo evaluating spring spill in the FCRPS. As that memo relates in great detail, the Corps undertook a follow-up to its RPA 132 study to determine whether the relocation of the forebay monitors solved the problem. In the course of this study, it became clear that "forebay monitors do not accurately reflect the TDG of mixed waters and continue to be impacted by localized processes. Measures (relocation) taken under RPA 132 to assure that the forebay monitors were representative of mixed water at several of the projects did not achieve that objective."[16] FPC concluded in its 2006 evaluation that "[d]ownstream forebay monitors, as presently configured, are not indicative of the readings in a well-mixed water column due to the local influence of temperature, barometric pressure and biological processes."[17]

The Ecology/ODEQ joint evaluation also acknowledges that the Camas-Washougal gauge is particularly suspect and cites to 2001 and 2004 USGS studies of the efficacy of that gauge. The evaluation notes that those studies found that daily variations of TDG were "probably due to the production of oxygen by aquatic plants and to water-temperature variations on warm, sunny days."[18]

As years of implementation and study demonstrate, monitoring data produced by the forebay monitors is not the kind of "credible data" that Ecology may rely on when it determines "whether any surface water of the state is supporting its designated use" because it is not "representative of water quality conditions at the time the data was collected." See RCW 90.48.580(2)(c); RCW 90.48.585(1)(b). Under these circumstances, Ecology must eliminate the requirement for forebay TDG monitoring.

IV. The 115 percent forebay TDG limit does not protect the most sensitive designated use of the Snake and Columbia rivers: salmonid habitat.

States adopting WQSs are required to designate uses for state waters and ensure that their WQSs "protect the designated use." 40 C.F.R. § 131.11(a)(1). When there are multiple use designations, the WQSs "shall support the most sensitive use." Id. Ecology has designated four uses for Washington's fresh surface waters. WAC 173-201A-200. The first of these designated uses – "aquatic life uses" – includes providing salmonid habitat and facilitating salmonid spawning, rearing, and

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[15] BiOp Measure 132 Final Report, December, 2004: "Total Dissolved Gas Forebay Fixed Monitoring Station Review and Evaluation for Lower Snake River Projects and McNary Dam, 2003-2004," http://www.nwd-wc.usace.army.mil/tmt/wq/studies/rpa132_20041230.pdf
[16] Fish Passage Center, Spring Spill 2006 Memorandum (Sept. 29, 2006) at p. 9.
[17] Id. at pp. 1-2.
[18] Water-Resources Investigations Report 01-4273, page 11 and Figure 13 on page 12, http://or.water.usgs.gov/pubs_dir/WRIR01-4273/index.html

migration. WAC 173-201A-200(1)(a)(ii)-(iv). In addition, Ecology designated "recreational uses," "water supply uses," and "miscellaneous uses." WAC 173-201A-200(2)-(4). The miscellaneous freshwater uses "are wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics." WAC 173-201A-200(4). Power generation is not a designated use for Washington's fresh surface waters.

Despite the benefits of increased spill, it has been limited in recent years in the spring and summer months in the Snake and Columbia Rivers in order to comply with the 115 percent forebay dissolved gas standard. As noted in our prior petition, FPC conducted an extensive analysis of spring spill in 2006 for the eight FCRPS dams. That evaluation found that, primarily due to the Corps' actions to meet the forebay limits, spring spill was approximately 4.4 million acre feet ("MAF") less than would be expected under the Court's Order if TDG were not a constraint at all. Without the forebay gas caps and only the tailrace waiver at 120 percent, 4.1 MAF of this 4.4 MAF would have been spilled.[19] Thus the forebay gas caps play a dominant role in reducing spill for salmon survival.

The AMT's investigation of the matter went even farther, considering analyses by the Corps[20] and Bonneville Power Administration,[21] along with a new FPC examination.[22] The conclusions from those analyses varied pretty widely, as did the assumptions that went into the different analyses. However, all agreed that there would be additional spill in the system if the forebay monitoring requirement were removed, ranging from the 1 percent to 60 percent increase predicted by FPC to an overall increase of just an average of 1.3 percent according to BPA. And there was basic agreement across the analyses as well that Little Goose, Lower Monumental, and Bonneville dams would see the greatest increase in spill if the 115 percent requirement were removed.

Ecology's claims regarding the additional protections afforded aquatic life by the 115 percent forebay standard are simply not supported by the science. In the first place, as noted in Section III above, downstream forebay monitor readings are not accurately gauging the effects of upstream spill, but are instead reflecting local conditions such as temperature and wind. Thus, basing actions to protect the most sensitive use – aquatic life – on TDG measurements that do not actually represent the conditions in the river makes no sense.

Likewise, Ecology's statements regarding the effects of TDG on aquatic life near the water surface are unfounded. We know from screen bypass data and tests of fish approaching dams with and without surface bypass and spill that nearly all juvenile salmon approach the dam in the forebay from depths in excess of one meter. For example, in extensive surface collector tests at Bonneville Dam, all juvenile fish (15,800 targets) from 17 meters out to the face of the dam were located with sonar

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[19] Fish Passage Center, Spring Spill 2006 Memorandum (Sept. 29, 2006) at p. 2-3.
[20] U.S. Army Corps of Engineers, Northwest Division, Report On the SYSTDG Modeling for AMT With and without 115% TDG standard (July 7, 2008).
[21] Bonneville Power Administration, HYDSIM Use in Analysis of Removing 115% TDG Forebay Gauge Requirements, BPA Report to the Adaptive Management Team – May 2008
[22] Fish Passage Center, Spill Volume Changes with Use of Tailrace Monitors (January 2008).

equipment between 2.5 and 10 meters in depth.[23] At Lower Granite Dam, another study found that as fish approached the dam in the forebay, they tended to move to the center of the river at a deeper depth than upstream where they were found in shallower areas near shore. The study also noted that fish 100 feet upstream of the dam were found deeper in the water column in front of the spillbays than in front of the powerhouse. Furthermore, most of the fish in the forebay were in the 5-15 meter depth range and few if any were in the 0-1 meter depth range.[24]

Regarding duration of exposure to TDG, Ecology's statement that "most aquatic life spends more of their time in the forebays"[25] is not fully accurate. In fact, some evidence indicates that dams with spill reduce forebay residence time and fish density. For example, one study found that yearling chinook residence time in the McNary Dam forebay was only 0.6 hours with spill and 2.6 hours without spill.[26] Another study found that during 64% spill, the mean forebay residence time was 0.1 hour; under 30% spill, the mean residence time was 1 hour. In short, with spill, residence time was only "fractions of an hour."[27]

A study at The Dalles Dam noted that forebay residence time was correlated with spill volume: the greater the spill, the lower the residence time for juvenile steelhead. The authors summarized the importance of reduced fish residence time in the forebay:

- Delay in emigration disrupts life history synchrony
- Delay causes fish fatigue from searching and milling which can lead to stress, which will increase the predation risk due to reduced predator avoidance fitness
- Increased residence time may attract predators to areas of high prey density[28]

Thus, in light of the abundant evidence that GBT is unlikely to occur if TDG levels stay below 120 percent in the tailrace and that the 115 percent forebay standard affords no additional protection, the spill that is being foregone due to the 115

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[23] Johnson, R.L., R.A. Moursund and M.A. Simmons. Fish behavior in front of the prototype surface collector at Bonneville Dam, 1998. Project No. 2877. Prepared for Portland Division, Corps of Engineers, by Pacific Northwest Laboratory, Richland, WA.

[24] Adams, N.S., D.W. Rondorf , E.E. Kopfoot, M.J. Banach and M.A. Tuell. Migration characteristics of juvenile salmon and steelhead in the forebay of Lower Granite Dam relative to 1996 surface bypass collector tests. Project No. E 86930151 to Walla Walla District Corps of Engineers, by USGS and Nez Perce Tribe. Cook, WA, 1997.

[25] Washington Department of Ecology/Oregon Department of Environmental Quality, *Evaluation* at p. 60.

[26] Axel, G.A., E.E. Hockersmith, M.B. Eppard and B.P. Sandford. Passage and survival of hatchery yearling Chinook salmon at McNary Dam, 2003. Contract W68SBV92844866 to Walla Walla District Corps of Engineers, by Fish Ecology Division, Northwest Fisheries Science Center, NOAA Fisheries. Seattle, WA, 2004.

[27] Allen, M.B and eight co-authors. Movement, distribution, and behavior of radio-tagged yearling and subyearling salmon in the tailrace of The Dalles Dam, 1999. Report to Portland District, Corps of Engineers, by USGS, Cook WA, 1999.

[28] Ploskey, G., T. Poe, A.Giorgi and G. Johnson. Synthesis of hydroacoustic, radio telemetry and survival studies of juvenile salmon at The Dalles Dam (1982-2000). Contract with Portland District, Corps of Engineers and Pacific Northwest Laboratory, Portland, OR, and Richland, WA, 2001.

percent standard is actually impeding salmon and steelhead survival. For this reason, the 115 percent forebay standard is unlawful because it interferes with the most sensitive designated use of Washington's fresh surface water: habitat for salmonids. Furthermore, the 115 percent forebay TDG exemption is simply not based on sound science. Accordingly, Ecology should amend the exemption to its water quality standards to remove the 115 percent forebay gas cap.

V. Ecology should amend WAC 173-201A-200(1)(f)(ii) to remedy its violations of federal and state law.

Ecology should delete the requirement that TDG be monitored in the forebays. This amendment would not only allow for spill to maximize, to the extent possible, salmon and steelhead survival through the hydrosystem, but would also eliminate a monitoring approach that is well documented as being unreliable. Alternatively, Ecology should increase the forebay TDG limit to 120 percent.

Oregon's Department of Environmental Quality considered the same evidence as Ecology and came to the conclusion that "the removal of the forebay monitoring requirement will not cause excessive harm to the beneficial use, aquatic species in the Columbia River, during fish passage spill season."[29] Based on that conclusion, ODEQ has removed the requirement for the use of forebay monitors as of 2009.[30]

Ecology, on the other hand, did not dispute the science, but instead determined that the benefits to salmon from changing its water quality standards was outweighed by the complexity of the process for making that change in Washington State law.[31] Nothing in the Clean Water Act or Washington law suggests that administrative convenience is a sufficient rationale for retaining a water quality standard that is harmful to beneficial uses. In addition, notwithstanding its finding that 120 percent TDG level in the tailrace "does allow for additional spill that benefits salmon," Ecology declined to change its 115 percent forebay standard because it placed weight on its inaccurate belief that there is a risk of "detrimental effects on aquatic life near the surface when TDG" exceeds 115% in the forebays and "approaches 120%."[32] But Ecology has not pointed to any specific evidence it relied on to make this finding, how it weighed or combined this evidence with other evidence, or why it found this line of evidence more compelling than another.[33] Nor has it addressed the contrary evidence regarding near-surface use of water in the forebays by salmon

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[29] Washington Department of Ecology/Oregon Department of Environmental Quality, *Evaluation* at p. 61.

[30] Id. at 62 ("Based on these consultations and the findings and conclusions described in this document, the Department proposes to remove the requirement for the use of forebay monitors in 2009.") That proposal was adopted by the Oregon Environmental Quality Commission on June 18, 2009.

[31] Id. at 61 (reciting the requirements that may be triggered by a rule change, including state environmental policy act review and approval by EPA, and summarily concluding that "Ecology does not believe the overall benefits of additional spill versus additional risk of gas bubble trauma are clear and are sufficient for a rule revision.")

[32] Id. at 60.

[33] Indeed, Ecology offered only an unsupported assertion that the "evidence from available scientific studies *clearly* points" to the conclusion that TDG levels approaching 120% risk harm to aquatic life near the surface. Id. (emphasis added).

discussed above. Washington State's Administrative Procedure Act prohibits the agency from relying upon such unexplained statements.[34]

Ecology's failure to follow the science and change its standards will limit spill at the dams and further harm the designated beneficial use of salmon migration in these rivers. In addition, the spill limitations pursuant to the decision not to modify or eliminate the forebay standards will increase fish residence time, which will increase TDG exposure and may actually cause fish to occupy higher portions of the water column where they will be more affected by TDG.

Ecology's refusal to revise its standards also threatens to undermine ODEQ's more protective waiver that eliminates the forebay monitoring requirement. Unless and until Ecology changes Washington's standards, the Corps apparently will seek to abide by the lowest common denominator in Washington's standards, rather than the more protective standard contained in Oregon's waiver.[35] This will result in the undermining of Oregon's decision and continue to deprive these threatened and endangered fish of spill levels that would increase their survival, though there is no adequate basis for doing so.[36]

Ecology should therefore either abandon altogether the counterproductive requirement that TDG be monitored in the forebay or it should increase the forebay limit to 120 percent. Petitioner proposes the following amendments to WAC 173-201A-200(1)(f)(ii):

Preferred amendment proposal:

The TDG criteria may be adjusted to aid fish passage over hydroelectric dams when consistent with a department approved gas abatement plan. This plan must be accompanied by fisheries management and physical and biological monitoring plans. The elevated TDG levels are intended to allow increased fish passage without causing more harm to fish populations than caused by turbine fish passage. The following special fish passage exemptions for the Snake and Columbia rivers apply when spilling water at dams is necessary to aid fish passage:

- TDG must not exceed an average of ~~one hundred fifteen percent as measured in the forebays of the next downstream dams and must not exceed an average of~~ one hundred twenty percent as measured in the tailraces of each dam (these averages are measured as an average of the twelve highest consecutive hourly readings in any one day, relative to atmospheric pressure); and
- A maximum TDG one hour average of one hundred twenty-five percent must not be exceeded during spillage for fish passage.

Alternative amendment proposal:

The TDG criteria may be adjusted to aid fish passage over hydroelectric dams when consistent with a department approved gas abatement plan. This plan must be accompanied by fisheries management and physical and biological monitoring

[34] *See* RCW 34.05.570.
[35] *See* 2009 Summer Fish Operations Plan (May 14, 2009), attached as Exhibit A.
[36] *See Arkansas v. Oklahoma*, 503 U.S. 91, 105 (1992) (reviewing regulations that prohibit issuing pollution permits that "'cannot ensure compliance with the applicable water quality requirements of all affected States'").

plans. The elevated TDG levels are intended to allow increased fish passage without causing more harm to fish populations than caused by turbine fish passage. The following special fish passage exemptions for the Snake and Columbia rivers apply when spilling water at dams is necessary to aid fish passage:

- TDG must not exceed an average of one hundred ~~fifteen~~ *twenty* percent as measured in the forebays of the next downstream dams and must not exceed an average of one hundred twenty percent as measured in the tailraces of each dam (these averages are measured as an average of the twelve highest consecutive hourly readings in any one day, relative to atmospheric pressure); and
- A maximum TDG one hour average of one hundred twenty-five percent must not be exceeded during spillage for fish passage.

*The stricken text indicates suggested deletions from the current regulation. The italicized text indicates suggested additions to the current regulation.

Conclusion

It is well documented that voluntarily spilling water over the dams on the Snake and Columbia Rivers benefits salmonids. While spill can pose a risk to salmonids if TDG levels are too high, biological monitoring conducted over the last decade and more demonstrates the minimal negative impact to migrating salmonids, resident fish, and invertebrates when TDG levels are at 120 percent. On the other hand, setting TDG standards at levels below 120 percent unnecessarily and illegally limits the benefits of spill for these fish and degrades and diminishes a beneficial use of the Snake and Columbia Rivers. Therefore, it is counter to the science and the requirements of the CWA and Washington law for Ecology to limit forebay TDG in the Snake and Columbia Rivers to 115 percent.

For the above reasons, SOS hereby petitions Ecology to promptly amend WAC 173-201A-200(1)(f)(ii) by either deleting the forebay monitoring requirement or, at the very least, setting both forebay and tailrace TDG standards to 120 percent so that these revised standards can be adopted and in place before the 2010 juvenile salmon migration season begins. SOS would also request that this change be made on an emergency basis for 2010 if a complete rule amendment process cannot be completed before the commencement of the spring migration and spill season on or about April 10, 2010.

Sincerely,

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