Bonnie Blessing
To Dept of Ecology
re:Algae and lake plant permit comments
https://ecology.wa.gov/regulations-permits/permits-certifications/aquatic-pesticide-permits/aquatic-plant-algae-management

I support the general intent of your general proposal to: 1) revise monitoring requirements around dO and some types of treatment to reduce P, 2) clarifying treatment timing windows, 3) increased flexibility on aquatic herbicides 4) add lanthanum=based control of P, 5) update permit requirements to be more consistent with state and federal laws. I urge Ecology however to consider how a partial removal of aquatic vegetation could affect predation rartes on salmon juveniles moving through lakes (page 59 or 60 of (https://www.govlink.org/watersheds/8//pdf/WRIA8PredationSynthesisReport.pdf). I believe that Ecology does not review permits for waters of higher quality but some of those waters do have salmon that could be affected by the intensity of aquatic weed removal. Use of herbicide probably improves 'aesthetics' to some people, which is one water quality criteria. However, Since 'aesthetics' to some people mean NO aquatic plants what does 'no aquatic pants' mean for salmon and other water quality parameters?
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From permit:	Comment or suggestion
Permit condition S3.A.1. The application of pesticides must not cause or contribute to lower water quality standards,2 and S3.B. use of -410	Great. maybe details here on specific narrative and numberic water quality.
S3. D.1 and D.2, measures to avoid lower dO include removal of weeds and avoiding treatment when lake is warm etc.	This is important because we don't' want to lower dO in lakes that may be subject to HABs from low dO. Low dissolved oxygen may also be naturally occurring which does complicate issues. P is released from sediments when its low dO. Can you add in a link to the ecology page that shows where water quality is or is not a problem already (Water Quality atlas) Secondly, just applying herbicide when lake water temp is cool enough may not prevent a huge loss of dO later on. But see below on mudminnow.
S4.D implied there's no need to consult with WDFW if applying to a ditch.	spotted frogs occur in many ditches. So do Olympic mudminnow. A 2014 paper by Tabor and Waterstrat describes some use of ditches by mudminnow.
3. The cumulative percentage of the littoral zone where herbicides may be intentionally applied must not exceed the amount allowed below: a. In water bodies up to 15 acres in size, the Permittee may intentionally apply herbicides to no more than 75 percent of the littoral zone. b. In waterbodies over 15 acres and up to 50 acres in size, the Permittee may intentionally apply herbicides to no more than 60 percent of the littoral zone. c. In waterbodies over 50 acres and up to 500 acres in size, the Permittee may intentionally apply herbicides to no more than 50 percent of the littoral zone. d. In waterbodies over 500 acres in size, the Permittee may intentionally apply herbicides to no more than 30 percent of the littoralzone	This still seems like alot of shoreline to treat without having a risk of low dO from decomposition of plants. It also could change predation risk to salmon page 59 or 60 of (https://www.govlink.org/watersheds/8//pdf/WRIA8PredationSynthesisReport.pdf) Describe the literature that supports that we can reduce that much littoral vegetation without lowering dO or increasing predation risk. Since Ecology doesn't seem to do Tier 2 reviews of waters of higher quality and quite a few people think its in the public interest to have substantially lower weeds in a lake but doing so could influence salmonid predation risks, it seems like a good idea to do a Tier 2 review of predation risk. Especially since we do have some salmon left that migrate though lakes here and there.
S6. Monitoring of dO and temperature says the dO must be monitored on the top and the bottom	This is typically done during the day however dO lowers at night. Can you address this?
S6. b. adds requirements for testing 2 weeks, a month and quarterly	Thank you. This seems important to learn more about how aluminum sulfate influences water quality and if it

	is re-released. I hope Ecology can use the information gathered.
General Conditions G3.A.2. is important because it says that applicants should obtain a permit only after sharing all relevant facts.	Or can there be an office tasked with review of SEPA?
The definition of surface waters of the state are described on page 47.	A document entitled 'Proof of landowners unreasonable interference with surface waters' available at Westlaw, further defines surface water laws in this state.
Appendix C on page 50 describes fluoridone mgt plans and properly asks applicants to list animals and fish etc.	Listing animals and plants can be difficult for some. The WDFW PHS maps and info are sometimes masked to protect locations of sensitive animals. I encourage Ecology and WDFW to discuss how to solve and streamline this. And a chat with USFWS. Is there any way to communicate with WDFW about site specific plans where fluoridone may be proposed?
There is a list of herbicides approved on page 16 of the permit.	Some of those herbicides may be similar to the photosynthesis-inhibiting herbicides referred to by Lurling and Roessink, who describe how photosynthesis-inhibiting herbicides may promote cyanobacteria. To prevent cyanobacterial blooms, Could you all elaborate on the type of herbicides that promote cyanobacteria? https://pubmed.ncbi.nlm.nih.gov/16540149/. For instance diquat is approved but it is a photosynthesis inhibitor. The article above said that a photosynthesis inhibitor herbicide promotes growth of cyanobacteria.

Comments on fact sheet.

The factsheet is for 2021. (Page 1 of the Fact Sheet)	Please update for 2026
Ecology will ***NOT*** revise the original fact sheet after it publishes the notice. (page 1 of fact sheet)	It seems Ecology ***should*** revise the fact sheet to explain changes and the technical basis for the decisions. If a permit changes in its technical requirements it seems pertinent to revise the original fact sheet.
Formative events include some legal history.	It seems important to also discuss the PCHB ruling on the Benton County Mosquito District v. Ecology, which discussed or decided on Ecology's role in administering NPDES. I think the article below does not really address all the issues of the Benton Cty s. Ecology by the way. And, San Francisco v. EPA. https://perkinscoie.com/insights/update/washington-pollution-control-hearings-board-rules-ecology-exceeded-its-authority
Page 4 of fact sheet describes how dying plants deplete dO	Please add in text about how low dO may release P from sediments and exacerbate HABs. How many plants can we all kill before the dO plummets?
Page 5 describes how much algae is beneficial, may be a nuisance but not a public health risk	Great. This is important for people to understand!! Maybe compare how dO in Capital lake is ok because the river runs through it so Capital lake does not tend to have HABs because of that increase in dO from the flow-through (interesting). Also, So many lakes do

	host spores of all sorts of algae including HAB in the sediments.
Page 5 describes how cyanobacterial blooms can be toxic and phosphorus contributes to algae growth.	Great. But this could be improved by some text on how herbicides may create low dO and increase P levels in the water column, contributing to algal blooms.
Page 7 describes some legal cases.	Improve by updating with recent cases and explaining how the CWA case in San Francisco affects this permit. .
Page 11 describes when a Tier 2 analysis is done. I believe it implies that a Tier 2 analysis won't be done for high quality water bodies that are going to hae a lowering of water quality	It is alarming that a Tier 2 analysis is not done if water quality is going to e lowered in lakes with high water quality. This baffles me. What if those water bodies have listed species? It is unclear that it is in the public interest to degrade water quality that is high quality.
Page 12 says: 'Individual actions covered under a general permit do not need go through independent Tier 2 review. Ecology considers is important that the public have the opportunity to weigh in on whether individual actions are in the overriding public interest. The antidegradation rule establishes a refutable presumption that they do, but only through a public notice of intent to provide coverage and expected compliance with antidegradation does the general public have an opportunity to question individual actions.	Please rewrite this 'establish a refutable presumption' in plain talk. This is legalese that several PhDs did not really get..***I thought WA was used to use Plain Talk***. I run this statement by people and they don't know what it means. I so want to be wrong here. But i believe that 'No Tier 2 review' means there is no additional review of impacts to waters of higher quality from projects that are new or about to be permitted. Are you kidding? Who wrote this in? Has there ever been a real review of whether there has been compliance with maintaining water quality? Don't see see cyanobacterial blooms after herbicide use? Water quality includes a whole suite of things including narrative things like wildlife habitat. When herbicides are used on big canarygrass mats, the effective water depth on top of that gets shallower because the organic plant mass that created shallow conditions goes away People care about fish and wildlife and lake use and avoiding the extensive use of chemicals in lakes. Can there be increased outreach on the public notice of intents to provide coverage? Social media. No one uses newspapers.
Page 12 mentions non-numeric water quality effluent limits	I presume these are then narrative criteria. Primary contact recreation and Boating are only 2 of many uses of waters (WAC 173-201A-200(4). So is wildlife habitat (WAC 173-201A-200(4). So i Warm Water Species should then include Olympic mudminnow shouldn't it? they need plants in the water to breed and hide from predators.
reference to use of imazapyr is somewhere in this permit	use of imazapyr only temporarily controlled parrotfeather in a paper by Kuehne and olden in 2015, who also found mudminnow associated with groundwater of 13 to 15 Celsius rather than the mainstem temps of 20 C https://drive.google.com/drive/folders/1oKc5a0lmqfi0O2MGfJidEsHkhW4Ble_q

Page 12 mentions non=-numeric water quality effluent limits.	Can there be some language added to protect the dO and vegetation conditions needed by the Olympic mudminnow in Western Washington. Olympic mudminnow is a fish that occurs in the Chehalis Basin and a few other places in Western Washington This includes roadside ditches and often with standing water. It tends to occupy places that may have low dO and dense vegetation (see Adey[1] et al 2018 page 271). On page 273 of Adey it says that the mudminnow in Wisconsin are protected by dense vegetation. My understanding is that herbicide reduces dense vegetation. The fish secures its eggs onto aquatic vegetation in spring so ensuring that that vegetation recovers is important. In a lab reproductive activity started after water temp increased to 15 C and daylight was 16 hours (Hagen and Moodie 1972). In one study in Satsop area, mudminnow were full of eggs by end of February and young of the year were observed in early June (Schulz). So spawning was likely in spring. The fish Novumbra hubbsi occurs in ditches that can dry up. They are found in a wide array of water bodies 'choked with vegetation' because they breathe air sometimes so they can also live where other fishes do not including in small lakes that have Myriophullm etc. Oncorhyunchus kisutch, a salmon, co-occurred with Novumbra sometimes (Harris Thesis 1974 page 218. https://drive.google.com/drive/folders/1oKc5a0lmqfi0O2MGfJidEsHkhW4Ble_q

[1] https://drive.google.com/drive/folders/1oKc5a0lmqfi0O2MGfJidEsHkhW4Ble_q