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State of Washington Department of Ecology
Att: **Nathan Lubliner**
PO Box 47600
Olympia, Wa.
98504-7600

Re: written comments on Draft Fisheries Resource Management General Permit

I wish to thank the Washington Department of Ecology (DOE) for this opportunity to provide written comments on the proposed Draft Fisheries Resource Management General Permit. I would like to submit the following comments for your consideration in this process.

Page 3 S1 section B. Geographic Area

Page 3 S1 section B. Geographic Area Covered: An item restricting the use on reservoirs, which are used for irrigation, as water quality standards may differ with the recent adopted rules on irrigation water quality and food process. New SEPA may need to be completed for irrigation reservoirs. Any effects to the irrigation water quality from Lake Rehabilitation, Rotenone, inert Ingredients, and Bacteria needs to be addressed. As the current SEPA shows the effects can last a year or more, even treatment in the fall would have an effect on the next years irrigation water.

I also know of at lease one additional tribe in the state that I believe has banned the use of Rotenone on their waters. Item 3 needs to be researched and any other tribes added that do not allow rotenone in their waters.

Draft Fisheries Resource Management General Permit page 3, S1 permit Coverage C. Zooplankton Study.

I would like to thank the DOE for the requirements stated on page 3 S1 permit Coverage C. Zooplankton Study. The Zooplankton issues were first identified by Stephen L. Saunders DOE Water Quality Program in his comments on the 1992 Draft Programmatic Supplemental Environmental Impact Statement for Lake and Stream Rehabilitation letter dated August 7, 1992. The 2002 SEIS does not address impacts to zooplankton, macroinvertebrates, or other aquatic invertebrates even though Washington Department of Fish and Wildlife comments to this issue brought up August 7, 1992 was “*WDW will work closely with DOE to collect abundance and composition information of pyto- and zoo-planktonic communities in the waters which may be of special concerns as time and resources allow.*” So almost 23 years later it is finally a permit requirement and time and

resources will be committed to monitoring even though some of the waters may have been treated 1 to 4 times without baseline data.

Draft Fisheries Resource Management General Permit page 10 S6 Monitoring

Macrophyte composition and abundance should be added to the monitoring required. I feel that this section is in need of updating and should focus on the whole environment and not just the short term effects of Rotenone. Aquatic weeds have become much more of an issue than they were in 1992. They are problematic and wide spread and have an effect on the environment, water quality and public safety.

Stephen L. Saunders DOE Water Quality Program had several comments and concerns related to effects on Macrophytes in his letter dated August 7, 1992 on the 1992 Draft Programmatic Supplemental Environmental Impact Statement for Lake and Stream Rehabilitation letter dated August 7, 1992. The 1992 EIS was adopted into the 2015 Programmatic Lake and Stream Rehabilitation for environmental effects and his comments are still valid.

The following are issues identified by DOE (1992) and the response by WDFW;

DOE comment Labeled #4

“(pg. 9) Nutrient levels, particularly phosphorus, should be monitored and reported as part of the post-treatment procedures. The potential for a pulse of nutrients following a treatment to result in accelerated macrophyte growth or algal bloom, and particular blooms of the potentially toxic algae anabaena, makes this important information to resource managers.”

WDFW Response to #4

“WDW will work closely with DOE to measure phosphorus levels in waters which may be of special concern as time and resources allow.”

DOE comment Labeled #5

“(pg. 12) Having only one study, and that being in Texas, is inadequate for assessing impacts to water quality. This section does a good job of analyzing and discussing the scattered data, but points out the need for more detailed monitoring and comprehensive studies of rotenone’s impact on water quality.”

WDFW Response to #5

5). WDW agrees, and we will continue our search of the scientific literature for more studies on how water quality is affected by lake rehabilitations.

DOE comment Labeled #6

“(pg. 13-15) Only a passing reference is made regarding the impact that increased nutrients and enhanced clarity may have on macrophyte growth. If information exists, additional discussion would be helpful. If information does not exist, some monitoring of macrophyte composition and abundance would be necessary.”

WDFW Response to #6

“(6). WDW will work closely with DOE to measure macrophyte composition and abundance in waters which may be of special concern as time and resources allow.”

DOE comment Labeled #11

“(pg. 18) Given that the proposed treatment doses are generally higher than the toxic effects levels reported by Wollitz and Almquist, some discussion of the conflict between these studies and those referenced as showing no direct effects of rotenone on phytoplankton would seem warranted.

The Discussion on plants, particularly as relation to nutrients and algae, is very in-depth and well done. As previously mentioned, additional consideration of nutrient loading on macrophyte growth is warranted (pg. 24, #2 and 3), and the addition of information relating to depth and sediment type (if known) would be useful (pg. 28).”

WDFW Response to #11

“We understand your concern because of this conflicting information. We will work closely with DOE to conduct pre- and post-treatment surveys of macrophytes in waters of special concern as time and resources allow.”

DOE comment Labeled #15

“(pg. 77) The importance of access to bottom muds and the potential role of bottom vegetation in the survival of benthic fauna reinforces the need to include information on bottom substrate and aquatic macrophytes in the Pre-Rehabilitation Plan forms.”

WDFW Response to #15

“(15). WDW will work closely with DOE to conduct pre- and post-treatment surveys on macrophytes in waters of special concern as time and resources allow.”

As you can see from the above 5 issues brought up by the DOE the effects of lake rehabilitation on the aquatic vegetation was and should still be a concern. All of the above issues bring up the concern of changes in the aquatic vegetation. In my opinion it should be a bigger concern today with the aquatic invasive weed problems that we are experiencing across the state.

With many waters being treated on average every 7.74 years this could contribute to the rapid spread of aquatic weeds and the crowding out of the native vegetation.

At a public meeting in 2013 on the Spectacle Lake rehabilitation concerns about increased and spread of weeds on the lake was brought up. The response from WDFW was weeds were not their problem. During the 2015 SEAPA comment period I also brought up the possible negative effects of Lake Rehabilitation on weeds. The response I received back March 17, 2015 from Bruce Bolding Warmwater Fish program manager was quite disappointing. *“There is no documented research showing accelerated aquatic weed growth as a result of the presence of rotenone.”* Although his statement may be true in regards to the presence of rotenone he is avoiding the effects of the lake rehabilitation that were documented in the 1992 Supplemental Environmental Impact Statement Lake & Stream Rehabilitations and the documented concerns brought up by DOE. He also ignores the following in the FINAL PROGRAMMATIC ENVIRONMENTAL ASSESSMENT, WDFW Statewide Lake and Stream Rehabilitation Program, As funded by the USFWS Wildlife and Sportfish Restoration Program, September 30, 2008

Plants

Phytoplankton are not directly affected by rotenone and tend to increase initially because of the loss of the zooplankton feeding on them, but then become markedly reduced the following spring, or later in the season following a springtime treatment, when the zooplankton recover. Aquatic macrophytes are not affected directly by rotenone. When imbalanced fish populations have resulted in depressed zooplankton numbers, increased clarity of the water results post-habilitation, due to increases in zooplankton feeding on the phytoplankton. Improved water clarity increases the amount of sunlight penetrating the water, allowing macrophytes to flourish and spread (Hanson, et al., 2006).

Rotenone is short lived however the environmental affects after the Rotenone has dissipated are much greater. It appears that the WDFW is trying to distance its self from the aquatic weed problem and the role they may be playing with continued Lake Rehabilitation. Even in 1992 they put the quaiFYer on *“as time and resources allow”*. Although the WDFW does monitor phosphorus levels after the treatment it does not monitor the effects such as nutrient levels which may cause macrophytes to flourishing and increased algae bloom. They also do not monitor the phosphorus levels after the Rotenone has dissipated. It is time to monitor the long term environmental effect of the lake rehabilitation after the rotenone has dissipated.

Water tests taken before and after the weed treatment, by the U.S. Bureau of Reclamation and Whitestone Reclamation District, on Spectacle Lake tend to show that the lake does not turn over as fast as the WDFW claims. It appears that the dead fish sinking below the thermocline are available much longer then WDFW estimates and documented outside the state of Washington in the WDFW SEPA, increasing the time that nutrients are available for the plants and algae. The past treatments on Spectacle

every 5 to 10 years may have significantly contributed to the current weed problem that the irrigation district and home owners association are dealing with today. Had monitoring started back in 1992 when this issue was brought up, by the DOE, we would have a good idea what effects have occurred from Lake Rehabilitation on this reservoir. Without long term monitoring we have no idea how many other lakes in Washington State are not reacting like the out of state waters from the studies sited in the WDFW SEPA.

All the lakes covered by the permit have aquatic vegetation and most if not all will have invasive weeds. Aquatic weeds are a significant public safety concern as well as a problem for fish. The weeds are a danger to recreational users, decrease Rotenone effectiveness; out compete native vegetation and reduce the carrying capacity of the lake. It is time to make monitoring and surveying aquatic vegetation as part of the permit. We have gone to far down the road with no waters of “*special concern*” and no “*time and resources*”. Mitigation such as weed treatment should be added to the permit. A base line has to be established pre-treatment and long term (3 -5 years) monitoring of aquatic vegetation post treatment has to be incorporated in the permit or no “*time and resources*” will be comitted.

Stephen L. Saunders DOE Water Quality Program also brought up the following concern about the increase in snails after treatment:

DOE comment Labeled #16

(pg. 94) The potential for populations of aquatic snails to increase following rotenone application raises a concern for the potential increase in swimmer’s itch, caused by a parasite associated with snails. The number of serious cases of swimmer’s itch reported to Ecology, including reports of associated serious illnesses, have increased significantly this past year, raising our concern and that of other health and natural resource professionals regarding this affliction. Therefore, we may also consider rotenone treatments to be inappropriate for lakes which also support recreational swimming as a major beneficial use and, monitoring of snail populations in such lakes.”

WDFW Response to #16

16): WDW will work closely with DOE to conduct pre- and post- treatment surveys on snail populations in waters of special concerns as time and resources allow”

Many if not all the lakes covered by the permit have recreational use by swimmers, water skiers, and other. Realizing that Eastern Washington is less populated than Western Washington, if any cases of swimmer’s itch have been reported in the proposed lakes, snail populations should be required monitoring. Is this the reason that no Western Washington Lakes have been treated since 1998?

Also in 1996 the New Zealand mudsnails were found near the mouth of the Columbia River. New Zealand mudsnails pose both an ecological and an economic threat to

Washington State and are very small and hard to detect. Many of the Lakes that are proposed for Lake Rehabilitation are in close proximity to the Columbia River or its tributaries.

It is time to make monitoring and surveying snails as part of the permit. All waters covered by the permit should be of “*special concern*” and “*time and resources*” should be committed. This monitoring should be for at least 3 years or until the snail population returns to pre-treatment populations.

Stephen L. Saunders DOE Water Quality Program also brought up the following concern regarding algae blooms of toxic or noxious strains of algae after treatment:

DOE comment Labeled #13

“(pg. 47-50) As previously mentioned, concern exists regarding the potential for nutrient pulses to result in blooms of toxic or noxious strains of algae, primarily blue-green algae such as Anabaena. Blooms of specific toxic-producing strains of Anabaena have resulted in domestic animal deaths in American and Clear lakes in Pierce County, necessitating closures of these lakes to human use. Therefore, additional discussion of composition of the algal populations relative to green and blue-green algae, and the potential implications of the various species and strains, would seem warranted, particularly given that many of these species may bloom as a result of the nutrient pulse but not be affected by grazing (per table F). Ecology may require algal composition analysis as part of the pre- and post-treatment plans and reports.”

WDFW Response to #13

“WDFW shares DOE concerns. We will work closely with DOE to monitor algal composition in waters of special concern as time and resources allow.”

From my ocular observations increased algae bloom can last up to 3 years after treatment of the water although decreasing each year after. The algae has a secondary effect on reservoirs that are problematic in that the increased algae causes additional algaecide to be added to the outflow of irrigation water.

Many of these waters covered by this permit will average Lake Rehabilitation every 7.74 years. The long term effects of increased algae bloom for 12% to 40% over the past 23 years could have an effect on the aquatic ecosystems health and water quality. It is time that base line data is collected on waters that are treated.

All waters covered by this permit should be of “*special concern*” and “*time and resources*” should be committed. This monitoring should be until the algae returns to pre-treatment conditions and not just until the Rotenone has dissipated.

Water Quality

93% of the formulation of the Rotenone is Inert Ingredients. The NPDES permit should require monitoring of any inert ingredients listed on the MSDS. Especially those ingredients that possibly cause cancer, such as n---Methyl2---Pyrrolidone.

Additional water quality parameters should be added to the monitoring required after one year, including any parameters that register significantly higher at four weeks than other lakes tested in the region or above baseline. Requiring Baseline data before treatment would be preferred.

The criteria being used by ALS labs needs to be made clear when they make the statement “No abnormalities or nonconformance were observed during the analyses of the project samples”. This tells us little about the changes in water quality from the Lake Rehabilitation.

Water quality as it relates to reservoir treatments and agriculture in regards to the new adopted rules on irrigation water quality and food process. Rules on irrigation water have changed since 2008 and any effects to the irrigation water quality from Rotenone, inert Ingredients, and Bacteria need to be addressed as they relate to irrigation water and food production if reservoirs are not excluded. As this is a public safety concern long term monitoring should be required.

Conclusion

In conclusion, WDFW continues to rely and adopt old EIS documents in every SEPA since 1992 with the main update focus on human health impacts from rotenone with little or no monitoring. Continuing to rely on research most of it from out of state and not site specific, to updates to the environmental effects.

Lake Rehabilitation is not a true description of what the WDFW is doing. They really are changing the fish species composition from a multi- species to a single species trout lake. Most research shows that 20% aquatic vegetation is the sign of healthy aquatic ecosystems. True Lake Rehabilitation would include aquatic weed treatment that would decrease the danger to recreational users, improve native vegetation and increase the carrying capacity of the lake.

As an avid fisherman I have seen some of the environmental effects that a pulse of nutrients every 5 to 10 years has had on some of the local waters. There is a cumulative effect over time when you fertilize a body of water every 7.74 years on average and increased algae bloom. The cumulative effects are for a single body of water treated multiple times and not the same as the SEPA cumulative for eastern Washington treatments. Spectacle Lake is one example where the WDFW seems to have it on a schedule to treat every 5 to 10 years. The weeds had taken over so much that the owners around the lake had to form a homeowners association to raise money and treat weeds on the lake.

The monitoring required by the NPDES should not only focus on water quality but also take into account ecosystem impacts that affect water quality and public safety. The NPDES permit required monitoring should include collection of baseline data, adequate monitoring for all potentially impacted trophic levels in addition to water quality parameters, and follow up for at least three years to determine what the impacts to these aquatic ecosystems have been. The goal should be for healthy aquatic ecosystems which include water quality and public safety.

It does not seem fair that the DOE allows the WDFW to add nutrients to some waters in Eastern Washington on average every 7.74 years and not take any responsibility for the increase in aquatic weeds which compromise public safety and water quality.

Thank you again for the opportunity to comment. Please keep me informed of any activity related to this process. I am sorry that I will miss the workshop on July 8th.

Sincerely,

/s/ *Rick Lind*

Rick Lind