

Discussion Notes

Salmon Spawning Habitat Protection Rule Science Advisory Group (SAG)

1:15 – 4:15 p.m., Wednesday, February 3, 2021, online meeting

Introduction of Meeting participants¹ (Braley)

Ecology Watershed Management Section staff & their role

Susan Braley (Facilitator), Chad Brown (Unit Supervisor), Bryson Finch (Technical Rule Lead), Marla Koberstein (Moderator)

Public Advisory Group attendees & the organizations they represent²:

Jennifer Arthur (Seattle Public Utilities), Seth Book (Skokomish Tribe), Ashley Coble (NCASI), Joanna Crowe Curran (US Corps of Engineers), Chris Frissell (Salish Kootenai College), Lindsay Guzzo (EPA), Tim Hagan (Pierce County), Kirk Krueger (WDFW), Brian Mattax (WSP/Consultant), Rainy Rau (City of Vancouver)

Ecology Advisory Group attendees & the region/program they represent:

Jordan Bauer (ERO/Hydropower), Patrick Lizon (Nonpoint Source Pollution), Glenn Merritt (EAP Watershed Health Monitoring), Cleo Neculae (NWRO/TMDL), Cole Provence (CRO/TMDL), Leanne Weiss (SWRO/TMDL), Angela Zeigenfuse (Water Quality Permits)

Preliminary decisions on dissolved oxygen criteria (Finch)

- All salmonid spawning and incubation uses for DO would increase from a range of 8.0-9.5 mg/L to 10 mg/L across the board. Additionally there would be an oxygen saturation contingency if DO concentration does not meet 10 mg/L.
- This recommendation suggests ultimate protection while balancing feasibility and implementation.

Justifications for dissolved oxygen criteria preliminary decisions (Finch)

- The proposed DO criteria protects eggs halfway between max (11 mg/L) and high (9mg/L) protection levels according to EPA.
- The main point here is to what extent DO depression is observed in the gravels. It's been studied a 1-3 mg/L difference is typically observed in the gravels, 3 mg/L being worst case scenario.

¹ See [EZView page](#) for full bios of Advisory Group members.

² A list of acronyms is on page 5

- Ecology's preliminary decision is assuming a 2 mg/L DO depression in the spawning gravels.
- DO depression in the gravels is influenced by many factors and WA has other criteria to regulate those influential pieces.
- Literature is supportive of 2 mg/L DO depression; a member expressed concerns about the number of studies supporting this finding and their quality/relevance. Member wants to ensure decisions are decided on sound study designs.
- Having the 5-10% DO saturation buffer provides natural variability within the streams for temperature, elevations, AND instrument error (+- 0.2 mg/L DO)
- EPA does not have an oxygen saturation recommendation but has been approved for several states

Questions or comments on dissolved oxygen criteria (Finch)

- How will 95% saturations be governed? It's likely to be instantaneous measurement during the warmest part of the day when productivity is at its' peak while also considering atmospheric pressure.
- A member noted that it is important to have the justification as a narrative record to back up decisions for future public reference.
 - Ecology staff noted that a technical support document will be completed for all decisions made in the rulemaking process.
- Why was 2 mg/L chosen? Is it a median value? What percentage of values will be recorded under 2 mg/L depression?
 - More research needs to be done and comparisons made between field and lab studies.
- Concerns were expressed with using fine sediment (and other variables) as a basis for having a lower DO depression than what would be fully protected at 3 mg/L.
- Multiple members expressed support for 10 mg/L as it demonstrates the protection to interstitial gravel DO and provides a reasonable buffer for environmental and instrumental influences.
 - Some members were thinking the preliminary proposed criteria would be much higher.
- One member had concerns with not having a seasonal element to the DO criteria.
 - Having the 95% DO saturation criteria would be used for summer time conditions to help buffer the seasonal element.

- While it was acknowledged that there are temperature supplemental spawning criteria by stream, Ecology staff noted that having DO implemented in the same way would be difficult to justify and quantify.
- It was pointed out that while it would be difficult to demonstrate 'no spawning' is occurring, it would still be beneficial to have rule language stating when 'no spawning' conditions occur that a less stringent criteria could apply.
- A member asked what a one-day minimum for the DO criteria would look like and the timing for it. The primary concern is with being able to meet criteria over a 24-hour day.
- It was suggested that Ecology develop a chart showing how the DO concentration fluctuates with DO saturation percent at certain atmospheric conditions and temperatures in the rulemaking document.

Preliminary decisions on fine sediment criteria structure (Finch)

- Ecology would adopt a new narrative criteria that specifically addresses fine sediment.
- Criteria could include the following parameters for consideration in developing fine sediment narrative criteria:
 - Anthropogenic influence must be documented.
 - Require water column measures (suspended sediments), and turbidity.
 - Require streambed measures (bedded sediments), such as percent substrate, embeddedness, and relative bed stability (all three parameters are already included in Ecology's stream monitoring program).
 - Chemical measures would be optional: i.e. intragravel dissolved oxygen depression.
 - Biological surveys would be optional: i.e. macroinvertebrate sampling using appropriate indices.

Using a weight of evidence approach for a fine sediment impairment listing (Finch)

- A weight of evidence approach could be established for measured parameters (for example, those having $\geq 75\%$ impairment indication) to justify fine sediment impairment listings.
- It was suggested that Ecology use existing data from across the state to draw correlations with the data available and whittle down the parameter list to which ones make the most sense.

- Ecology's Water Quality Assessment program will help identify parameters useful for assessing stream conditions.

Questions or comments on the fine sediment criteria (Finch)

- How do we implement a weighted evidence approach to measure and quantify improvements to ultimately reach a delisting goal for a fine sediment impairment?
- Several questioned the lack of information available to decide a weighted evidence approach and the ties between listing for impairment and anthropogenic influences. Overall, the rule is rudimentary and needs work.
- Why was turbidity chosen and not TSS or SSC?
 - Any one parameter has its benefits and challenges but turbidity was chosen based on its background and current reference data.
- A suggestion was made to include multiple water column measures such as SSC AND Turbidity.
- Can we ultimately understand the depositional aspect of turbidity?
 - A concern was expressed with establishing reference sites that make sense for a certain geographical region.
- It was suggested that TSS could be used, due to its widespread monitoring and MS4 use in various permitting and implementation programs.
- One member noted that it is important to establish language for a fine sediment size threshold and language on how to apply it to permits and implementation plans.
- Members have concern with how anthropogenic versus natural fine sediment influences will be distinguished and determined, since nearly every watershed has been impacted by humans in some way.
- A reaffirming point was made that the fine sediment criteria is being decided based on aquatic life use and not through a combination of uses.
- Members agreed that careful considerations must be made when deciding on parameters to evaluate fine sediment in streams.
- The primary takeaway here is that a narrative criteria is likely, but difficulties and unknowns still exist with identifying the appropriate thresholds for the parameters that best demonstrate fine sediment impairment.

Ecology contacts

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More information

Meeting materials are stored on our [Salmon Spawning SAG EZ View page](#)

Follow the progress of this rule on Ecology's [Salmon spawning Habitat Protection Rulemaking](#) webpage

Get updates on this rulemaking by joining our [WQ Information listserv](#)

Acronyms

CR – Code Reviser

CRO – Central Regional Office

DO – Dissolved Oxygen

EAP – Environmental Assessment Program

EPA – Environmental Protection Agency

ERO – Eastern Regional Office

IGDO – Intragravel Dissolved Oxygen

NWRO – Northwest Regional Office

TMDL – Total Maximum Daily Load

TSS – Total Suspended Solids

SWRO – Southwest Regional Office

WDFW – Washington Department of Fish and Wildlife