

Attachment H

A Description of the Information and Methods Used to Delineate the Proposed Beneficial Fish Use Designations for Oregon's Water Quality Standards

I. Background

DEQ worked together with an interagency team to delineate fish use designations for the waters of the State of Oregon and to develop maps and tables showing the applicable fish uses for each basin. Beneficial use designations are part of Oregon's Water Quality Standards, as required by the federal Clean Water Act, and the fish use designations shown on the maps and tables are proposed to be adopted into the Oregon Administrative Rules by reference. The agencies that participated in this effort include the US Environmental Protection Agency, the US Fish and Wildlife Service, NOAA Fisheries and the Oregon Department of Fish and Wildlife. The proposed fish use designation maps and tables may be viewed on the DEQ web site at <http://www.deq.state.or.us/wq/standards/WQStdTemp.htm> or at any DEQ office.

Most of Oregon's basins have 2 maps to represent fish uses, one for uses that occur throughout the year, including the warmest period (July and August), and a second for salmon and steelhead spawning use (spawning through fry emergence). Water quality criteria apply for the uses shown on the "Fish Use Designation" maps year round except when a more stringent spawning criterion applies. The spawning criteria apply to the reaches and date ranges shown on the "Salmon & Steelhead Spawning Use Designation" maps. In many cases, more than one fish use occurs in the same water body. In this case, the use designation is based on the most sensitive species or life stage. The criteria applied to the most sensitive use will also protect the less sensitive uses present.

II. Information Sources

DEQ primarily relied on the Oregon Department of Fish and Wildlife (ODFW) for information on fish distribution and life stage timing. This information can be viewed on the internet at <http://osu.orst.edu/dept/nrimp/information/fishdistdata.htm>. The ODFW methodology for developing their database is described in the "1:24K Fish Habitat Distribution Development Project Procedures Manual" (Oregon Department of Fish and Wildlife, February 26, 2002). The database is the product of a multi-year effort by ODFW to develop consistent and comprehensive fish distribution data for a number of salmonid species. This database has recently been completed for all basins or sub-basins in Oregon that have anadromous fish. The distribution data represent known fish use based on documented observations, as well as the best professional judgment of local field biologists' as to where use is likely to occur based on suitable habitat (i.e., waters near areas of documented life stage presence on the same water body that have similar habitat features, such as flow volume, gradient, gravel size, and pool frequency, and no known obstructions or reasons why the use would not also be present in these waters). ODFW compiled and reviewed fish distribution information from a variety of sources, including

state and federal fisheries agencies, federal land management agencies, tribal entities, watershed councils and other interested public or private organizations. The ODFW fish distribution data reflect areas of fish use based on information collected over the past five life cycles for a particular species, which ranges from 15 to 35 years. In addition to spatial fish distribution data that describe where a life stage use is known or likely to occur, the ODFW database also includes information describing when a life stage use is known or likely to occur.

DEQ believes the ODFW database is scientifically sound and, together with the additional sources identified below, represents the best information readily available. The use of both data and professional judgment is appropriate because of the practical limitations of monitoring every stream mile, and because fish distributions vary from year to year for any given water body. Salmonid use designations should be based on fish presence studies over multiple years or best professional judgment about the interannual variability.

DEQ also relied upon the following sources of information to identify the proposed salmonid designated uses:

1. *Bull Trout Habitat Designation Report: Technical Work Group Recommendations* (DEQ, July 2003),
2. USFWS proposed critical habitat for bull trout spawning and juvenile rearing (67 FR 71236, November 29, 2002),
3. Personal communication with USFWS (Elizabeth Materna, October, 2003) on timing of Feeding, Migration and Over wintering (FMO) use in the upper N. Fork Sprague River,
4. Salmon Anchor Habitat Strategy for the Tillamook and Clatsop State Forests, (Ecotrust, 2002),
5. Ecotrust Salmon Anchor Habitat in the Siuslaw River sub-basin, and
6. Temperature data (ODEQ database, 2003).

A DEQ Technical Workgroup on Bull Trout was assembled specifically for the purpose of identifying current and potential bull trout habitat needed to allow survival and recovery of current populations of Bull trout in Oregon. This workgroup met for over one year and included bull trout experts from various agencies and organizations around the state. They identified current and potential year round bull trout use and current and potential bull trout migration. The workgroup also provided some estimates of migration timing.

III. Beneficial Use Designations for Fish Use (Uses that occur throughout the summer)

The following is a summary of the methods used to delineate the proposed fish use designations based on the information sources described above. This methodology was agreed upon by DEQ, EPA, US Fish and Wildlife Service and NOAA fisheries.

Bull Trout Juvenile Rearing and Spawning

The Bull trout juvenile rearing and spawning use was designated based on DEQ's *Bull Trout Habitat Designation Report: Technical Work Group Recommendations* (2003) and USFWS' proposed critical habitat for bull trout juvenile rearing and spawning. DEQ believes it is necessary and appropriate to designate areas identified as potential bull trout rearing and spawning habitat (identified in both of the above reports) in addition to where current use occurs because bull trout habitat in the State has been greatly reduced and fragmented, and because Bull trout are listed under the federal Endangered Species Act (ESA). The additional habitat will allow local populations to grow to the point they: (1) are reconnected with other local populations and with foraging habitats, (2) are large enough to withstand losses due to natural stresses and events (e.g., drought); and (3) maintain the genetic diversity to support a viable population.

DEQ proposed to designate bull trout rearing and spawning use for: (a) waters classified in DEQ's report as known bull trout spawning and juvenile rearing habitat (BTHD1) or potential bull trout spawning and juvenile rearing habitat necessary for long-term health and viability of bull trout populations (BTHD3), (b) any additional waters identified by the USFWS as proposed bull trout spawning and rearing critical habitat, and (c) waters upstream of these habitats that support the bull trout use by providing cold water to the areas where bull trout use occurs. Because USFWS' critical habitat designations are currently proposed and undergoing public review, DEQ may revise the Bull trout use designations in the future to be consistent with the final critical habitat designations.

Core Cold-Water Habitat

Core cold-water habitat designations identify and ensure the protection of colder water habitats that provide more optimal conditions for salmon and steelhead juvenile rearing and that protect summer bull trout sub-adult and adult foraging and migration. In addition, these areas would provide colder holding waters for pre-spawning adults.

The following indicators were used to identify where these colder water habitats occur or are likely to occur:

1. Waters where spring Chinook spawn during the late summer months (August 1 through September 15).
2. Waters having sub-adult and adult bull trout use where available timing data indicate that use occurs during July or August. The timing data used is primarily from ODFW. Where ODFW timing data was not available, DEQ used timing information provided by the DEQ Bull Trout Workgroup or personal communications with USFWS biologist if it was available.
3. Waters identified as "salmon anchor habitat" in Ecotrust (2000) and Dewberry (2003). These studies collected data on juvenile rearing density and identified areas of high production for Coho (salmon), steelhead (trout), and Chinook (salmon). DEQ designated stream segments as core cold-water habitat in the North Coast Basin (an upper portion of the Necanicum River, Ecola Creek and Plympton Creek) and Mid-Coast Basin (Siuslaw

River) based on this data.

4. Waters upstream of the areas identified in 1-3 above that also support salmon & steelhead rearing or provide cold water to these areas.
5. Waters where water temperature data that meets DEQ's data quality requirements indicate that current 7-day average maximum stream temperature for the warmest week of the year stays below 16°C.

If additional scientifically credible data becomes available in the future, DEQ may designate additional reaches as core cold-water habitat. This will require a rulemaking process to revise the beneficial use designations and an opportunity for public comment.

DEQ believes that sufficient cold-water habitat will be available to protect listed salmonid species due to the proposed designations of core cold-water habitat and due to the fact that additional colder water reaches (waters that stay 16°C or less) will be available in each sub-basin (4th field HUC) in order to meet the 18° criteria throughout the extent of the waters designated for salmon and trout rearing use. In order to attain 18°C in the lower portions of sub-basins, most upstream waters must be colder than 18°C. Thus, the salmon and trout juvenile rearing and migration summer maximum criterion will, in effect, protect additional core cold-water habitats upstream.

Salmon and Trout Juvenile Rearing and Migration

DEQ proposes to designate "Salmon and Trout Rearing and Migration Use" for waters where:

1. salmon or steelhead rearing occurs in July or August;
2. rainbow or coastal cutthroat trout rearing occurs; and
3. all waters upstream of the waters identified above.

The data and information supporting these determinations is contained in the ODFW database on the distribution and life stage timing of salmonid fishes described under the information sources section above. This use designation is also intended to protect for upstream migration of adult salmon and steelhead.

Salmon and Steelhead Migration Corridors

DEQ proposes to designate waters as "salmon and trout migration corridors" where ODFW distribution and timing information indicates there is migration use but no rearing use in July or August or information suggests a lower mainstem river is primarily a migration corridor during the period of summer maximum temperatures, and there is some evidence to suggest that temperatures would naturally reach 20°C/68°F. At this time DEQ is proposing migration corridor designation for the following reaches:

1. the lower Willamette River (from the mouth to river mile 50),
2. the lower John Day River (from the mouth to the confluence with the North Fork John Day River),
3. the Columbia River mainstem from the mouth to the Washington-Oregon border,
4. the Snake River from the Washington-Oregon border to Hells Canyon Dam, and
5. three small reaches of the lower Coos and Coquille Rivers.

Lahontan Cutthroat and Redband Trout Use

These two trout species are found in Eastern Oregon. ODFW has not updated their distribution database in this part of the State or collected life stage timing data for interior basins that do not have anadromous fish, so DEQ had to rely on other sources of information. Lahontan Cutthroat trout are limited to the Upper Quinn and Alvord Lakes basins in southeastern Oregon (USFWS, 1995; Dunham, 1999).

Redband trout occur throughout much of eastern Oregon (Behnke, 1992). Recent research done on the performance of redband trout done in the interior basins have shown they do quite well at somewhat warmer temperature than salmon and steelhead (Gamperl & Rodnick, 2003). The redband trout use designation is reserved at this time for basins that do not have steelhead because both redband trout and steelhead are subspecies of the species *O. mykiss*. In basins with steelhead, it is more difficult to determine with certainty which species are present. Also, because these fish can interbreed and because the research done on the performance of redband at warmer temperature was done in the interior basins, it is unknown whether redband in basins with steelhead have developed the same warmer water adaptations. Therefore, at present redband trout use designation is reserved for the native resident *O. mykiss* in the Goose and Summer Lakes, Malheur Lake, Malheur River, Powder, Burnt, Owyhee and Klamath basins. For more information see the DEQ report on Temperature Technical Advisory Committee (EQC Staff Report attachment C2, 2003).

In addition, redband trout use is designated for some tributaries to the lower Umatilla River and Middle Columbia River/Lake Wallula that do not have anadromous fish use according to ODFW's distribution data. These streams include: Willow Creek and its tributaries, several tributaries to the middle Columbia/Lake Wallula and Butter Creek, a tributary of the lower Umatilla River, as shown on the Umatilla Basin fish use designation map (Figure 310A). These streams were shown as having redband trout use in the draft proposed rule and DEQ received no comment to revise this use. Further information should be collected in the future to confirm the appropriate fish use for these streams.

Cool Water Species

There are a limited number of streams or stream reaches within the anadromous basins of the State that either have no salmonid fish use during the warmest part of the summer (July or August). If ODFW information is available that shows a stream reach has no salmonid fish use (rearing or migration) during July or August, it may be designated for cool water species. Cool water fish use designation is proposed for the following reaches:

- a. the mainstem Long Tom river below Fern Ridge reservoir (ODFW database, Personal communication with ODFW biologist, 2003);
- b. Rickreall Creek (EQC Report, October 1997 and attached letters from ODFW); and
- c. Butter Creek, Willow Creek, and additional small tributaries to the mid Columbia River/Lake Walula (ODFW database).

In the non-anadromous basins there are additional streams or stream reaches designated for cool water fish use. Cool water fish use is currently designated for reaches of the lower Owyhee, Malheur and Klamath Rivers and for the Lost River (Klamath basin). There are more streams in the interior lakes basins of Oregon that have no salmonid use or no salmonid use during the summer months, but the distribution of the redband trout is not as readily available. DEQ proposing redband trout and cool water fish uses for these basins according to the best information we have readily available (Behnke, 1992; ODEQ, 2003; USFWS, 1998). Where information is not available, we are proposing the more sensitive redband trout use. Additional information needs to be assembled for these basins and when this is done, these use designations will be corrected accordingly.

Borax Lake Chub

The Borax Lake Chub are located in a very limited area in the Alvord Lake Subbasin in the waters associated with Borax Lake and Lower Borax Lake in Harney County.

IV. Beneficial Use Designations for Salmon & Steelhead Spawning Through Emergence

DEQ considered identifying each different combination of species locations and time periods where the ODFW database shows salmon or steelhead spawning through emergence occurs. However, this resulted in over 30 different spawning date ranges for just one basin. Because this approach seemed overly complicated and difficult to implement, the interagency team considered ways we could simplify our method for designating spawning use time periods and still protect this use. After reviewing the timing information for all salmon species and steelhead, we agreed on the approach described below.

1. In waters designated for salmon and trout rearing use during the summer months:
 - a. Spawning through emergence use applies from October 15 through May 15 to reaches with fall spawners (Chinook, Coho or chum), or a combination of fall and spring (steelhead) spawners.
 - b. Spawning through emergence use applies from January 1 to May 15 to reaches that have only steelhead spawning use.
2. In waters designated as core cold-water habitats, spawning may begin earlier and/or emergence may end later. The above spawning through emergence dates apply unless they are extended as follows:
 - a. Spawning use for Chinook salmon begins 2 weeks after the earliest spawning date in the timing unit for that species according to the ODFW timing tables, but no later than October 15. If the initial spawning date is identified as "peak use," there is no 2 week delay.
 - b. Emergence use for steelhead spawning reaches ends June 15.
3. In waters designated as migration corridors, the best available site specific information will be used to determine dates of spawning use. This occurs in only 2 locations.
 - a. In the Columbia River mainstem, chum salmon spawning use dates are based on site

specific information available from ODFW.

b. In the Snake River mainstem below Hell's Canyon dam, fall Chinook spawning use dates are based on site specific information assembled during the development of the temperature TMDL.

The rationale for the two week delay after the spawning start date in 2a above is that the date shown in the ODFW timing tables applies to a "timing unit," which in many cases is fairly large. The spawning criterion will apply throughout the designated reach the date this use begins, yet it is most likely that the earliest spawning begins in cooler upstream waters, tributaries or springs. Also, the first 2 weeks of is often identified as "lesser use" by ODFW, meaning a few fish are beginning to spawn at this time, or perhaps in some years, but the bulk of them spawn during the "peak use" time.

The later emergence end data for steelhead in 2B above is used because in these colder waters, steelhead spawning and emergence typically occurs later. Although steelhead fry may emerge even later than June 15 in some waters, those waters are typically a colder upstream (i.e., high elevation) portion of where this use is designated, or in cold spring waters. In order to attain the spawning criterion (i.e., 13°C/55°F) on June 15 in the downstream extent of spawning reaches, temperatures would remain colder in the upstream waters and therefore would not likely reach 13°C/55°F until later in the year.

The reasons for using site specific timing information for spawning through emergence in the migration corridors as described in 3 above, is that there are a limited number of spawning reaches in these larger mainstem rivers, they are shorter segments (thus no need for the 2 weeks delay for upstream/downstream variability), they each have spawning by only a single species, and there is more site specific timing information available.

V. References

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