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Part II

Environmental Protection Agency

40 CFR Part 131

Water Quality Standards for Oregon; Proposed Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 131

[FRL–OW–7570–3]

Water Quality Standards for Oregon

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: This document proposes use designations and temperature criteria for the protection of salmonids in Oregon waters, except in the Columbia River. This document also proposes an intergravel dissolved oxygen (IGDO) criterion to protect salmonid spawning wherever salmonid spawning is the designated use. In addition, this rule proposes methods to implement Oregon's existing antidegradation policy.

DATES: EPA will accept public comments on this proposed rule until November 10, 2003. EPA will consider comments postmarked after this date only to the extent that time permits. EPA is sponsoring three public hearings on today's proposed water quality standards for Oregon on October 22 (5 p.m. to 9 p.m.), October 23 (2 p.m. to 6 p.m.), and October 24, 2003 (10 a.m. to 1 p.m.).

ADDRESSES: Send your comments by mail to Valerie Badon, ORC–158, U.S. EPA Region 10, 1200 Sixth Avenue, Seattle, Washington 98101. Comments may also be submitted electronically, or through hand delivery/courier. Follow the detailed instructions as provided in section I.C. of the **SUPPLEMENTARY INFORMATION** section. The following public hearings will be held:

October 22 hearing: State of Oregon Building, 800 NE. Oregon Street, Portland, Oregon.

October 23 hearing: Eugene Public Library, 100 W. 10th Avenue, Eugene, Oregon.

October 24 hearing: Bend Community Center, 1036 NE. 5th Street, Bend, Oregon.

The administrative record for today's proposed rule is available for public inspection at EPA Region 10's Oregon Operations Office, 811 SW. 6th Avenue, 3rd Floor, Portland, Oregon 97204, between 8 a.m. and 4 p.m. Please call Tom Townsend at 503–326–3250 for appointments to review the record. A reasonable fee for copying will apply.

FOR FURTHER INFORMATION CONTACT: Mary Lou Soscia at U.S. EPA Region 10's Oregon Operations Office by phone at: 503–326–3250, or by e-mail at: *soscia.marylou@epa.gov.* You may also contact Cara Lalley at U.S. EPA Headquarters by phone at 202–566–0057, or by e-mail at: *lalley.cara@epa.gov.*

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I. General Information

A. Potentially Affected Entities

Citizens concerned with water quality in Oregon may be interested in this proposed rulemaking. Entities discharging pollutants to waters of the United States in Oregon could be indirectly affected by this rulemaking because water quality standards are used in determining water quality-based effluent limitations included in National Pollutant Discharge Elimination System (NPDES) permits. Categories and entities that may indirectly be affected include:

Category	Examples of Potentially Affected Entities
Industry	Industries discharging pollutants to surface waters in Oregon.
Municipalities	Publicly-owned treatment works discharging pollutants to surface waters in Oregon.

This table is not intended to be exhaustive, but rather provides a guide for readers regarding NPDES entities likely to be affected by this action. This table lists the types of entities that EPA is now aware could potentially be affected by this action. Other types of entities not listed in this table could also be affected. To determine whether your facility may be affected by this action, you should carefully examine today's rule. If you have questions regarding the applicability of this action to a particular entity, consult one of the persons listed in the preceding **FOR FURTHER INFORMATION CONTACT** section.

B. How Can I Get Copies of This Document and Other Related Information?

1. *Docket.* EPA has established an official public docket for this action at EPA Region 10's Oregon Operations Office, 811 SW. 6th Avenue, 3rd Floor, Portland, Oregon 97204, under Docket ID No. OW–2003–0068. The official public docket consists of the documents specifically referenced in this action, any public comments received, and other information related to this action. Although a part of the official docket, the public docket does not include Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. The official public docket is the collection of materials that is available for public viewing under ID No. OW–2003–0068, or *Proposed Federal Water Quality Standards for Oregon.* The Docket Facility is open from 8 a.m. to 4 p.m., Monday through Friday, excluding legal holidays. Please call Tom Townsend at 503–326–3250 for appointments to review the record. A reasonable fee will be charged for copies.

2. *Electronic Access.* You may access this **Federal Register** document electronically through the EPA Internet under the "Federal Register" listings at *http://www.epa.gov/fedrgstr/.*

An electronic version of the public docket is available through EPA's electronic public docket and comment system, EPA Dockets. You may use EPA Dockets at *http://www.epa.gov/edocket/* to submit or view public comments, access the index listing of the contents of the official public docket, and to access those documents in the public docket that are available electronically. Once in the system, select "search," then key in the appropriate docket identification number.

Certain types of information will not be placed in the EPA Dockets. Information claimed as CBI and other information whose disclosure is restricted by statute, which is not included in the official public docket will not be available for public viewing in EPA's electronic public docket. EPA's policy is that copyrighted material will not be placed in EPA's electronic public docket but will be available only in printed, paper form in the official public docket. To the extent feasible, publicly available docket materials will be made available in EPA's electronic public docket. When a document is selected from the index list in EPA Dockets, the system will identify whether the document is available for viewing in the EPA electronic public docket. Although not all docket materials may be available electronically, you may still access any of the publicly available docket materials through the docket facility identified in I.B.1. EPA intends to work towards providing electronic access to all of the publicly available docket materials through EPA electronic public docket.

For public commenters, it is important to note that EPA's policy is that public comments, whether submitted electronically or in paper, will be made available for public viewing in EPA's Electronic public docket as EPA receives them and without change, unless the comment contains copyrighted material, CBI, or other information whose disclosure is restricted by statute. When EPA identifies a comment containing copyrighted material, EPA will provide a reference to that material in the version of the comment that is placed in EPA's electronic public docket. The entire printed comment, including the copyrighted material, will be available through the docket facility identified in I.B.1.

Public comments submitted on computer disks that are mailed or delivered to the docket will be transferred to EPA's electronic public docket. Public comments that are mailed or delivered to the docket will be scanned and placed in EPA's electronic public docket. Where practical, physical objects will be photographed, and the photograph will be placed in EPA's electronic public docket along with a brief description written by the docket staff.

For additional information about EPA's electronic public docket, visit EPA Dockets online or see 67 FR 38102, May 31, 2002.

C. How and to Whom Do I Submit Comments?

You may submit comments electronically, by mail, or through hand delivery/courier. To ensure proper receipt by EPA, identify the appropriate docket identification number in the subject line on the first page of your comment. Please ensure that your comments are submitted within the specified comment period. Comments received after the close of the comment period will be marked "late." While EPA is not required to consider these late comments, we will make every attempt to consider them.

1. *Electronically.* If you submit an electronic comment as prescribed below, EPA recommends that you include your name, mailing address, and an e-mail address or other contact information in the body of your comment. Also include this contact information on the outside of any disk or CD–ROM you submit, and in any cover letter accompanying the disk or CD–ROM. This ensures that you can be identified as the submitter of the comment and allows EPA to contact you in case EPA cannot read your comment due to technical difficulties or needs further information on the substance of your comment. EPA's policy is that EPA will not edit your comment, and any identifying or contact information provided in the body of a comment will be included as part of the comment that is placed in the official public docket, and made available in EPA's electronic public docket. If EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, EPA may not be able to consider your comment.

i. *EPA Dockets.* Your use of EPA's electronic public docket to submit comments to EPA electronically is EPA's preferred method for receiving comments. Go directly to EPA Dockets at *http://www.epa.gov/edocket,* and follow the online instructions for submitting comments. To access EPA's electronic public docket from the EPA Internet home page, select "Information Sources," "Dockets," and "EPA Dockets." Once in the system, select "search," and then key in Docket ID OW–2003–0068. The system is an "anonymous access" system, which means EPA will not know your identity, e-mail address, or other contact information unless you provide it in the body of your comment.

ii. *E-mail.* Comments may be sent by electronic mail (e-mail) to *OW-Docket@epa.gov,* attention Docket ID No. OW–2003–0068. In contrast to EPA's electronic public docket, EPA's e-mail system is not an "anonymous access" system. If you send an e-mail comment directly to the docket without going through EPA's electronic public docket, EPA's e-mail system automatically captures your e-mail address. E-mail addresses that are automatically captured by EPA's e-mail system are included as part of the comment that is placed in the official public docket, and made available in EPA's electronic public docket.

iii. *Disk or CD–ROM.* You may submit comments on a disk or CD–ROM that you mail to the address identified in I.C.2. These electronic submissions will be accepted in WordPerfect or ASCII file format. Avoid the use of special characters and any form of encryption.

2. *By Mail.* Send your comments to: Valerie Badon, ORC–158, U.S. EPA Region 10, 1200 Sixth Avenue, Seattle, Washington 98101, Attention Docket ID No. OW–2003–0068.

3. *By Hand Delivery or Courier:* Deliver your comments to the address identified in I.C.2, Attention Docket ID No. OW–2003–0068. Such deliveries are only accepted between 8 a.m. and 4 p.m.

D. What Should I Consider as I Prepare My Comments for EPA?

You may find the following suggestions helpful for preparing your comments:

1. Explain your views as clearly as possible.
2. Describe any assumptions that you used.
3. Provide any technical information and/or data you used that support your views.
4. If you estimate potential burden or costs, explain how you arrived at your estimate.
5. Provide specific examples to illustrate your concerns.
6. Offer alternatives.
7. Make sure to submit your comments by the comment period deadline identified.
8. To ensure proper receipt by EPA, identify the appropriate docket identification number in the subject line on the first page of your response. It would also be helpful if you provided the name, date, and **Federal Register** citation related to your comments.

II. Background

A. What Are the Statutory and Regulatory Requirements Relevant to This Action?

The purpose of the Clean Water Act (CWA) is to restore and maintain the chemical, physical and biological integrity of the Nation's waters. Section 101(a)(2) of the CWA establishes as an interim goal "water quality which provides for the protection and propagation of fish, shellfish, and wildlife and * * * recreation in and on the water," wherever attainable. This national goal is commonly referred to as the "fishable/swimmable" goal of the CWA. (Hereafter, the fishable/swimmable goals are referred to as CWA section 101(a) goal uses.) Section 303(c)(2)(A) requires State and Tribal water quality standards to "protect the public health and welfare, enhance the quality of water, and serve the purposes of this Act." Further, States and authorized Tribes are required to take into consideration the waters' use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and agricultural, industrial, and other purposes, and also take into consideration their use and value for navigation. 33 U.S.C. 1313(c)(2)(A). EPA's regulations at 40 CFR 131.10 describe the process States and authorized Tribes must follow and the analyses States must conduct prior to designating any uses that do not contain the CWA section 101(a) goal uses.

Section 303(c) of the CWA, 33 U.S.C. 1313(c), requires States and authorized Tribes to adopt water quality standards for waters of the United States within their applicable jurisdictions. Section 303(c) and EPA's implementing regulations at 40 CFR part 131 require State and Tribal water quality standards to include the designated use or uses to be made of the water, the criteria necessary to protect those uses, and an antidegradation policy. States and authorized Tribes may also include in their standards policies generally affecting the standards' application and implementation. See 40 CFR 131.13. These policies are subject to EPA review and approval. States and authorized Tribes are also required to review their water quality standards at least once every three years and, if appropriate, revise or adopt new standards. 33 U.S.C. 1313(c)(1). States and authorized Tribes are required to submit new or revised water quality standards to EPA for review and approval or disapproval. 33 U.S.C. 1313(c)(2)(A). If EPA approves a new or revised water quality standard submitted by a State or Tribe, it takes effect for CWA purposes. 40 CFR 131.21. If EPA disapproves a new or revised water quality standard submitted by a State or Tribe, EPA must promulgate its own water quality standard for the State or Tribe, when necessary to replace the disapproved water quality standards.

Finally, section 303(c)(4)(B) of the CWA authorizes the Administrator to determine, even in the absence of a State or Tribal submission, that a new or revised standard is needed to meet the CWA's requirements. The authority to make a determination under CWA section 303(c)(4)(B) resides exclusively with the Administrator; it has not been delegated.

Section 7 of the Endangered Species Act (ESA) requires Federal agencies, in consultation with the U.S. Fish and Wildlife Service (FWS) and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries) (collectively, "the Services"), to ensure that their actions are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of habitat of such species which have been designated as critical. Consultation is designed to assist Federal agencies in complying with the requirements of section 7 by supplying a process within which FWS and NOAA Fisheries provide such agencies with advice and guidance on whether an action complies with the substantive requirements of the ESA. Approval of State or Tribal water quality standards and Federal promulgation of water quality standards are considered Federal actions, and hence EPA is required to comply with the requirements of ESA section 7 prior to taking final action on this proposed rule.

As a result of EPA's responsibilities and duties under section 7 of the ESA, EPA has initiated informal consultation with FWS and NOAA Fisheries on this rulemaking. As part of this process, EPA is preparing a biological assessment document that it will transmit to FWS and NOAA Fisheries and include in the record if this rule is finalized.

B. What Actions Have Oregon and EPA Taken Leading to Today's Action?

On July 23, 1996, the State of Oregon submitted revisions to its water quality standards to EPA for review, and approval or disapproval, pursuant to CWA section 303(c)(2)(A). Certain of these revisions identified specific numeric temperature criteria to protect critical life stages of fish in the family *Salmonidae*, commonly known as "salmonids." The *Salmonidae* family includes the genus *Oncorhynchus*, which consists of Pacific salmon and trout. There are seven species of Pacific salmon within the genus *Oncorhynchus*, five of which are found in North America: pink (*O. gorbuscha*), chum (*O. keta*), sockeye (*O. nerka*), coho (*O. kisutch*), and chinook (*O. tshawytscha*). Pacific trout within the genus *Oncorhynchus* include the anadromous steelhead, *O. mkiss*, and coastal cutthroat, *O. clarki. clarki;* and the non-anadromous rainbow trout, *O. mkiss*. Also in the family *Salmonidae* is the genus *Salvelinus*, which includes the bull trout species, *confluentus*.

Oregon's 1996 revised temperature criteria were intended to protect salmon rearing (17.8°C/64°F), salmon spawning (12.8°C/55°F), and bull trout (10°C/50°F). This included a revised temperature criterion for salmonid rearing in the Lower Willamette River from 21°C/70°F to 20°C/68°F. Oregon also submitted an IGDO criterion of 6.0 milligrams per liter (mg/L) for the protection of salmonid spawning. In addition, Oregon adopted new or revised narrative criteria and other provisions establishing a process for adopting site-specific numeric criteria or temporary revisions to its standards.

On September 15, 1998, EPA entered into formal consultation under section 7(a)(2) of the ESA with both NOAA Fisheries and FWS with regard to the effect of its approval decision regarding the new or revised standards on listed and endangered species including chinook, coho, sockeye, chum, coastal cutthroat, steelhead, and bull trout. On July 1, 1999, FWS issued a biological opinion that EPA's approval of the State's standards revisions was not likely to jeopardize the continued existence of listed threatened and endangered species, including bull trout. On July 7, 1999, NOAA Fisheries issued a biological opinion that EPA's approval of the standards revisions was not likely to jeopardize the continued existence of listed threatened and endangered species. Included on the Services' lists of threatened and endangered species were:

- Snake River Sockeye Salmon;
- Upper Columbia River spring chinook salmon;
- Upper Columbia River steelhead;
- Snake River spring/summer, Snake River fall, Upper Willamette River, Lower Columbia River, and Southern Oregon/California Coastal chinook salmon;
- Oregon Coast and Southern Oregon/ Northern California coho salmon;
- Snake River Basin, Middle and Lower Columbia, Upper Willamette, Oregon Coast, and Klamath Mountains Province steelhead trout;
- Columbia River Chum Salmon;
- Umpqua River coastal cutthroat trout;
- Southwestern Washington/ Columbia River coastal cutthroat trout; and
- Columbia River Basin and Klamath River Basin Bull Trout.

As part of the consultation action, EPA and the State of Oregon also committed to perform specific conservation measures under section 7(a)(1) of the ESA. These measures were designed to address the Services' and EPA's concerns regarding Oregon's water quality standards and also to further investigate uncertainties regarding the water temperatures necessary to protect specific life stages of endangered salmonid species.

On July 22, 1999, EPA approved all but one of the revised water quality standards submitted by Oregon, including the new and revised temperature, pH, dissolved oxygen, and bacteria standards. EPA disapproved the 20°C/68°F numeric criterion for salmonid rearing in the lower Willamette River because the State did not include a justification for how 20°C/ 68°F would protect salmonid rearing in view of record information showing that 20°C/68°F is not protective of salmonid rearing. (Letter to Michael Llewelyn, Oregon Department of Environmental Quality, from Randall Smith, EPA, July 22, 1999; Memorandum to Randy Smith from Dru Keenan regarding Recommended Action, July 21, 1999). At that time, EPA took no action with respect to Oregon's existing water quality criteria for the Columbia River or its antidegradation implementation plan because Oregon had not submitted new or revised water quality standards for review on either matter.

One of the conservation measures in NOAA Fisheries' biological opinion required EPA to establish and lead a region-wide effort to conduct a comprehensive review of the temperature requirements of critical life stages of salmonids in the Pacific Northwest, and ultimately to issue guidance recommending temperature criteria for their protection, which could be used as a basis for further revision of Oregon's standards if warranted. The reason for this conservation measure was that during the formal consultation process, it became evident to EPA, NOAA Fisheries, and FWS, and others that there was scientific uncertainty regarding the precise effects of various temperature regimes on the life stages of threatened and endangered salmonids. This three year effort concluded in April 2003 with the issuance of the "EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards' (hereafter identified as the Temperature Guidance).

Both EPA's approval action and NOAA Fisheries' Biological Opinion of "no jeopardy" were challenged in 2001 by Northwest Environmental Advocates in the U.S. District Court for the District of Oregon. *Northwest Environmental Advocates* v. *EPA & NMFS*, 268 F.Supp.2d 1255 (D. Or., Mar. 31, 2003). The plaintiff also alleged that EPA had a non-discretionary duty to promulgate Federal water quality criteria for temperature for the lower Willamette River and the Columbia River, and to promulgate an implementation plan for Oregon's antidegradation policy.

On March 31, 2003, the U.S. District Court in Oregon ruled that EPA had violated the CWA and the ESA when it approved in 1999 certain water quality standards for the protection of salmonids that were contained in Oregon's 1996 submission. Although the court deferred to EPA's scientific judgment regarding the protectiveness of the specific numeric temperature criteria, the court found that the temperature standards that EPA approved violated EPA's regulations and EPA's duty under section 7 of the ESA because Oregon had failed to designate "where and when" these criteria would apply. The court directed EPA to rescind its approval of the criteria because the absence of "time and place" use designations failed to protect the use categories created by Oregon, in this case salmonid rearing, bull trout rearing and bull trout spawning. The court directed EPA to propose and promulgate new temperature water quality standards, or approve new State standards, to address this deficiency.

The court also directed EPA to rescind its approval of a water quality criterion for intergravel dissolved oxygen for the protection of salmonid spawning. The court found that EPA's approval of the 6.0 mg/L criterion adopted by Oregon was arbitrary and capricious based on record information showing that 6.0 mg/L would not adequately protect salmonid spawning and because Oregon had not made time and place use designations where the criterion would apply. Thus, the court ordered EPA to promulgate a new water quality criterion for this pollutant parameter or approve a new State criterion. The court also ordered EPA to promulgate an antidegradation implementation plan for Oregon waters or approve such a plan promulgated by Oregon. Finally, the court also found arbitrary and capricious NOAA Fisheries' determination that Oregon's water quality standards for temperature and IGDO would not jeopardize threatened and endangered species.

The court ruled in favor of EPA regarding the Plaintiff's challenge to EPA's failure to establish Federal water quality criteria for temperature for the Columbia River for migration and rearing. EPA also successfully defended EPA's decision to approve certain narrative water quality criteria. Finally, the court agreed that EPA had met its obligations under ESA section 7(a)(1) to implement programs to conserve threatened salmon.

On August 13, 2003, the court ordered EPA to sign proposed regulations by October 1, 2003, and either sign final regulations or approve new State regulations by March 2, 2004, for the following:

(a) Water quality criteria for temperature for the lower Willamette River;

(b) Methods for implementing the antidegradation policy adopted by Oregon, pursuant to 40 CFR 131.12;

(c) Numeric water quality criteria for temperature for the protection of salmonid rearing and bull trout rearing

and spawning, accompanied by specific time and place designations for waters of the United States in Oregon; and

(d) A water quality criterion for intergravel dissolved oxygen for Oregon's waters for the protection of salmonid spawning in waters of the United States in Oregon.

EPA's usual practice when promulgating a water quality standard is to provide an opportunity for a public hearing, provide the public with 45 days notice of the hearing, and establish a public comment period that extends at least until the date of the hearing. 40 CFR 25.5(b). However, the regulations also allow for a shorter comment period and a shorter period of public notice prior to the hearing when necessary to accommodate the specific provisions of court orders. EPA is providing a 30-day comment period from the date of publication. EPA believes a 30-day comment period is reasonable in this case for several reasons. First, EPA is compelled by court order to take final action on this proposal by March 2, 2004. That schedule precludes a longer comment period. Second, a significant portion of the water quality standards being proposed today has already been the subject of considerable public input in connection with the Temperature Guidance. In the course of developing that guidance, which EPA Region 10 issued in April 2003, EPA published and considered public comment on two drafts and engaged in considerable stakeholder communication. With the exception of the use designations and antidegradation implementation procedures proposed today, all aspects of today's proposed rule were the subject of extensive public input in that context. Therefore, the public has already had several months to consider the substance of these proposed decisions.

In this document, EPA is not proposing any time and place designations for the Columbia River. Oregon had not submitted and EPA had not disapproved water quality criteria for temperature or use designations for salmonid migration and rearing for the Columbia River. Therefore, the court did not require EPA to propose and promulgate such water quality standards for the Columbia River. Accordingly, EPA is not proposing time and place designations for salmonid spawning for the Columbia River. The court did hold that EPA's approval of the State's IGDO criterion to protect salmonid spawning was arbitrary and capricious based on record information showing that 6.0 mg/L would not adequately protect salmonid spawning and because Oregon had not made time and place use designations where the criterion would apply. Thus, the court order requires EPA to propose IGDO criteria wherever salmonid spawning is the designated use in Oregon. Therefore, the proposed IGDO criterion would apply to all waters identified in section 131.39(b) for salmonid spawning. In addition, for the Columbia River, the State of Oregon has identified the times and places where salmonid spawning occurs and, therefore, the IGDO criterion would apply to those places in the Columbia River (Letter to Randall Smith, EPA, from Michael Llewelyn, ODEQ, September 5, 2003).

EPA is proposing these regulations under authority of CWA section 303(c)(4)(A), which requires EPA to promptly prepare and publish proposed Federal water quality standards when EPA disapproves new or revised water quality standards submitted by a State. On September 29, 2003, EPA disapproved the following new or revised water quality standards submitted by Oregon in 1996:

- The water quality criteria for temperature for the protection of salmonid rearing;
- The water quality criteria for temperature for the protection of bull trout spawning, rearing, and migration;
- The water quality criteria for temperature for the protection of salmonid spawning; and
- The water quality criterion for intergravel dissolved oxygen for the protection of salmonid spawning.

A copy of the disapproval decision may be found in the docket for this proposed rule.

In making its disapproval decision, EPA relied on the reasoning of the U.S. District Court for the District of Oregon when it ordered EPA to rescind its 1999 approval of certain Oregon temperature and IGDO standards. In its March 2003 order, the court stated that without accurate time and place use designations, Oregon's 1996 criteria for temperature and IGDO were inconsistent with the CWA and should not have been approved.

Accordingly, EPA has disapproved these criteria to the extent that Oregon had failed to determine when and where these criteria apply (Letter from Randall F. Smith, Director of EPA Region 10's Office of Water, to Mike Llewelyn, Director of Oregon Department of Environmental Quality, September 29, 2003). Where Oregon has made time and place use determinations under its regulations (*e.g.*, the Columbia River for salmonid spawning), EPA's 1999 approval decision remains in effect. Under those circumstances, the State's time and place use determinations apply for CWA purposes, and EPA is not proposing Federal time and place designations for those waters in this rulemaking.

In developing this proposed rule, EPA sought advice from other Federal agencies, including those that administer the ESA and those that operate dams in Oregon. Their comments improved the clarity of the proposal, resulted in EPA deciding to solicit comment in some additional areas, aided EPA in developing standards that would be protective of endangered salmon and trout, and, prompted EPA to better articulate for owners and operators of Federal dams the information needs and process associated with petitioning for changes in use designations. EPA appreciates the input of these agencies.

III. What Federal Water Quality Standards Is EPA Proposing Today?

A. Background

In this document, EPA is proposing (1) designated uses to protect migration, rearing, and spawning through fry emergence for salmonids; (2) specific water bodies where those designated uses would apply, and the times of year when the uses occur; (3) temperature criteria that protect each of those designated uses; (4) an IGDO criterion that protects salmonid spawning; and (5) an implementation plan for Oregon's existing antidegradation policy.

The basis for EPA's proposed salmonid uses and associated temperature criteria is the Temperature Guidance, contained in the record for this rule. The Temperature Guidance is intended to assist States and authorized Tribes in adopting scientifically-defensible temperature water quality standards. The Temperature Guidance recommends an approach for adopting temperature water quality standards to protect cold-water salmonids and specifically addresses the following cold-water salmonid species in the Pacific Northwest: chinook, coho, sockeye, chum, and pink salmon; steelhead and coastal cutthroat trout; and bull trout. The Temperature Guidance provides recommendations to States and authorized Tribes on how they can designate uses and establish numeric temperature criteria for waterbodies that help meet the interim goal of the CWA to, where attainable, provide for water quality that "provides for the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water." *See* CWA section 101(a)(2). In addition, temperature water quality standards are viewed by EPA and the Services as an

important tool for the protection and recovery of threatened and endangered salmonid species in the Pacific Northwest. Attaining criteria and protecting existing cold temperatures for waters used by these salmonids will help maintain and improve their habitat and aid in their protection and recovery.

As mentioned above, EPA Region 10 undertook the Temperature Guidance project as a result of the commitments agreed to under the ESA Biological Opinion issued by the Services on Oregon's temperature water quality standards. EPA Region 10 also undertook this project because EPA's CWA section 304(a) national criteria recommendations for temperature found in "Quality Criteria for Water 1986," commonly known as the Gold Book, were established in 1977, and do not reflect the most current science regarding temperature in the Pacific Northwest. In general, the Gold Book temperature recommendations for salmonids and other fish consist of formulas to calculate the protective temperatures for short-term exposure and a maximum weekly average exposure based on the maximum weekly average temperature metric. Protective short-term temperature exposure is based on subtracting 2°C/4°F from the upper incipient lethal temperature. Protective weekly average temperature exposure is based on the optimal growth temperature plus one-third of the difference between the optimal growth temperature and the upper incipient lethal temperature. Using these formulas and EPA data for coho and sockeye salmon, the 1986 document calculates suggested temperature criteria for short-term exposure as 22°C/71.6°F (sockeye) and 24°C/75.2°F (coho) and a maximum weekly average exposure of 18°C/64°F for both species.

Based on extensive review of the most recent scientific studies, many of which were undertaken specifically for the Pacific Northwest, EPA and the Services believe that there are a variety of chronic (long-term) and sub-lethal effects (*i.e.*, effects other than death) that are likely to occur to Pacific Northwest salmonid species exposed to the maximum weekly average temperatures calculated using the CWA section 304(a) national recommended formulas. These chronic and sub-lethal effects include reduced juvenile growth, increased incidence of disease, reduced viability of gametes in adults prior to spawning, increased susceptibility to predation and competition, and suppressed or reversed smoltification. Healthy fish populations could possibly endure some of these chronic impacts with little appreciable loss in population size. However, EPA and the Services are concerned that these chronic and sub-lethal effects can reduce the overall health and size of vulnerable fish populations, such as the endangered or threatened salmonids of the Pacific Northwest. Based on the new scientific studies developed specifically for the Pacific Northwest and the fact that the fish populations at issue are already vulnerable for reasons unrelated to temperature, EPA believes that the general assumptions upon which the national recommendations are based are inapplicable here. In particular, EPA is concerned that vulnerable coldwater salmonids in the Pacific Northwest would not be adequately protected at water temperatures selected between the optimal growth temperatures and the higher temperatures at which there would be incipient lethality. For these reasons, EPA is basing today's proposed rule on the more recent, site-specific information and analyses contained in the 2003 Temperature Guidance, rather than on the 1986 CWA section 304(a) national temperature criteria recommendations.

B. Federal Use Designations for Specific Water Body Segments

1. Background

Today, EPA is proposing to designate the same salmonid uses recommended in the Temperature Guidance with a few exceptions discussed in the preceeding paragraphs. Four of the five designated salmonid uses that EPA is proposing are based on the salmonid uses that occur during the period of summer maximum temperatures, which is generally during July and August. EPA believes it is appropriate to primarily base designated salmonid uses on summer salmonid use because: (1) human activities that increase summer water temperatures are a significant concern for salmonids in the Pacific Northwest, and (2) ensuring water temperatures are protective of salmonid uses during the summer will generally result in protective water temperatures for salmonids other times of the year due to the fact that waters will naturally be cooler during other months of the year. However, for some waters, attaining the criteria to protect for a summertime salmonid use may not result in protecting salmonid spawning and fry emergence that occurs in the spring to early summer or late summer to fall. Thus, in addition to the four summer salmonid designated uses, EPA is also proposing a use designation specifically for salmon and steelhead spawning through fry emergence, which typically occurs beginning in the fall and continuing through the spring, but can also occur in early July for steelhead and late August for chinook. Designating this use and associated water quality criteria provides an added degree of protection where meeting only the summer maximum temperature may be inadequate to ensure protection of this use during the other times of the year when spawning occurs.

In this document, EPA is proposing salmonid uses and associated temperature and IGDO water quality criteria for the waters identified. Water quality criteria often protect water bodies that have multiple and competing uses. Federally-owned or operated dams in certain waters may present a particular challenge in designating uses and establishing water quality criteria. In cases such as this, water quality standards should take into consideration the authorized purposes of Federally-owned or operated dams. EPA, therefore, will take into consideration the operational parameters and authorized purposes at these facilities when developing Federal water quality standards for the State of Oregon, to the extent time and availability of data permit. If data become available prior to promulgation of the final rule demonstrating that a proposed use is not attainable on a particular water body impacted by a Federally-owned or operated dam, EPA may promulgate a revised use that reflects the highest feasibly attainable use consistent with the operation of the dam. Designated uses should be deemed "feasible" if they can be implemented by a dam in a manner that allows the dam to perform its authorized purposes. Because these standards are being developed on an expedited schedule, and it may not be possible to fully consider data on attainability of uses for all water bodies potentially impacted by Federally-owned or operated dams, EPA is also proposing a process by which Federal agencies responsible for Federally-owned or operated dams may request that EPA modify the water quality standards described in this proposed rule. *See* section V.B.

For each of the uses proposed in section III.B.2, EPA requests comment on its methodology for designating waters for those uses, and on the specific use designations for waters identified on the maps available on the Internet at *http://www.epa.gov/r10earth/federaloregonwqs.htm*, or in hard copy at U.S. EPA Region 10's Oregon Operations Office, 811 SW. 6th Avenue, 3rd Floor, Portland, Oregon 97204.

2. Salmonid Use Descriptions

i. Bull Trout Juvenile Rearing and Spawning. EPA is proposing a bull trout juvenile rearing and spawning use for the waters identified in the maps previously referenced. This use is intended to protect moderate to high-density summertime bull trout juvenile rearing near their natal streams in their first years of life prior to making downstream migrations, and bull trout spawning through fry emergence typically occurring from the fall through the spring in the same waters. In general, EPA is proposing this use in the upper reaches of the applicable river basins, where this use typically occurs.

ii. Salmon and Steelhead Core Juvenile Rearing. EPA is proposing a salmon and steelhead core (moderate- to high-density) juvenile rearing use for the waters identified in the maps previously referenced. This use is intended to protect core salmon and steelhead juvenile rearing that occurs in the summer. This use is generally found in a river basin's mid-to-upper reaches, downstream from juvenile bull trout rearing areas. Protection of these waters for salmon and steelhead juvenile rearing also provides protection for adult spring chinook salmon that "hold" (wait in a river reach) throughout the summer prior to spawning, and for migrating and foraging adult and sub-adult bull trout, which also frequently use these waters.

iii. Salmon and Trout Juvenile Rearing and Migration. EPA is proposing a salmon and trout juvenile rearing and migration use for the waters identified in the maps previously referenced. This use is intended to protect salmon and steelhead (trout) moderate- to low-density juvenile rearing and migration, during the period of summer maximum temperatures. During the rest of the summer and other months of the year, salmon and steelhead juvenile rearing and migration is likely to be of higher density. This use designation reflects the fact that salmon and steelhead juveniles will use waters during the summer that have higher temperatures than their optimal thermal range. Salmon and trout juvenile rearing and migration is generally found in the middle and lower part of a basin, downstream of the salmon and steelhead core rearing use. In many river basins in Oregon, this use extends all the way to a river basin's terminus (*i.e.*, confluence with the Columbia River, Snake River or Pacific Ocean). EPA is also proposing salmon and trout juvenile rearing and migration use to protect for general juvenile rearing for resident rainbow trout.

iv. Salmon and Steelhead Migration. EPA is proposing a salmon and steelhead migration use for the lower Willamette River (50 miles upstream from the confluence with the Columbia River), the John Day River (from the confluence with the North Fork River downstream to the confluence with the Columbia River), and the portion of the Snake River in Oregon (from the Washington-Oregon border to Hells Canyon Dam).

Salmon and steelhead migration occurs all year, but primarily in the spring and early summer or in the late summer and fall. Although fewer fish migrate during the summer maximum time period, migration is the most prevalent life stage use that occurs during that period in these waters. Some isolated salmon and steelhead juvenile rearing may occur in these waters during the period of summer maximum temperatures, but when it does, such rearing is usually found only in the confluence of colder tributaries or other areas of colder waters.

The summer maximum temperature criterion is designed to protect migration both during that time period and, more importantly, during other times of the year when the majority of migration occurs. This is because the criterion assures that the water temperatures stay cool enough in the summer that the natural seasonal cooling that occurs during other times of year results in achievement of temperatures that are protective of migration.

v. Salmon and Steelhead Spawning Through Fry Emergence. EPA is proposing to designate a spawning through fry emergence use for the protection of salmon and steelhead trout spawning, egg incubation, and fry emergence in the times and places indicated on the maps previously mentioned. Generally, these life stages occur: (a) From late winter through early summer for steelhead trout (mid-upper reaches); (b) from the late summer-fall through spring for spring chinook (mid-upper reaches); and (c) from the fall through spring for coho (mid-reaches), chum, and fall chinook (the latter two in lower reaches).

vi. Other Salmonid Uses Considered. EPA considered designating separate salmonid uses for (a) bull trout spawning and (b) steelhead smoltification. For purposes of this proposed rule, however, EPA determined that these uses can be protected by the temperature criteria associated with other salmonid uses EPA is proposing today. See Temperature Guidance p. 31. For bull trout spawning, EPA believes that its proposed "bull trout rearing and spawning" use category will be protective, and for steelhead smoltification, EPA believes that its proposed use category, "salmon and steelhead spawning through fry emergence" will be protective.

Bull trout generally spawn in the late summer and fall in the same waters where young and resident juvenile bull trout rear. EPA decided that a combined bull trout spawning and rearing use with a single numeric temperature criterion (12°C/54°F) that limits summer maximum temperatures would protect both the rearing that occurs year-round and the spawning, egg incubation, and fry emergence that generally occurs fall through spring. EPA proposes this approach for two reasons. First, data indicate that if the summer maximum temperature is 12°C/54°F, temperatures will naturally decrease to levels that are protective of bull trout spawning (9°C/48°F) when it occurs in the late summer and fall, and further decrease to protect egg incubation (2–6°C/36–43°F) when it occurs over the winter. Second, there may be some areas where bull trout spawn in the summer, but in those situations, the existing summer maximum temperatures are likely to be colder than 12°C/54°F and in those situations the existing cold water alternative criterion discussed in section III.C.vi.b. would apply and the applicable criterion would be the existing maximum temperatures.

Salmon and steelhead smoltification occurs in the spring as these fish migrate to the ocean and go through the adaptation process for saltwater. Steelhead are believed to be the most temperature-sensitive salmonids during smoltification, which is why a separate designated use and criterion of 14°C/57°F was recommended in the Temperature Guidance. EPA believes that its proposed water quality criteria for temperature and associated designated uses would effectively protect steelhead smoltification. In particular, the proposed salmon and steelhead spawning through fry emergence use designation includes a 13°C/55°F criterion that would apply from the fall through the spring until either May 15th or June 15th in nearly all the waters where steelhead smoltification occurs.

3. Specific Locations and Times for the Salmonid Uses

EPA, in coordination with the Oregon Department of Environmental Quality (ODEQ) and the Services, established an interagency team to designate where and when the salmonid uses described above apply for waters in the State of

Oregon. These proposed salmonid use designations are shown in the previously mentioned maps (available on the Internet at *http://www.epa.gov/r10earth/federaloregonwqs.htm* or in hard copy at U.S. EPA Region 10's Oregon Operations Office, 811 SW., 6th Avenue, 3rd Floor, Portland, Oregon 97204). The salmon and steelhead spawning through fry emergence use is designated only for the time period indicated in the map legends; all other identified designated uses apply throughout the year.

EPA is proposing multiple use designations for certain waters where the criterion applicable to the most sensitive use also protects a less sensitive use. Where EPA proposes to designate bull trout rearing and spawning, EPA is also proposing to designate salmon and steelhead core juvenile rearing. Where EPA is proposing salmon and steelhead core juvenile rearing, EPA is also proposing to designate salmon and trout juvenile rearing and migration. Where EPA proposes salmon and trout juvenile rearing and migration, EPA also proposes salmon and steelhead migration. EPA notes that the maps indicate only the most sensitive use that occurs during the period of maximum summer temperatures. Also, EPA notes that its approach of defining uses that occur during the period of summer maximum temperatures will also have the effect of protecting other uses. If the most sensitive use designated for a particular water body or segment no longer applies, then the less sensitive use would apply.

In proposing the designated uses for the specified water bodies the team primarily relied on a database developed by Oregon Department of Fish and Wildlife (ODFW), which is available in the record and on the Internet. (ODFW Database, *http://osu.orst.edu/dept/nrimp/information/fishdistdata.htm).* This database was the product of an ODFW multi-year effort to develop consistent and comprehensive fish distribution data for a number of salmonid species. These distribution data represent the known or probable presence of all salmonid species within the anadromous zones of Oregon. ODFW compiled fish distribution information from a variety of sources including State and Federal fishery agencies, tribal entities, watershed councils and other interested public or private groups.

The ODFW fish distribution data depict the known or probable presence for the different life stages (*i.e.*, spawning through fry emergence, rearing, and migration) of the above listed salmonid species. The ODFW fish distribution data reflect both waters with known fish life stage presence based on documented observations, as well as local field biologists' best professional judgment as to where a life stage use is likely to occur based on suitable habitat (*i.e.*, waters near areas of documented life stage presence on the same waterbody that have similar temperatures and geomorphological habitat features, such as flow volume, gradient, gravel size, pool frequency, and no known obstructions or reasons why uses would not also be present in these waters). 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.

EPA believes the methodology ODFW used to develop its database, as summarized above, is scientifically sound and is appropriate to use for salmonid use designations. (1:24K Fish Habitat Distribution Development Project Procedures Manual, Oregon Department of Fish and Wildlife, February 26, 2002). In particular, the ODFW database is based on fish presence information spanning multiple years and includes waters where fish are likely to occur based on locations near areas with documented life stage presence and suitable habitat. This approach is appropriate because salmonid use designations based solely on areas of documented presence does not sufficiently describe the actual waters of use due to the practical limitations of monitoring every stream mile, and routine fish monitoring sometimes indicates no fish presence when fish are actually present (*i.e.*, false negatives). Further, fish distributions vary year to year for any given waterbody, so salmonid use designations should be based on fish presence studies over multiple years. EPA requests comment on its use of the ODFW database as its primary source of fish distribution data.

EPA also relied upon three other sources of information to identify the proposed salmonid designated uses: ODEQ's *Bull Trout Habitat Designation Report: Technical Work Group Recommendations* (July 2003); USFWS proposed critical habitat for bull trout spawning and juvenile rearing (67 FR 71236, November 29, 2002); and Ecotrust's Salmon Anchor Habitat Strategy for the Tillamook and Clatsop State Forests, October 2002 (*http://www.inforain.org/mapsatwork/anchorhabitats/*).

As noted above, EPA, the State of Oregon, and the Services developed an agreed-upon methodology to define where and when the different proposed salmonid uses would apply based on the ODFW database and the other information described above. The following is a summary of the approach used to identify each of the proposed salmonid designated uses.

i. Bull Trout Juvenile Rearing and Spawning. EPA reviewed three different information sources that identify bull trout spawning and juvenile rearing habitat in Oregon: (1) ODEQ's *Bull Trout Habitat Designation Report: Technical Work Group Recommendations,* (2) ODFW database for bull trout juvenile rearing and spawning habitat, and (3) FWS' proposed critical habitat for bull trout juvenile rearing and spawning. These three data sources are consistent in defining areas of known or probable bull trout juvenile rearing and spawning. The ODEQ report and the FWS proposal referenced previously also identify habitat areas that have the potential to support bull trout juvenile rearing and spawning and are essential to the conservation of the bull trout species. EPA believes it is appropriate to designate areas identified as potential bull trout rearing and spawning habitat because in order to protect the bull trout use in the State, there must be a critical population to (1) provide a compensatory reserve to protect against natural stresses and events (*e.g.*, drought); and (2) protect against "depensation" [a population level that is so low that it experiences decreases in recruitment and which has led to documented crashes in certain fish populations (Rieman and McIntyre, 1993)]; and (3) ensure that genetic diversity is sufficient to support healthy reproduction. EPA requests comment on its proposal to designate areas of potential as well as known or probable bull trout juvenile rearing and spawning use. ODEQ's report was translated into a Geologic Information System (GIS) database by ODEQ; EPA primarily used this information supplemented by FWS's proposed critical habitat information to identify where this designated use is proposed.

EPA proposes to designate a bull trout rearing and spawning use for: (a) Waters classified in ODEQ's report as known bull trout spawning and juvenile rearing habitat (BTHD1) and 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 FWS as bull trout spawning and rearing proposed critical habitat, and (c) all waters upstream of the areas (as indicated on the use designation maps) identified in (a) and (b) except for a few relatively large tributaries where EPA has data showing this use does not occur, or the water body has not been identified as habitat needed to protect the designated use of bull trout. EPA requests comment on its methodology for designating waters for the bull trout juvenile rearing and spawning use and on the specific waters identified.

ii. Salmon and Steelhead Core Juvenile Rearing. In developing this proposal, EPA judged that the ODFW database could not be used to differentiate core (high-density) juvenile rearing from non-core (low-density) juvenile rearing. In addition, there is generally very little available information on juvenile rearing density for Oregon's river basins. Therefore, as recommended in the Temperature Guidance, EPA elected to use surrogate information to help identify areas where summertime core salmon and steelhead juvenile rearing is likely. Waters used by spring chinook to spawn in the late summer months (August through mid-September), waters used over the summer by migrating and foraging adult bull trout, and waters upstream of these areas are likely to also support and be used for core salmon and steelhead juvenile rearing for two reasons. First, ODFW's database indicates juvenile rearing occurs in these waters, and second, the temperatures needed for core rearing are similar to those that occur in waters that support adult spring chinook holding to spawn as well as those that support migrating and foraging adult bull trout. See EPA Temperature Guidance.

The Ecotrust study on anchor habitat in the North Coast Basin was one juvenile rearing density study EPA relied upon to identify waters where the salmon and steelhead core juvenile rearing designated use should be proposed. This study identified areas of core juvenile rearing habitat for coho (salmon), steelhead (trout), and chinook (salmon). Use of this information resulted in EPA proposing that three stream segments be designated for salmon and steelhead core juvenile rearing in the North Coast Basin (Necanicum River, Ecola Creek and Plympton Creek) where there is no spring chinook spawning. Most of the waters identified in this study were also waters where the ODFW database showed spring chinook spawning to occur in or upstream of these areas.

In summary, EPA is proposing to designate a salmon and steelhead core juvenile rearing use for: (a) Waters where ODFW distribution and timing information shows chinook spawning occurs on or prior to September 15; (b) waters where known or probable adult bull trout migration and foraging occurs in July or August based on the ODFW database; (c) waters where scientifically credible information (specifically the Ecotrust study) shows core salmon or steelhead rearing (such information was only available for the North Coast Basin); and (d) all waters upstream of the waters identified in (a), (b), or (c), except for a few relatively large rivers where the information in (a), (b) and (c) showed that these life stages are not occurring in the river and the designation is not necessary to ensure delivery of cold water downstream.

EPA requests additional scientifically-credible data or information regarding core juvenile rearing areas that it could use to identify those waters where this use should be designated. In particular, EPA seeks information on coho and steelhead juvenile rearing density and timing. EPA would consider such data or information in EPA's final use designations.

Other data and information that may be appropriate for commenters to review and evaluate EPA's designated uses include: (1) Waters identified by ODFW as juvenile rearing habitat where ODEQ monitoring data from any year shows that maximum water temperatures are at or below 16°C/61°F (the proposed numeric criterion for this use); (2) waters identified by ODFW as juvenile rearing habitat where ODEQ temperature modeling indicates maximum water temperatures can meet 16°C/61°F; (3) information from NOAA Fisheries describing critical sub-populations; (4) ODFW information on high density spawning areas; and (5) waters above a certain elevation that are identified by ODFW as steelhead and/or coho juvenile rearing with no chinook rearing. Use of this data could potentially increase the number of waters for which EPA promulgates the salmon and steelhead core juvenile rearing designated use.

Although EPA is soliciting additional data or information that may be helpful in designating this use, EPA believes the water bodies EPA is proposing to designate for salmon and steelhead core juvenile rearing provide sufficient spatial coverage to protect this use. As can be seen by viewing the use designation maps, EPA is proposing to designate salmon and steelhead core juvenile rearing for significant portions of each basin. EPA, after discussions with NOAA Fisheries, believes it is important for each existing salmon and steelhead population to have a portion of their rearing habitat designated for this use. EPA believes it has achieved this by designating this use for a portion of most of the sub-basins in each of Oregon's basins used by salmon and steelhead.

It is also important to recognize that waters EPA is proposing to designate as salmon and trout juvenile rearing and migration use (See section III.B.2.iii) with an associated 18°C/64°F criterion, will provide a significant amount of water with 16°C/61°F maximum temperatures that support salmon and steelhead core juvenile rearing because attaining 18°C/64°F in the lower elevation waters will require that a significant portion of the upstream waters be colder than 18°C/64°F. Thus, EPA believes that the salmon and trout juvenile rearing and migration summer maximum criterion will, in effect, protect additional upstream waters for salmon and steelhead core juvenile rearing. EPA requests comment on its methodology for identifying waters for the salmon and steelhead core juvenile rearing use and on the specific waters identified.

iii. Salmon and Trout Juvenile Rearing and Migration. EPA proposes to designate a salmon and trout juvenile rearing and migration use for: (a) Waters where ODFW distribution and timing information shows chinook, chum, coho or steelhead rearing occurring in July or August; (b) waters where ODFW distribution information shows rainbow trout rearing use; and (c) all waters upstream of the waters identified above. The data and information supporting these determinations is contained in the ODFW database.

iv. Salmon and Steelhead Migration. EPA proposes to designate a salmon and trout migration use for waters where ODFW distribution and timing information indicates there is 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 evidence that temperatures naturally reach or exceed 20°C/68°F. Specifically, EPA is proposing a salmon and steelhead migration use for the lower Willamette River (50 miles upstream from the confluence with the Columbia River), the John Day River (from the confluence with the North Fork River downstream to the confluence with the Columbia River), and the portion of the Snake River in Oregon (from the Washington-Oregon border to Hells Canyon Dam). The data and information supporting

these determinations is contained in the ODFW database.

v. Salmon and Steelhead Spawning Through Fry Emergence. EPA considered identifying specific locations and all the distinct time periods where the ODFW database shows salmon or steelhead spawning, egg incubation or fry emergence to occur, but doing so even for one basin resulted in over 30 different time periods for this use designation. Because such an approach would be very complicated and difficult to implement, EPA instead reviewed all of the data and developed an approach that protects this use with fewer different time frames in a basin.

After reviewing the timing information for spawning through fry emergence for all salmon species and steelhead, EPA determined that designating this use from October 15 through May 15 where it occurs would protect this use for all waters in the State except for those waters where the salmon and steelhead core juvenile rearing is the designated use. In those waters, chinook (salmon) spawning may occur prior to October 15 and steelhead fry emergence may occur later than May 15. To account for chinook spawning in these waters prior to October 15, EPA decided to designate this use as occurring either two weeks after the start of non-peak chinook spawning or at the time of peak chinook spawning, whichever date is earliest. The rationale for designating this use two weeks after the start of chinook spawning is that the use designation is for the whole river segment where chinook spawning occurs but the early spawning generally occurs in the higher elevation part of the river segment. EPA believes it is reasonable to apply the criterion two weeks after the start of spawning upstream because the criterion applies throughout the water body, including the downstream extent of the use where spawning typically occurs later.

To account for steelhead fry emergence after May 15 in waters where salmon and steelhead core juvenile rearing is the designated use, EPA decided that designating the salmon and steelhead spawning through fry emergence use where it occurs in these waters through June 15 would be protective. Although steelhead fry emerge later than June 15 in some waters, those waters are typically the upstream (*i.e.*, high elevation) portion of where this use is designated. Thus, in order to attain the criterion for this use (*i.e.*, 13°C/55°F) on June 15 in the downstream extent of waters where this use would be designated, temperatures would need to be colder on June 15 in the upstream waters and therefore would not likely reach 13°C/55°F until later in the year.

Lastly, because the timing information is well known for salmonid spawning in the lower mainstem rivers and the temperature variation within these segments is small, EPA decided to also propose a salmon and steelhead spawning through fry emergence use where and when spawning and fry emergence occur (based on the ODFW database) in waters where salmon and steelhead migration is the designated use. Of the three rivers for which EPA is proposing the migration use, the Snake River is the only one where spawning and fry emergence also occurs. As a result, it was unnecessary for EPA to develop a generalized methodology to protect the spawning use for this waterbody.

In summary, EPA proposes to designate the times and places for salmon and steelhead spawning through fry emergence use as follows:

(1) For waters where EPA is proposing to designate salmon and trout juvenile rearing and migration (*i.e.*, the 18°C/64°F summer maximum criterion applies) and where ODFW distribution information shows salmon (chinook, coho, chum) or steelhead spawning occurs, EPA is also proposing to designate the salmon and steelhead spawning through fry emergence use from October 15 through May 15.

(2) For waters where salmon and steelhead core juvenile rearing is the proposed designated use (*i.e.*, the 16°C/61°F summer maximum criterion applies), EPA also proposes to designate the salmon and steelhead spawning through fry emergence use for the following waters and associated timeframes:

(a) For waters where ODFW distribution information shows chinook spawning and steelhead spawning occurs, beginning the earliest of (i) 2 weeks after the beginning of chinook spawning, or (ii) the start of peak chinook spawning, or (iii) October 15; and ending June 15;

(b) For waters where ODFW distribution information shows chinook spawning occurs (and no steelhead spawning occurs), beginning the earliest of (i) 2 weeks after the beginning of chinook spawning, or (ii) the start of peak chinook spawning, or (iii) October 15; and ending May 15;

(c) For waters where ODFW distribution information shows steelhead spawning occurs (and no chinook spawning occurs), from October 15 to June 15; and

(d) from October 15 to May 15 for any waters where other salmon spawning (*e.g.*, coho or chum) occurs.

(3) For waters where EPA is proposing to designate a salmon and steelhead migration use (*i.e.*, 20°C/68°F criterion applies) and where ODFW distribution information indicates salmon or steelhead spawning occurs, EPA is also proposing to designate the salmon and steelhead spawning through fry emergence use from the beginning of spawning to the end of fry emergence, as indicated on the maps at *http://www.epa.gov/r10earth/federaloregonwqs.htm.*

C. Temperature Criteria for Salmonid Uses

1. Background

Each salmonid life stage has an optimal temperature range. Physiological optimum temperatures are those where physiological functions (*e.g.*, growth, swimming, heart performance) are optimized. These temperatures are generally determined in laboratory experiments. Ecological optimum temperatures are those where fish do best in the natural environment considering food availability, competition, predation, and fluctuating temperatures. All are important considerations when establishing numeric temperature criteria. Exposure to temperatures above the optimal range results in an increased severity of harmful effects, often referred to as sub-lethal or chronic effects (*e.g.*, decreased juvenile growth which results in smaller, more vulnerable fish; increased susceptibility to disease which can lead to mortality; and decreased ability to compete and avoid predation), as temperatures rise until at some point they become lethal. See Temperature Guidance, pp.18–19.

Water temperatures significantly affect the distribution, health, and survival of native salmonids in the Pacific Northwest. Since salmonids are ectothermic (cold-blooded), their survival is dependent on external water temperatures, and they will experience adverse health effects when exposed to temperatures outside their optimal range. Salmonids have evolved and thrived under the water temperature patterns that historically existed (*i.e.*, prior to significant anthropogenic impacts that altered temperature patterns) in Pacific Northwest streams and rivers. Although evidence suggests that historical water temperatures exceeded optimal conditions for salmonids at times during the summer months on some rivers, the temperature diversity in these unaltered rivers provided enough cold water during the summer to allow salmonid populations as a whole to thrive.

Pacific salmon populations have historically fluctuated dramatically due to climatic conditions, ocean conditions, and other disturbances. High water temperatures during drought conditions likely affected the historical abundance of salmon. In general, the increased exposure to stressful water temperatures and the reduction of suitable habitat caused by drought conditions reduce the abundance of salmon. Human-caused elevated water temperatures significantly increase the magnitude, duration, and extent of thermal conditions unsuitable for salmonids.

The freshwater life histories of salmonids are closely tied to water temperatures. Cooling rivers in the autumn serve as a signal for upstream migrations. Fall spawning is initiated when water temperatures decrease to suitable temperatures. Eggs generally incubate over the winter or in early spring when temperatures are coolest. Rising springtime water temperatures may serve as a cue for downstream migration. Temperature can also influence the life histories of salmonid prey and allow a competitive advantage for non-native species such as pikeminnow.

Because of the overall importance of water temperature for salmonids in the Pacific Northwest, human-caused changes to natural temperature patterns have the potential to significantly reduce the size of salmonid populations. Of particular concern are human activities that have led to the excess warming of rivers and the loss of temperature diversity.

Different salmonid species have evolved to take advantage of the Pacific Northwest's cold-water environment in different ways. Each species has a unique pattern of when and where they use the rivers, and even for a specific species this pattern of use may change from year to year. This diversity in freshwater life history is a critical evolutionary trait that has allowed salmonids to persist in a freshwater environment that naturally fluctuates and has natural disturbances.

Therefore, EPA's proposed water quality standards for temperature include protective criteria that account for the natural thermal diversity of streams and rivers. In proposing temperature criteria for salmonids uses, EPA recognizes that (1) Salmonids need specific water temperature ranges for their various life stages; (2) the natural thermal temperature regime of the rivers and streams of the Pacific Northwest were naturally thermally diverse, varying spatially and temporally; and (3) salmonids evolved specific life history strategies to find and thrive in the cold water provided by these thermally diverse river systems. EPA believes that water quality standards for temperature should take this natural thermal diversity into account in addition to setting the appropriate temperature thresholds necessary to protect the various life stages of salmonids. The water quality criteria EPA is proposing today address both of these concepts in the form of generally applicable numeric criteria corresponding to specific use designations, and two alternative criteria that, if promulgated, would apply instead of the numeric criteria on a site-specific basis. The first proposed alternative criterion addresses naturally warm conditions: when the natural thermal condition of the stream is naturally warmer than the otherwise applicable numeric temperature criterion, the natural temperature becomes the criterion. The second proposed alternative criterion concerns waters that are currently cold: if the current summer maximum stream temperature is colder than the otherwise applicable numeric criterion, the current summer maximum temperature becomes the criterion.

2. EPA's Basis for the Proposed Numeric Criteria

Water quality criteria must protect the associated designated use(s). See CWA section 303(c)(2)(A), 33 U.S.C. 1313(c)(2)(A), and 40 CFR 131.5(a)(2), 131.6(c) and 131.11(a)(1). Therefore, a criterion should apply to the whole extent of a water body or segment for which a particular use is designated, including, in the case of flowing water bodies, the lowest point downstream where the use is designated. Because streams generally warm progressively in the downstream direction, waters upstream of that point will generally need to be cooler in order to ensure that the criterion is met throughout the segment, including the furthest point downstream. Thus, a water body that meets a temperature criterion at the furthest downstream extent of the water body segment where the use is designated will, in many cases, provide water cooler than the criterion at the upstream extent of the segment. EPA took this into consideration when it formulated the proposed numeric temperature criteria contained in today's proposed rule.

EPA regulations also require that water quality standards provide for the attainment and maintenance of downstream uses. 40 CFR 131.10(b). Thus, the designated use and associated numeric criteria should apply upstream of the areas of actual use because temperatures in upstream waters significantly affect the water temperatures where the actual use occurs and upstream waters are usually colder. Of course, if a more sensitive use is designated upstream, the more protective criterion associated with that use would apply upstream. *See* 40 CFR 131.11(a).

The numeric temperature criteria EPA is proposing to protect the salmonid designated uses are the same criteria recommended in the Temperature Guidance. The Guidance included two tables summarizing the temperature considerations for each life stage of Pacific salmon and trout and bull trout that are described in detail in the technical issue papers that are the basis for the Temperature Guidance. See the record for this proposed rule to view the issue papers. These temperature considerations, summarized in Tables III–1 and III–2 at the end of this section, form the scientific basis for EPA's proposed numeric temperature criteria.

EPA requests comment on the proposed temperature criteria and methodology and scientific judgments that led to the recommendations in the Temperature Guidance and the criteria in this proposed rule. Specifically, EPA requests comment on the level of conservatism associated with proposing numeric criteria, considering the temperature ranges identified by studies that were evaluated in the Temperature Guidance. The level of conservatism should be considered along with the conservative approach of applying the criteria as the 7DADM of the second warmest year of ten years at the downstream end of the affected segment; see discussion below).

The metric EPA is proposing for all the numeric criteria is the maximum seven-day average of the daily maximum temperatures (7DADM). A 7DADM value is calculated by adding the daily maximum temperatures recorded at a site on seven consecutive days and dividing by seven. The maximum 7DADM is the highest recorded 7DADM for the year (*i.e.*, the warmest week).

The 7DADM is similar to the maximum weekly average temperature metric used previously by EPA for its national temperature criteria recommendations. However, EPA proposes to use the 7DADM metric because it describes the maximum temperatures in a stream, but is not overly influenced by the maximum temperature of a single day. Thus, it reflects an average of maximum temperatures that fish are exposed to over a week-long period. Since this

metric is oriented to daily maximum temperatures, it can be used to protect against acute effects, such as lethality and migration blockage conditions.

This metric can also be used to protect against sub-lethal or chronic effects (*e.g.*, temperature effects on growth, disease, smoltification, and competition), but the resultant cumulative thermal exposure fish experience over the course of a week or more needs to be considered when selecting a 7DADM value to protect against these effects. EPA's general conclusion from studies on fluctuating temperature regimes (which is what fish generally experience in rivers) is that fluctuating temperatures increase juvenile growth rates when mean temperatures are colder than the optimal growth temperature derived from constant temperature studies, but will reduce growth when the mean temperature exceeds the optimal growth temperature. *See* "Issue Paper 5: Summary of Technical Literature Examining the Physiological Effects of Temperature on Salmonids," prepared as part of the EPA Region 10 Temperature Water Quality Criteria Guidance Development Project. EPA–910–D–01–005, May 2001, pp. 51-56. When the mean temperature is above the optimal growth temperature, the "mid-point" temperature between the mean and the maximum is the "equivalent" constant temperature. This "equivalent" constant temperature then can be directly compared to laboratory studies done at constant temperatures. For example, a river with a 7DADM value of 18°C/64°F and a 15°C/58°F weekly mean temperature will be roughly equivalent to a constant laboratory study temperature of 16.5°C/61.7°F (mid-point between 15°C/58°F and 18°C/65°F). Thus, both maximum and mean temperatures are important when determining a 7DADM value that is protective against sub-lethal/chronic temperature effects. See the Temperature Guidance, pp.19-20.

As discussed in the Temperature Guidance, many rivers and streams occupied by salmon and steelhead in the Pacific Northwest have a 3°C/5°F difference between the 7DADM and the weekly mean temperature. So, for many streams occupied by salmon and steelhead, a protective 7DADM temperature is approximately 1.5°C/2.7°F higher than a protective constant temperature derived from laboratory studies. *Id.* For bull trout streams, where the difference between the 7DADM and the weekly mean is smaller because there is less diurnal variation, a protective 7DADM temperature is approximately 0.5°C/0.9°F higher than a protective constant temperature derived from laboratory studies. *Id.*

3. Numeric Temperature Water Quality Criteria for EPA's Salmonid Use Designations

i. Temperature Criteria for Waters Designated for Bull Trout Juvenile Rearing and Spawning. EPA proposes a 12°C/54°F maximum 7DADM numeric criterion (which roughly translates to an equivalent constant temperature of 11.5°C/52.7°F) for waters designated for a bull trout juvenile rearing and spawning use to: (1) Protect juvenile bull trout from lethal temperatures (22–23°C/72–73°F constant); (2) provide conditions during the period of summer maximum temperature at the upper end of the optimal temperature range when food is limited for juvenile growth (8–12°C/46–54°F constant), thus providing optimal temperatures for other times of the year; (3) provide temperatures where juvenile bull trout are not at a competitive disadvantage with other salmonids (greater than 12°C/54°F constant); and (4) provide temperatures that are consistent with the temperatures observed in field studies identifying where juvenile bull trout have the highest probability to occur (12–13°C/54–55°F daily maximum). *See* Table III–2.

When determining the overall optimal range for bull trout juvenile rearing, EPA reviewed both laboratory and field data and considered both physiological and ecological aspects. Optimal growth under limited food rations in laboratory experiments, preference temperatures in laboratory experiments where fish select between a gradient of temperatures, and field studies on where rearing predominately occurs are three independent lines of evidence that form the basis for identifying the optimal temperature range for bull trout rearing in the natural environment. These three lines of evidence show very consistent results, with the optimal range between 8-12°C/46–54°F for bull trout juvenile rearing. See the Temperature Guidance.

EPA is proposing that this numeric criterion apply to the warmest times of the summer, the warmest years (except for the warmest year out of ten), and throughout the water body or segment, including the lowest downstream extent of that waterbody or segment designated for that use. Because of the conservative nature of how this criterion is applied to the water body, EPA believes that it is appropriate to propose this numeric criterion near the warmer end of the optimal temperature range for bull trout rearing. EPA expects that a numeric criterion near the warmer end of the optimal range that is applied during the period of summer maximum temperatures is likely to result in temperatures near the middle of the optimal range for most of the spring through fall in the segments where most of the rearing use occurs. EPA has identified three reasons for this. First, if the criterion is met during the summer maximum period, then temperatures will be colder than that value during the rest of the year. Second, because the criterion would apply throughout the water body or segment including the furthest point downstream where the use is designated, temperatures will generally be colder as you move upstream in the waterbody or segment. Finally, the criterion must be met in the warmest years (except for the warmest year in ten), so that in most years, the waters will be colder.

As mentioned previously, the scientific literature indicates that water with a temperature of 9°C/48°F is necessary for the protection of bull trout spawning. *See* Table III–2. For a more detailed explanation of why EPA believes the proposed 12°C/54°F summer maximum criterion would protect bull trout spawning, *see* section III.B.2.vi.

For four water bodies where EPA is proposing a 12°C/54°F 7DADM criterion to protect bull trout spawning, FWS believes that criterion may not be protective. In these waters, dams delay the natural seasonal cooling of waters in the fall to an extent that may prevent waters from cooling to 9°C/48°F downstream at times of the year when bull trout spawning occurs. The four locations identified by FWS are segments immediately downstream of: Laurence Lake Reservoir (Hood River Basin on the Middle Fork of the Hood River); Melhorne Reservoir and Clear Creek Reservoirs (Pine Creek Sub-Basin of Powder Basin); and Carmen Reservoir (behind Carmen dam in the Willamette Basin, on the McKenzie River above Blue River).

EPA requests comment on two approaches to address the four identified water body segments where this situation occurs. First, EPA requests comment on whether a numeric criterion of 9°C/48°F is necessary in these waters at the time of spawning (in addition to the 12°C/54°F 7DADM criterion) to protect the designated use of bull trout spawning. Such a criterion would apply immediately downstream of each reservoir, starting at the beginning of the spawning period. The proposed bull trout spawning and rearing use designation continues downstream of each reservoir for some distance, and some warming could occur as the water moves downstream

from the reservoir. EPA, however, believes that applying a 9°C/48°F criterion immediately below the reservoir would be protective because of the application of the criterion there at the earliest spawning dates. Typically, bull trout spawning begins at the upper end of the range of waters in which spawning occurs, and gradually moves downstream as temperatures naturally cool due to seasonal weather changes. Thus, applying a 9°C/48°F criterion immediately below the reservoir at the start of the spawning time period would mean that temperatures downstream are likely to cool naturally later in the spawning period.

Second, EPA also requests public comment on a narrative provision that would limit temperature increases during spawning times to no more than 0.3°C/0.5°F greater than the otherwise applicable criterion immediately downstream of the reservoir relative to the water temperature upstream of the reservoir. EPA believes this prohibition of any significant warming would be protective because in each case, EPA is proposing to designate bull trout spawning and rearing upstream of the reservoir, which will make the 12°C/54°F summer maximum criterion applicable there. As discussed above, seasonal temperature cycles would be expected to cool those upstream waters to the 9°C/48°F temperature that is protective of spawning in time for the fall time periods when spawning occurs. Limiting the temperature increase from these reservoirs to this insignificant increment would therefore be expected to protect the bull trout spawning below the reservoirs.

EPA believes it is important to consider the attainability of the bull trout rearing and spawning use and accompanying criterion EPA is proposing. As such, EPA will consider data and information submitted regarding the attainability of this use and criterion on the water bodies where it is proposed, including data regarding attainability of the additional criteria it is considering for the four water bodies mentioned above.

ii. Temperature Criteria for Waters Designated for Salmon and Steelhead Core Juvenile Rearing. EPA proposes a 16°C/61°F maximum 7DADM numeric criterion (which roughly translates to an equivalent constant temperature of 14.5°C/58°F) for waters designated for salmon and steelhead core juvenile rearing to: (1) Protect juvenile salmon and trout from lethal temperatures (23–26°C/73–79°F constant); (2) provide conditions during the period of summer maximum temperature at the upper end of the optimal temperature range when food is limited for juvenile growth (10–16°C/50–61°F constant), thus providing optimal temperatures for other times of the year; (3) protect against temperature-induced elevated disease rates (14-17°C/57–63°F constant); and (4) provide temperatures that juvenile salmon and trout prefer, as demonstrated by studies indicating fish in high densities at these temperatures (10–17°C/50–63°F constant or less than 18°C/64°F 7DADM). *See* Table III–1.

When determining the overall optimal temperature range for salmon and steelhead juvenile rearing, EPA reviewed both laboratory and field data and considered both physiological and ecological aspects. Optimal growth under limited food rations in laboratory experiments, preference temperatures in laboratory experiments where fish select between a gradient of temperatures, and field studies on where rearing predominately occurs are three independent lines of evidence that form the basis for identifying the optimal temperature range for salmon and steelhead juvenile rearing in the natural environment. These three lines of evidence show very consistent results, with the optimal range between 10–16°C/50–61°F for salmon and steelhead juvenile rearing. See the Temperature Guidance.

EPA is proposing that this numeric criterion apply to the warmest times of the summer, the warmest years (except for the warmest year in ten), and and throughout the water body or segment, including the lowest downstream extent of the waterbody or segment designated for that use. Because of the conservative nature of how this criterion is applied, EPA believes that it is appropriate to propose numeric criteria near the warmer end of the optimal temperature range for core juvenile salmon and trout rearing. EPA expects that a numeric criterion near the warmer end of the optimal range that is applied during the period of summer maximum temperatures is likely to result in temperatures near the middle of the optimal range for most of the spring through fall in the segments where most of the rearing use occurs. EPA has identified three reasons for this. First, if the criterion is met during the summer maximum period, then temperatures will be colder than that value during most of the rest of the year. Second, because the criterion would apply throughout the waterbody or segment, including the furthest point downstream where the use is designated, temperatures will generally be colder throughout the rest of the waterbody or segment. Finally, criterion must be met in the warmest years (except for the warmest year in ten), so that in most years, the waters will be colder.

iii. Temperature Criteria for Waters Designated for Salmon and Trout Juvenile Rearing and Migration. EPA proposes an 18°C/64°F maximum 7DADM criterion (which roughly translates to an equivalent constant temperature of 16.5°C/62°F) for waters designated for salmon and trout juvenile rearing and migration to: (1) Protect against lethal conditions for both juveniles and adults (21–22°C/70–72°F constant); (2) prevent migration blockage conditions for migrating adults (21–22°C/70–72°F average); (3) provide optimal or near optimal juvenile growth conditions (under limited food conditions) during the summer maximum conditions and optimal conditions during the rest of the year (10–16°C/50–61°F constant); and (4) prevent adults and juveniles from high disease risk and minimize the exposure time to temperatures that can lead to elevated disease rates (14–17°C/57–63°F constant). *See* Table III–1.

Data and information in the record indicates that salmon and steelhead will use waters that are warmer than their optimal thermal range during the summer and that portions of rivers and streams in the Pacific Northwest naturally (*i.e.*, absent human impacts) were historically warmer than the optimal thermal range for salmonids during the period of summer maximum temperatures. Therefore, EPA proposes a 7DADM numeric temperature criterion that is slightly warmer than the optimal thermal range for salmon and steehead to protect this use. EPA believes this criterion would provide sufficient protection from lethal conditions and sub-lethal effects that would significantly adversely affect these uses. As a result, if this value is met during the period of summer maximum temperatures, then during other times of the summer and the rest of the year, temperatures will likely be within the optimal temperature range. An additional level of protection is provided by requiring the criterion to be met during the warmest years (except for the warmest year in ten), thus ensuring that the water will be colder in most years.

iv. Temperature Criteria for Waters Designated for Salmon and Steelhead Migration. As discussed in section III.B.2.iv, the salmon and steelhead migration use applies to the lower Willamette River, a portion of the John Day River, and a portion of the Snake River. To protect salmon and steelhead migration, EPA proposes a 20°C/68°F maximum 7DADM numeric criterion in conjunction with a requirement to

ensure the presence of well-distributed cold water refugia. This 20°C/68°F criterion roughly translates to an equivalent constant temperature of about 19–20°C/66–68°F because the large mainstem rivers where this use is proposed have little diurnal variation. Well-distributed cold water refugia are portions of a river with cooler nighttime temperatures, or portions of a river that are cooler during the day, that allow salmon and steelhead to migrate through the river segment with minimal stress. Spatial cold water refugia are waters that are at least 2°C/4°F colder than the daily maximum temperature at the nearest location in the main river channel. Spatial cold water refugia results from cold tributaries and cooler groundwater flow entering into a warmer river. Temporal cold water refugia are waters in rivers at times of the day when water temperatures are at least 2°C/4°F colder than the daily maximum temperatures on that day in the main river channel (from diurnal temperature variation in a river), and are waters in rivers on days in the summer when maximum water temperatures are at least 2°C/4°F colder than the summer maximum temperature (from seasonal temperature variation).

EPA believes that a 20°C/68°F criterion accompanied by a narrative criterion to ensure the presence of well-distributed cold water refugia would protect migrating juveniles and adults from lethal temperatures and would prevent migration blockage conditions. However, information in the record indicates that many sublethal effects could occur without cooler nighttime temperatures or portions of the river that are cooler during the day, rendering the numeric criterion of 20°C/68°F alone unprotective of the designated use. *See* Temperature Guidance, pp. 28–30. In such a situation, even if the river meets a 20°C/68°F criterion for maximum temperatures, the duration of exposure to 20°C/68°F temperatures may cause adverse effects in the form of increased disease and decreased swimming performance in adults, and increased disease, impaired smoltification, reduced growth, and increased predation for late emigrating juveniles (*e.g.*, fall chinook in the Columbia and Snake Rivers). Therefore, in order to protect this use, it is appropriate to accompany the numeric criterion of 20°C/68°F with a narrative provision that would require protection of well-distributed cold water refugia.

EPA believes the amount of cold water refugia would be sufficient to protect this use if a typical migrating salmon or steelhead could access waters that are 18°C/64°F or colder for at least 12 hours a day. Salmon and steelhead that are exposed to 18°C/64°F for half the day and up to 20°C/68°F for the remainder of the day are likely to be at less risk than if these fish were continuously exposed to 20°C/68°F because studies show the severity of adverse effects from elevated water temperatures increases significantly as temperatures reach 20–21°C/68–70°F.

As a practical matter, this provision is likely to be implemented during establishment of a Total Maximum Daily Load (TMDL), because all the waters where EPA is proposing for this use currently do not attain 20°C/68°F, thus a TMDL is required based on the numeric criteria. When applying this narrative criterion in the context of a TMDL, the State or EPA would identify the existing cold water refugia and determine whether or not they were sufficient to protect the use. Existing cold water refugia would be identified in the TMDL and the existing temperatures of the cold water refugia would be the applicable numeric criteria for those water segments. Thus, the TMDL would be the document where the narrative cold water refugia criteria is translated into numeric terms. If the existing cold water refugia were insufficient to protect the use, then additional cold water refugia sufficient to protect the use would also be identified and expressed in numeric terms in the TMDL. Depending on how the TMDL is structured, the expression of cold water refugia in numeric terms might also occur during the development of watershed plans to implement the TMDL rather than in the TMDL itself. In addition, the watershed plans may contain measures to protect and restore the cold water refugia.

In the future, as these waters come into attainment of the 20°C/68°F numeric criterion, attainment of the specific numeric cold water refugia criteria identified in the TMDL or watershed plan will also need to be assessed to determine the attainment status of these waters.

In the NPDES permitting context, existing cold water refugia are required to be protected. Where additional cold water refugia have not yet been identified, EPA believes it is impracticable to do so in the context of an individual NPDES permit because this assessment requires an evaluation of the adequacy of the existing cold water refugia on the water body as a whole and is likely to be data intensive. EPA believes this kind of comprehensive assessment is only practicable in the context of TMDL development. Once the TMDL is completed, however, any wasteload allocations to protect either existing or new cold water refugia must be incorporated into NPDES permits during the next permit cycle.

EPA seeks comment on whether a 18°C/64°F 7DADM criterion (without well-distributed cold water refugia) would be a more appropriate criterion for protection of the salmon and steelhead migration use, since the record shows that it would be equally protective of the use and may be more straight forward to implement than the 20°C/68°F with a narrative criterion for well-distributed refugia. See EPA Temperature Guidance, pp15–25. EPA, however, believes 18°C/64°F *throughout* the waters would be extremely costly to attain as compared to the 20°C/68°F with a narrative criterion for well-distributed refugia.

v. Temperature Criteria for Waters Designated for Salmon and Steelhead Spawning Through Fry Emergence. EPA proposes a 13°C/55°F maximum 7DADM criterion (which roughly translates to an equivalent constant temperature of 11.5°C/53°F) for this use (during the time of year when it applies) to: (1) Protect gametes inside adults prior to spawning (less than 13°C/55°F constant), (2) provide temperatures at which spawning is most frequently observed in the field (4–14°C/39–57°F daily average), and (3) provide protective temperatures for egg incubation (4–12°C/39–54°F constant for good survival and 6–10°C/43–50°F constant for optimal range) that occurs over the winter (salmon) and spring (trout), assuming the typical annual thermal pattern. As discussed in section III.B.1, EPA believes that in many water bodies, attainment of the summer maximum criteria for all the other proposed designated uses will result in attainment of the 13°C/55°F maximum 7DADM criterion for protection of salmon and steelhead spawning through fry emergence.

4. Alternative Criteria

i. EPA's Basis for the Proposed Natural Conditions Criterion. EPA is proposing an alternative criterion for natural conditions that would apply instead of the numeric criterion, where applicable. The criterion would require that where a water body or segment's water temperature under natural conditions exceeds the numeric criterion identified above, then the natural condition would be the applicable water quality criterion. Natural temperatures are those that would exist in the absence of human activities that alter stream temperatures. EPA views numeric criteria that reflect natural conditions to be protective of

salmonid designated uses because river temperatures prior to human impacts clearly supported healthy salmonid populations. EPA intends that the estimate of the temperature reflecting natural conditions be determined by the State or EPA using a scientifically-defensible method that utilizes the best available data, as indicated in the proposed rule at 40 CFR 131.39(d)(1). Typically, this determination is made in the context of a TMDL. EPA recognizes, however, that there will always be uncertainties in estimating natural conditions. Potential sources of uncertainty are numerous, including, but not limited to, data gaps, measurement errors, model errors, omissions in identification of impacts, and aggregation errors. It is important that regulatory agencies document the sources of uncertainty in any assessment for the benefit of decision-makers, stakeholders, and the public.

Where the natural temperature conditions so estimated exceeds 20°C/68°F, EPA proposes that the river must have well-distributed cold water refugia. EPA views cold water refugia to be an important aspect of the natural condition that must be specifically identified in waters where the estimated natural condition exceeds 20°C/68°F because of the significant adverse effects to salmon and steelhead exposed to temperatures exceeding 20°C/68°F. See Table 1. Well-distributed cold water refugia allows salmon and steelhead to minimize their exposure to temperatures that exceed 20°C/68°F. As discussed in section III.C.3.iv., EPA believes the amount of cold water refugia would be sufficient if salmon or steelhead could access waters that are at least 2°C/4°F colder than the estimated natural maximum temperature for the main channel for at least 12 hours a day. Refer to section III.C.3.iv. for a discussion on how cold water refugia should be addressed in the context of TMDLs, NPDES permits, and waterbody assessments.

Overview of Methods to Estimate Natural Background Temperatures: There are a number of different ways of estimating natural temperature conditions for the purposes of applying this proposed narrative criterion. These include: (1) Demonstrating that current temperatures reflect natural conditions, (2) using a non-degraded reference stream for comparison, (3) using historical temperature data, (4) using statistical or computer simulation models, and (5) assessing the historical distribution of salmonids. There may be other ways as well. Each approach has its strengths and weaknesses and therefore may or may not be most appropriate for a given situation. Moreover, all of these approaches have uncertainty, which should be quantitatively described where possible. EPA encourages the use of a combination of approaches to estimate natural background temperatures, where feasible. Below is an overview of the five approaches listed above.

Demonstrating That Current Temperatures Reflect Natural Conditions: Under this approach, the past and present human activities that could impact the river temperatures are documented and a technical demonstration is made that the human activities do not currently impact temperatures. This approach is most applicable to non-degraded watersheds (*e.g.*, State and National parks, wilderness areas, and protected State and National lands). These watersheds can be used as "reference" streams for estimating the natural background temperatures of degraded streams (see below). If there is a small human impact on temperatures, it may also be possible to estimate the human impact and subtract it from current temperatures to calculate the natural temperatures.

Comparisons to a Reference Stream: It is often reasonable to assume that the natural temperatures of a thermally degraded stream are similar to those of a non-degraded stream, so long as the location, landscape context, and physical structure of the stream are sufficiently similar. The challenge to this approach is finding a reference stream that is of similar location, landscape context, and physical structure. Because large rivers are unique and most in the Pacific Northwest have been significantly impacted by human activities, this approach is most applicable to smaller streams where a reference stream with current temperatures at natural conditions exists.

Historical Temperature Data: For some rivers, historical temperature data are available that reflect temperatures prior to human influences on the river's temperature regime, and can be used as an estimate of natural temperatures. Factors that lend uncertainty to historic temperature data are the uncertain nature of the quality of the data and whether or not humans affected temperature prior to data collection. Further, historical temperature data often do not adequately capture the spatial and/or temporal variability in stream temperature due to limited spatial or temporal sampling. Historical data may be useful, however, for verifying estimates of modeled natural temperatures.

Temperature Models: Two major methods have been commonly used for water quality modeling in the United States over the last 20 years: (1) Statistical models, which are based on observed relationships between variables and are often used in conjunction with measurements from a reference location, and (2) process-based models, which attempt to quantify the natural processes acting on the water body. Process-based models are often employed when no suitable reference locations can be identified.

Statistical models, also referred to as empirical models, estimate the thermal conditions of streams by using statistics to find correlations between stream temperature and those landscape characteristics that control temperature (*e.g.*, elevation, latitude, aspect, riparian cover, *etc.*). The equations in statistical models describe the observed relationships in the variables as they were measured in a specific location. If the specific location is a non-degraded reference stream, then the model can be used to estimate natural conditions in degraded streams. Statistical models have the advantage of being relatively simple, as they rely on general data and statistics to develop correlations.

The comparability between the reference water body where the statistical correlations are generated and the assessment water body strongly affects the applicability of statistical models. Uncertainties in statistical model results increase with increasing dissimilarity between the landscape characteristics of the reference and assessment water bodies. Uncertainties also increase when models do not include landscape characteristics that control important processes affecting the water temperature. For these reasons, statistical models are best suited for small headwater streams or for generalized predictions across a large landscape. Process models, also referred to as simulation models, are based on mathematical characterizations of the critical processes that affect water temperature in rivers. The equations are constructed to represent the observed or expected relationships and are generally based on physical or chemical principles that govern the fate and transport of heat in a river (*e.g.*, net heat flux from long-wave radiation, direct short wave radiation, convection, conduction, evaporation, streamside shading, streambed friction, and water's back radiation) (Bartholow, 2000).

Estimating water temperature with a process model is generally a two-step process. As a first step, the current river temperatures are estimated with system characteristics (*e.g.*, amount of shade

provided by the canopy, river geometry, point source inputs, *etc.*) reflecting current conditions. Model performance can then be evaluated by comparing simulated temperatures to measured temperatures. Once the model is thus calibrated, the second step involves changing the system characteristics to represent natural conditions. Examples of these changes are removal of point source discharges from the model inputs, changing the model hydrodynamics from impounded conditions due to a dam to free-flowing conditions, and increasing the riparian shade to represent a natural forest.

Unlike statistical models, process models do not rely upon data from reference locations, so they can be used for rivers that have no suitable natural reference comparisons available. Thus, process models are well suited for estimating natural conditions for larger streams and rivers. Although powerful, process models are by no means infallible. As noted above, there are numerous potential sources of uncertainty in model estimates, and these should be well documented in decision-making.

In addition to estimating natural conditions, process-based models are useful for understanding the basic mechanisms influencing water temperature in a watershed, understanding the relative contributions from different sources at different locations, understanding cumulative downstream impacts from various thermal loads, performing "what if" scenarios for different mitigation options, and setting TMDL allocations.

Historical Fish Distributions: Maps of historic salmonid distributions and their time of use can provide rough estimates of natural temperatures. Areas where salmonids existed historically likely provided temperatures suitable for salmonids and, as described in the Temperature Guidance, EPA has a fairly good understanding of suitable temperatures for various life stages of salmonids.

ii. EPA's Basis for Proposing a Criterion to Protect Waters That Are Currently Cold. One of the important principles in protecting the designated uses proposed in this rule is the protection of existing high quality habitat. EPA, therefore, believes it is important to have strong regulatory measures to protect waters with ESA-listed salmonids that are currently colder than EPA's proposed numeric criteria. EPA is proposing a narrative criterion specific to waters in which salmonid species that are listed as threatened or endangered under the ESA are present, and where available data and information from ten years prior to the date of the publication of the final rule in the **Federal Register** reflect the temperature in the water body and demonstrate that the warmest summer maximum 7DADM temperature is colder than the applicable numeric criterion. In these cases, the summer maximum 7DADM temperature shall be the applicable water quality criterion, unless a complete data record of ten years is available, in which case the maximum 7DADM temperature for the year with the second highest maximum 7DADM shall be the applicable criterion.

Because the temperatures of many waters in the Pacific Northwest are currently higher than the summer maximum criteria proposed in this rule, the high quality, thermally-optimal waters that do exist are important for the survival of ESA-listed salmonids. Additional warming of these waters will likely cause harm by further limiting the availability of thermally optimal waters. Further, protection of these cold water segments in the upper part of a river basin plays an important role in maintaining temperatures downstream. Thus, in situations where downstream temperatures currently exceed numeric criteria, upstream temperature increases in waters currently colder than the criteria may further contribute to the non-attainment downstream, especially where there are insufficient intervening river miles to allow the river to return to equilibrium temperatures. *See* "Issue Paper 3: Spatial and Temporal Patterns of Stream Temperature," Prepared as Part of EPA Region 10 Temperature Water Quality Criteria Guidance Development Project. EPA–910–D–01–003, May 2001.; "Technical Synthesis: Scientific Issue Relating to Temperature Criteria for Salmon, Trout, and Char Native to the Pacific Northwest," A Summary Report Submitted to the Policy Workgroup of the EPA Region 10 Water Temperature Criteria Guidance Project. EPA–910–D–01–007. Finally, natural summertime temperatures in Pacific Northwest waters were spatially diverse, with areas of cold-optimal, warm-optimal, and warmer-than-optimal water. The natural conditions narrative criterion described previously deals with natural conditions reflecting warmer-than-optimal water temperature. EPA believes it is important, however, to balance the effects of these warmer waters by adopting provisions to protect waters that are at the colder end of their optimal thermal range. EPA's proposed rule is intended to do this.

Provisions to protect waters currently colder than numeric criteria can also be important to ensure the numeric criteria proposed today protect salmonid uses. As discussed previously, EPA's proposed criteria are based in part on the judgment that meeting the criteria at the lowest downstream point at which the use is designated will likely result in cooler waters upstream. These proposed cold water protection provisions provide more certainty that this will be true.

EPA requests comment on an alternative that would rely on the State's existing antidegradation policy and EPA's proposed implementation procedures to protect these high-quality waters. In general, antidegradation policies, which are part of water quality standards, prohibit a lowering of water quality in high-quality waters except when specific procedural and substantive requirements are satisfied. Using the antidegradation policy to protect high-quality waters may provide greater site-specific flexibility because it would not be necessary to promulgate a rule change to accomodate a situation where some temperature increase (but still below the applicable criterion) was unavoidable. Also, there may be practical difficulties in determining what the applicable criterion is for high-quality waters under the proposed approach if data is incomplete or implementation resources are limited.

TABLE III–1.—SUMMARY OF TEMPERATURE CONSIDERATIONS FOR SALMON AND TROUT LIFE STAGES

Life stage	Temperature consideration	Temperature and unit	Reference
Spawning and Egg Incubation.	* Temp. Range at which Spawning is Most Frequently observed in the Field.	4–14 °C (daily avg)	Issue Paper 1; pp 17–18. Issue Paper 5; p 81.
	* Egg Incubation Studies.		
	—Results in Good Survival	4–12 °C (constant)	Issue Paper 5; p 16.
	—Optimal Range	6–10 °C (constant).	

TABLE III–1.—SUMMARY OF TEMPERATURE CONSIDERATIONS FOR SALMON AND TROUT LIFE STAGES—Continued

Life stage	Temperature consideration	Temperature and unit	Reference
	* Reduced Viability of Gametes in Holding Adults.	> 13 °C (constant)	Issue Paper 5; pp 16 and 75.
Juvenile Rearing	* Lethal Temp. (1 Week Exposure)	23–26 °C (constant)	Issue Paper 5; pp 12, 14 (Table 4), 17, and 83–84.
	* Optimal Growth.		
	—unlimited food	13–20 °C (constant)	Issue Paper 5; pp 3–6 (Table 1), and 38–56.
	—limited food	10–16 °C (constant).	
	* Rearing Preference Temp. in Lab and Field Studies.	10–17 °C (constant)	Issue Paper 1; p 4 (Table 2).
		<18 °C (7DADM)	Welsh et al. 2001.
	* Impairment to Smoltification	12–15 °C (constant)	Issue Paper 5; pp 7 and 57–65.
	* Impairment to Steelhead Smoltification	>12 °C (constant).	Issue Paper 5; pp 7 and 57–65.
	* Disease Risk (lab studies)		Issue Paper 4, pp 12–23.
	—High	>18–20 °C (constant).	
	—Elevated	14–17 °C (constant).	
	—Minimized	12–13 °C (constant).	
Adult Migration	* Lethal Temp. (1 Week Exposure)	21–22 °C (constant)	Issue Paper 5; pp 17, 83–87.
	* Migration Blockage and Migration Delay	21–22 °C (average)	Issue Paper 5; pp 9, 10, 72–74. Issue Paper 1; pp 15–16.
	* Disease Risk (lab studies).		
	—High	>18–20 °C (constant)	Issue Paper 4; pp 12–23.
	—Elevated	14–17 °C (constant).	
	—Minimized	12–13 °C (constant).	
	* Adult Swimming Performance.		
	—Reduced	>20 °C (constant)	Issue Paper 5; pp 8, 9, 13, 65–71.
	—Optimal	15–19 °C (constant).	
	* Overall Reduction in Migration Fitness due to Cumulative Stresses.	>17–18 °C (prolonged exposures).	Issue Paper 5; p 74.

TABLE III–2.—SUMMARY OF TEMPERATURE CONSIDERATIONS FOR BULL TROUT LIFE STAGES

Life stage	Temperature consideration	Temperature and unit	Reference
Spawning and Egg Incubation.	* Spawning Initiation	<9 °C (constant)	Issue Paper 5; pp 88–91.
	* Temp. at which Peak Spawning Occurs	<7 °C (constant)	Issue Paper 5; pp 88–91.
	* Optimal Temp. for Egg Incubation	2–6 °C (constant)	Issue Paper 5; pp 18, 88–91.
	* Substantially Reduced Egg Survival and Size.	6–8 °C (constant)	Issue Paper 5; pp 18, 88–91.
Juvenile Rearing	* Lethal Temp. (1 week exposure)	22–23 °C (constant)	Issue Paper 5; p 18.
	* Optimal Growth.		
	—unlimited food	12–16 °C (constant)	Issue Paper 5; p 90. Selong et al 2001. Bull trout peer review, 2002.
	—limited food	8–12 °C (constant).	
	* Highest Probability to occur in the field	12–13 °C (daily maximum)	Issue Paper 5; p 90. Issue Paper 1; p 4 (Table 2). Dunham et al., 2001. Bull trout peer review, 2002.
	* Competition Disadvantage	>12 °C (constant)	Issue Paper 1; pp 21–23. Bull trout peer review, 2002.

D. IGDO Criterion for Salmonid Spawning

1. Background

The early life stages of fish are recognized as being the most sensitive and requiring relatively high DO concentrations. The oxygen demand by embryos depends on temperature and on the stage of development with the greatest DO required just prior to hatching. When water temperature is near 15°C/58°F, maximum critical levels of DO (where ambient levels meet metabolic needs) for steelhead embryos were estimated at 10.2 mg/L (Rombough, 1986). Rombough (1986) and other researchers have shown that critical oxygen concentration increases with temperature and with the stage of development of the fish. In experiments to determine critical DO levels in steelhead embryos, Rombough (1988) found that critical DO levels rose from less than 1.0 mg/L shortly after fertilization to 9.7 mg/L prior to hatching (implies an IGDO of at least 6.7 mg/L), depending on the temperature. The crucial timing of IGDO, stream temperature, and flow rate varies with each salmonid Evolutionarily Significant Unit's specific characteristics. Sowden and Power (1985) observed that survival in field studies is negligible when IGDO falls below 5 mg/L. This is consistent with other studies. Phillips and Campbell (1962) and Maret *et al.* (1993) observed no or negligible survival in field studies where IGDO fell below 8.0 mg/L.

Turnpenny and Williams (1980) also found survival significantly reduced at 8 mg/L. Other studies found reduced growth of juvenile salmon correlating with IGDO with significant reductions occuring at levels below 9 mg/L (Maret *et al.*, 1993). Growth reductions result in small-sized juveniles that can be poor competitors and face increased risks from predation, disease, and starvation (Mason, 1969; Chapman and McLeod, 1987).

2. EPA's Proposed IGDO Criterion

EPA is proposing a water quality criterion for IGDO for the protection of bull trout spawning and salmon and steelhead spawning through fry emergence such that in water bodies or segments in which the numeric temperature criteria for bull trout spawning and salmon and steelhead spawning through fry emergence applies according to the proposed use designation maps, the spatial median IGDO shall not be less than 8.0 mg/L.

Altitude and temperature place physical limitations on the oxygen concentration in water. Oxygen saturation level decreases with increasing altitude and naturally, increasing temperature. (Oregon Department of Environmental Quality, Dissolved Oxygen 1992–1994 Water Quality Standards Review Final Issue Paper, June 1995). Thus, the IGDO criterion for the protection of egg incubation and fry emergence may not be achievable in some locations and times. EPA recognizes the need to have an alternative criterion when high altitude or naturally occurring warm temperatures preclude meeting the 8 mg/L IGDO criterion. Therefore, EPA proposes the following modifying provision to the IGDO criterion. Where barometric pressure, altitude, and air temperature preclude attainment of the IGDO criterion, then the criterion shall be not less than 95 percent of the maximum IGDO level attainable given the barometric pressure, altitude, and air temperature.

EPA requests comment on its proposed IGDO criterion, which is based on the studies cited above, and any additional data relevant to this criterion. EPA also notes that in general, an ambient water column DO level of 11 mg/L will ensure an IGDO of 8 mg/L and requests comment on whether an IGDO criterion is necessary to protect salmonid spawning in waters that already have an 11 mg/L ambient DO criterion.

E. Antidegradation Implementation Methods

1. Background

Section 303 (33 U.S.C. 1313) of the CWA requires States and authorized Tribes to adopt water quality standards for waters of the United States within their applicable jurisdictions. Such water quality standards must include, at a minimum: (1) Designated uses for all water bodies within their jurisdictions, (2) water quality criteria necessary to protect the most sensitive of the uses, and (3) antidegradation provisions consistent with the regulations at 40 CFR 131.12. Antidegradation is an important tool for States and authorized Tribes to use in meeting the CWA's requirement that water quality standards protect the public health or welfare, enhance the quality of water and meet the objective of the CWA to restore and maintain the chemical, physical and biological integrity of the nation's waters.

EPA's regulation at 40 CFR 131.12 requires that States and authorized Tribes adopt antidegradation policies to provide three levels of water quality protection and identify implementation methods. The first level of protection at 40 CFR 131.12(a)(1) requires the maintenance and protection of existing instream water uses and the level of water quality necessary to protect those existing uses (tier 1). Protection of existing uses is the "floor" of water quality protection afforded to all waters of the United States. Existing uses are "* * * those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards." (40 CFR 131.3(e))

The second level of protection is for high quality waters (tier 2). High quality waters are defined in 40 CFR 131.12(a)(2) as waters where the quality is better than the levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water. This high water quality is to be maintained and protected unless the State or authorized Tribe finds, after public participation and intergovernmental review, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing lower water quality, the State or authorized Tribe must assure water quality adequate to protect existing uses. Further, prior to allowing lower water quality, the State or authorized Tribe must ensure that all applicable statutory and regulatory requirements are achieved for all other new and existing point sources and all cost-effective and reasonable best management practices required by the State or authorized Tribe are achieved for nonpoint source control.

Finally, the third and highest level of antidegradation protection is for Outstanding National Resource Waters (ONRWs) (tier 3). If a State or authorized Tribe determines that the characteristics of a water body constitute an outstanding National resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, and designates a water body as such, then those characteristics must be maintained and protected. *See* 40 CFR 131.12(a)(3).

In addition to requiring States and authorized Tribes to have an antidegradation policy, 40 CFR 131.12 requires States to identify methods for implementing such a policy. Such methods are not required to be contained in the State's regulation, but as they inform EPA's judgment regarding whether the State's antidegradation policy is consistent with the Federal regulations at 40 CFR 131.12, they are subject to EPA review. Where the State chooses to make such methods part of its water quality standards regulations, section 303(c)(3) of the CWA and EPA's implementing regulations require them to be submitted to EPA for review. When a State or authorized Tribe chooses to develop such methods as guidance or outside of regulation, EPA reviews the methods either in connection with the State or Tribe's submission of an amendment to its antidegradation regulations under CWA section 303(c)(3) or under its discretionary authority to review existing water quality standards under CWA section 303(c)(4).

EPA's regulations at 40 CFR 131.12 provide a great deal of discretion to States regarding the amount of specificity required in antidegradation implementation methods. The regulations do not specify minimum elements for such methods, but do require that such methods not undermine the intent of the antidegradation policy. *See* Advanced Notice of Proposed Rulemaking, 63 FR 36742, 36781 July 7, 1998.

Finally, EPA wishes to explain the applicability of antidegradation provisions to point sources and nonpoint sources. While antidegradation requirements as water quality standards apply to the waterbody, the CWA requires only that antidegradation be applied to point sources because the CWA only gives EPA authority to regulate point sources.

Appalachian Power Company v. *Train*, 545 F.2d 1351, 1373 (4th Cir. 1976). Thus, whether antidegradation applies to nonpoint sources is solely a question of State and Tribal law. The CWA and EPA's regulations leave to the States and authorized Tribes the decision whether to regulate such sources by requiring that they undergo antidegradation review. *American Wildlands* v. *Browner*, 260 F.3d 1192, 1198 (10th Cir. 2001). EPA's proposed antidegradation methods must also meet the requirements of the ESA.

2. Why Is EPA Proposing Antidegradation Implementation Methods for the State of Oregon?

EPA is proposing methods for implementing the antidegradation policy adopted by the State of Oregon in order to comply with the court's final judgment in *Northwest Environmental Advocates* v. *EPA & NMFS* (August 13, 2003). At the time of the Oregon water quality standards litigation, EPA had approved Oregon's antidegradation policy. In addition, at the time of the initial briefing in the Oregon litigation, Oregon was in the process of developing methods for implementing its antidegradation policy. See "State of Oregon: Antidegradation Policy Implementation Internal Management Directive for NPDES Permits and Section 401 Water Quality Certifications," March 2001 ("the Directive"). These methods were not contained in Oregon's water quality standards regulations and were not submitted to EPA for review and approval as a "new or revised standard" under CWA section 303(c)(3). In addition, EPA did not review the Directive as part of any discretionary action to review Oregon's existing antidegradation regulations under CWA section 303(c)(4). Because of the jurisdictional argument EPA made in the Oregon litigation and because the implementation methods had not been submitted to EPA for review, EPA did not inform the court of the existence of Oregon's implementation methods. EPA argued that EPA was not subject to a mandatory duty under CWA section 303(c)(3) because there was no new or revised water quality standard regarding antidegradation that triggered a mandatory duty for EPA review, and that there could be no Administrative Procedure Act claim unless and until a party petitioned the Agency to act under its discretionary authority, because absent such a petition, there is no agency "action" to review. Although the court agreed with EPA in holding that EPA did not have a mandatory duty to review Oregon's implementation methods, the court found that it could immediately review EPA's failure to exercise its discretionary authority to review Oregon's methods for implementing its antidegradation policy. 268 F.Supp.2d 1255, 1264 (D.Or. 2003). The court held that EPA acted arbitrarily in failing to exercise its discretion to promulgate an implementation plan for Oregon. The court, therefore, ordered EPA to promulgate an antidegradation implementation plan for Oregon. While EPA does not agree with the court's decision, EPA is complying with the court's order. 268 F.Supp.2d at 1265.

3. What Antidegradation Implementation Methods Is EPA Proposing for the State of Oregon?

Subsequent to the court's order, Oregon proposed to amend its water quality standards, including its antidegradation regulations, to include key elements of its antidegradation implementation methods within its regulations. Oregon Administrative Rule (OAR) 340–041–0004; August 15, 2003. EPA's proposed rule is based on Oregon's proposal. When Oregon finally adopts revisions to its water quality standards, Oregon is required to submit them to EPA for review. As part of its review of Oregon's new or revised water quality standards as contained in State regulation, EPA will also consider Oregon's implementation methods that are not in State regulation, as information that is relevant to understanding what the regulatory revisions mean in practice. The final judgment dated August 13, 2003, requires EPA by March 2, 2004, to either promulgate final regulations regarding methods for implementing Oregon's existing antidegradation policy or to approve Oregon's submission. Thus, EPA may approve Oregon's antidegradation methods even if they are not the same as this proposal, as long as they are consistent with the CWA. EPA will consider what is contained in the Directive as part of determining whether Oregon's implementation methods comport with the CWA.

Tier 1: EPA is proposing that, to implement Tier 1, any lowering of water quality in any water body must protect existing uses. Oregon's existing regulation currently contains provisions to protect existing uses. *See e.g.*, 340–041–0004(1) Purpose; 340–041–0004(8)(c) High quality waters; and 340–041–0004(10), which refers in turn to 3401–041–0004(12)(a)(C). Due to the court's order, EPA is proposing, consistent with Oregon's Regulations and Directive (page 12 flow chart) that in all waters, including those that are not high quality, the existing use must be protected. For example, even in a water body that is impaired, if it continues to support a limited aquatic life use or the water quality supported an aquatic life use since November 28, 1975, prior to any authorization that requires compliance with water quality standards, the level of water quality necessary to protect that "existing use" must be maintained and protected. 40 CFR 131.3(e); 131.12(a)(1).

Tier 2: The purpose of EPA's antidegradation regulations with regard to high quality waters, 40 CFR 131.12(a)(2), is to ensure that assimilative capacity in the waterbody is not used up without a public process to determine that lowering water quality is necessary to accommodate important social or economic development. EPA's regulation applicable to high quality waters contains terms that provide States, and Territories and authorized Tribes with significant discretion to determine what is a high quality water, what constitutes a "lowering" of water quality that would trigger a Tier 2 antidegradation review, and what constitutes a determination that the "lowering" is necessary to accommodate important social or economic development. Thus, in identifying methods for implementing antidegradation policies, EPA would like States and authorized Tribes to explain how they intend to implement these three aspects of the regulation.

Oregon's definition of high quality waters in its existing antidegradation policy tracks EPA's regulation precisely at 40 CFR 131.12(a)(2). Regarding an implementation method for this regulation, EPA proposes to follow Oregon's approach in defining a high quality water as one that has water quality that meets or is better than all water quality standards. In other words, a high quality water is one that is not a water quality-limited water. Directive at 21.

EPA recognizes that Oregon's approach reflects a waterbody-by-waterbody approach to antidegradation rather than a parameter-by-parameter approach. In EPA's ANPRM, July 7, 1998, EPA discussed the advantages and disadvantages to both approaches to designating high quality waters. 63 FR 36782, 36783. EPA also discussed these issues in the preamble to its proposed rule regarding antidegradation implementation procedures for Kentucky. 67 FR 68971, 67798–99 November 14, 2002. EPA interprets the regulation to authorize either approach. Although arguably a parameter-by-parameter approach may capture more

waters as Tier 2 waters, EPA notes that Oregon includes waters that "meet" all water quality standards as Tier 2 waters, rather than using the term "exceed" in the regulation to exclude from Tier 2 review those waters that precisely meet water quality standards. Under Oregon's approach, which EPA follows here, all waters are captured within the State's water quality management system. Impaired waters are addressed through the TMDL provisions of CWA section 303(d) and those that are not impaired are not lowered absent a public process to determine that such lowering is necessary to accommodate important social or economic development. Further, Oregon's approach has the advantage of relying on pre-existing assessment decisions rather than requiring additional assessment of the waterbody to determine if it is a Tier 2 water.

Regarding what constitutes a "lowering" that triggers Tier 2 review, in today's proposed rule, EPA proposes a rule tracking Oregon's proposed amendment to its antidegradation regulations that allows for certain *de minimis* loadings not to constitute a "lowering" of water quality that triggers Tier 2 antidegradation review. EPA has long interpreted the antidegradation policy to allow a determination that certain discharges have an insignificant impact on water quality and therefore may not require an antidegradation review. See EPA's proposed rule regarding Kentucky's antidegradation implementation methods, 67 FR 68791, November 14, 2002. See also "Proposed Water Quality Guidance for the Great Lakes System," (GLI) 58 FR 20802, April 16, 1993; and "Supplementary Information Document for the Final Great Lakes Guidance," Chapter VII at 203–225, 207–210 included in the record for this rule.

Specifically, EPA proposes that pollutant concentration increases are not considered lowering of water quality if there is no overall increase in the total mass load of the pollutant on at least an annual basis. Also, a *de minimis* change in temperature that does not reduce or degrade water quality of the State is not required to undergo Tier 2 review. EPA tracks Oregon's definition of *de minimis* to mean a seven-day average maximum stream temperature increase or decrease of 0.30°C/0.54°F or less across the watershed.

Third, regarding what constitutes a finding that a lowering is necessary to accommodate important social or economic development, EPA tracks the main components of Oregon's proposed antidegradation regulations and the main principles contained in Oregon's Directive, that the discharger/applicant provide the State with enough information to allow for a financial impact analysis that assesses whether allowing important economic and social development justifies lowering water quality. EPA is aware that Oregon has included in its proposed amendments much more detail of how this assessment would be done through a reference to certain parts of its Directive; however, EPA is not proposing that those specifics be contained in EPA's proposed rule. EPA believes that including this degree of specificity in a Federal rulemaking is not required by the regulations at 40 CFR 131.12(a)(2) nor is it in the public interest because once codified, a subsequent Federal rulemaking would be necessary to allow the State to deviate from the Federal rule, and EPA does not wish to constrain a State's discretion to this degree. EPA intends to consider the specifics of the Directive, incorporated into the State regulation, when EPA acts on the State's final revised water quality standards regulations submitted to EPA.

Tier 3: EPA proposes to track Oregon's proposed water quality standards regulation regarding Tier 3 implementation for Outstanding Resource Waters (ORWs). (In today's proposed rule, EPA uses the term Outstanding Resource Water or ORW to be consistent with the State of Oregon's terminology in its existing regulation.) EPA's proposed rule describes the process the State would follow in designating high quality waterbodies to be classified as ORWs in order to protect the water quality parameters that affect ecological integrity of critical habitat or special water quality values that are vital to the unique character of those waterbodies.

F. Effect of This Proposed Rule on the State's Water Quality Programs

EPA's approach in this rulemaking does not undermine the State's primary role in designating uses, establishing protective criteria, and ensuring the protection of high quality waters in Oregon. EPA prefers that States establish their own regulations. If the standards are adopted by the State for specific waters and approved by EPA before final promulgation of the Federal standards, EPA will not proceed with the final promulgation and the State standards will take effect for CWA purposes.

Water quality standards are implemented through such mechanisms as NPDES permits. The State has flexibility in how it implements these water quality standards. EPA has included a variance provision in today's proposed rule, 40 CFR 131.39(h), authorizing the Regional Administrator to grant variances based upon a permittee's demonstration, consistent with the Federal regulations, that the use is not attainable. Variances are particularly suitable for instances where the cause of nonattainment is discharger-specific and it appears that the designated use in question will eventually be attainable or be demonstrated to be unattainable. For example, a permitted entity may have a long-term plan (*e.g.*, 20 or 30 years) in place that will result in the eventual attainment of water quality standards; however, in the intervening years attaining water quality standards may not be possible. In this circumstance, the entity may wish to seek a water quality standards variance. See Section V.C. In addition, the State will use these water quality standards, if finalized, in identifying impaired waters and establishing TMDLs. Where the State identifies waters subject to this rulemaking as impaired, the State has discretion in scheduling the water for TMDL development. Further discussion is contained in section V.F.

IV. Economic Analysis

These standards may serve as a basis for development of NPDES permit limits. In Oregon, the State is the NPDES permitting authority and retains considerable discretion in implementing standards. EPA prepared a preliminary analysis to evaluate potential costs to NPDES dischargers in Oregon associated with future State implementation of EPA's Federal standards.

Any NPDES-permitted facility that discharges to water bodies affected by this proposed rule could potentially incur costs to comply with the rule's provisions. The types of affected facilities may include industrial facilities and publicly owned treatment works (POTWs). EPA did not consider the potential costs for nonpoint sources, such as agricultural and forestry-related nonpoint sources because the CWA does not regulate nonpoint sources. EPA does, however, recognize that the State may decide to require controls under State law for nonpoint sources to achieve water quality standards. As a technical matter, nonpoint source discharges are difficult to model and evaluate for potential costs because they are intermittent, highly variable, and occur under different hydrologic or climatic conditions than continuous discharges from industrial and municipal facilities, which are evaluated under critical low flow or drought conditions. Thus, the evaluation of nonpoint sources and their

effects on the environment is highly site-specific and data sensitive. In addition, EPA did not quantify the potential benefits of this proposed rule for Oregon.

A. Identifying Affected Facilities

According to EPA's Permit Compliance System (PCS), there are 1,447 NPDES-permitted facilities in Oregon. Seventy-six of the facilities are classified as major dischargers, and 1,371 are minor or general permit dischargers. However, EPA did not include general permit facilities in its analysis because data for such facilities are extremely limited, flows are usually negligible, and EPA could not determine if any of these facilities discharge to affected stream segments because location information is not available in EPA's PCS database. Therefore, EPA's analysis includes a universe of 382 permitted facilities (76 major and 306 minor).

To identify facilities potentially affected by the proposed rule, EPA assumed that only facilities that discharge to rivers and streams with new or more stringent uses and criteria may be affected by the water quality criteria and designated uses provisions. (EPA also assumed that facilities discharging directly to the Columbia River and the Pacific Ocean are not affected by the proposed rule, except for portions of the Columbia River where spawning occurs and the proposed IGDO criterion would apply.) For IGDO, the current criterion of 6 mg/L is less stringent than the revised IGDO criterion of 8 mg/L. Therefore, all waters designated for salmonid spawning are potentially affected by the proposed rule, and facilities discharging to these waters are included in the set of potentially affected dischargers. EPA identified these facilities by overlaying PCS facilities with the waters designated for salmonid spawning using geographic information system (GIS) software.

To identify waters for which the rule provides new or more stringent uses and temperature criteria, EPA compared criteria and uses designated for salmonid spawning and rearing and bull trout protection for waters under the proposed rule with those criteria and uses that are currently designated by the State of Oregon. The State's current temperature criteria for salmonid rearing is 17.8°C/64.0°F, with no differentiation for core juvenile rearing. The proposed rule establishes a 16°C/61°F temperature criterion for core juvenile rearing (and 18°C/64°F otherwise for rearing). Therefore, EPA's rule provides a more stringent criterion for waters it designates for core juvenile rearing (16°C/61°F), and facilities discharging to these waters may be affected. EPA identified these facilities by overlaying PCS facilities with the waters designated for core juvenile rearing using GIS software.

For salmonid spawning, the current State criterion (12.8°C/55.0°F) is slightly more stringent than the proposed criterion of 13°C/55°F. However, the time period that the criterion applies may differ under EPA's proposed rule. Therefore, EPA assumed that any waters for which it is designating a salmonid spawning period that is earlier or later than currently designated by the State (*e.g.*, current designation from October 1 to May 31, versus a proposed designation from September 1 to June 30) would be affected because a more stringent criterion (*i.e.*, more stringent than the current State salmonid rearing criterion of 17.8°C/64.0°F would apply during the extended time period. Facilities discharging to these waters may be impacted. EPA identified these facilities by overlaying PCS facilities in a GIS map with the waters for which an earlier or later salmonid spawning period applies under the rule.

For antidegradation, the State already has an antidegradation policy in place. This rule would primarily affect the methods by which a review would occur in high quality waters. EPA assumed that facilities discharging to streams not listed by the State as impaired waters (*i.e.*, not on the 303(d) list) are affected. Although high-quality waters are not yet identified by the State, the unimpaired waters provide a reasonable approximation of high-quality waters (although some portion of these will be ORWs and not affected by the procedures because no lowering of water quality is allowed for ORWs). EPA identified these facilities by overlaying PCS facilities with 303(d) listed waters designated using GIS software. Table IV–1 summarizes the potentially affected facilities by provision. The dischargers are grouped by discharger type (*e.g.*, major or minor) and category (*e.g.*, POTW or industry category). Note that there are some facilities affected by more than one provision.

TABLE IV–1. ESTIMATED NUMBER OF FACILITIES POTENTIALLY AFFECTED BY EACH PROVISIONS OF THE PROPOSED RULE

Category	Number of facilities		
	IGDO [1]	Temperature [2]	Antidegradation [3]
Major POTWs	29	3	14
Major Industrial	14	1	8
Minor Dischargers	149	44	130
Total	192	48	152

[1] Estimated as facilities discharging to waters designated for salmonid spawning, except for portions of the Columbia River where spawning occurs.
[2] Estimated as facilities discharging to waters designated for core juvenile rearing, or an extended (earlier, later, or both) spawning period, under the proposed rule.
[3] Estimated as facilities discharging to waters not on the State's 303(d) list.

B. Method for Estimating Potential Compliance Costs

EPA identified a total of 48 facilities (4 major and 44 minor) that may be potentially affected by the proposed uses and temperature criteria. EPA evaluated all four major facilities and a sample of minor facilities from this group for potential cost impacts associated with the proposed rule. For these sample facilities, EPA assumed that any discharge that results in a downstream temperature greater than 0.14°C/0.25°F above the applicable criterion would require additional controls (current Oregon water quality standards state that a discharge may not cause an increase in the surface water temperature of greater than 0.14°C/0.25°F in waters exceeding the applicable criterion [OAR 340–041–0205 (b)(A)]).

EPA evaluated the effect of the discharge on the receiving water using monthly effluent and receiving water data. When possible, EPA calculated the

average of the maximum 7-day moving averages for each month, or if daily temperature data were not available, EPA evaluated the average of the maximum monthly values. To determine the effect of the discharge on the downstream temperature, EPA calculated the temperature at the edge of the regulatory mixing zone (RMZ) assuming that the background stream temperature is the applicable criterion when the waterbody currently exceeds the criterion. For example, if the receiving water has a proposed designated use of core salmonid rearing and currently has a maximum temperature of 17°C/62.6°F in August, the effluent temperature used in the compliance analysis would be the maximum monthly effluent temperature between July and August, and the stream temperature would be 16°C/61°F. Otherwise, EPA used the maximum receiving water temperature (*i.e.*, average of maximum 7-day moving average temperatures, average of maximum monthly temperatures) in those situations where the waterbody is currently attaining the criterion. In both cases, EPA calculated the dilution ratio from the 7Q10 stream flow (minimum 7-day average flow recurring once in 10 years) and the average dry weather design flow for the facility. EPA's proposed rule specifies that only 25 percent of the 7Q10 flow be used in the dilution calculation in waters not currently attaining the applicable temperature criterion. In many cases, facilities had already calculated dilution ratios through stream modeling (*e.g.*, CORMIX) or mixing zone studies. In these cases, if less than 25 percent of the 7Q10 flow was used in the model, EPA used the facility-calculated value, otherwise, EPA calculated the dilution ratio assuming 25 percent of the stream flow is available for dilution.

EPA estimated the most cost-effective control strategy for each facility to achieve compliance. To estimate the potential costs associated with the controls, EPA used temperature management plans (TMPs) from facilities that have already developed them to determine the necessary controls on point sources to reduce effluent temperatures. Possible controls include process optimization, pollution prevention, land application, and cooling towers. EPA determined costs for these controls from readily available documentation and updated these sources to 2003 dollars.

There are no IGDO data available for any of the affected waters, primarily because methods to measure IGDO have only recently been developed. Therefore, EPA estimated compliance with current and proposed IGDO criteria based on an estimated 3.0 mg/L differential between the IGDO and dissolved oxygen (DO) in the overlying water. Studies cited (Koski, 1965; Hollender, 1981) in EPA's *Ambient Water Quality Criteria for Dissolved Oxygen* (EPA, 1986) indicate that 3.0 mg/L is a good approximation of the differential between water column DO and IGDO. Therefore, EPA believes it is reasonable to assume that a water designated for bull trout juvenile rearing and spawning or salmon and steelhead spawning though fry emergence that has a water column DO concentration of 11.0 mg/L would achieve 8.0 mg/L IGDO. Using this differential, the current Oregon IGDO criterion of 6.0 mg/L corresponds to a minimum instream DO concentration of 9.0 mg/L. EPA's proposed IGDO criterion of 8.0 mg/L corresponds to a minimum instream DO concentration of 11.0 mg/L.

Current Oregon water quality standards specify a minimum water column DO for protection of salmonid spawning is 11.0 mg/L, unless the minimum IGDO (measured as a spatial median) is 8.0 mg/L, then the minimum DO may be 9.0 mg/L. If conditions of barometric pressure, altitude, and temperature preclude attainment of 11.0 or 9.0 mg/L standards, then the minimum DO may be 95 percent of saturation.

EPA's rule only changes the IGDO criterion, and not Oregon's 11.0 mg/L (or 9.0 mg/L) instream DO criteria. Thus, if a stream is meeting the current Oregon water quality standards, based on EPA's *Ambient Water Quality Criteria for Dissolved Oxygen* (EPA, 1986), the stream would also meet the revised EPA criterion, and no costs would be incurred as a result of this part of the rule. If a stream is not meeting the current water quality standards, the costs of attaining compliance would be associated with existing Oregon water quality standards, not as a result of the proposed rule. Therefore, EPA estimated the cost of this provision to be zero.

To develop an estimate of the incremental impact of the antidegradation provision of the proposed rule, EPA first estimated the number of facilities located on newly designated high-quality waters that might request to increase discharges during their permit term. EPA assumed that all waters not on the State's 303(d) list are high quality waters. EPA estimated that 22 major facilities and 130 minor facilities may discharge to high-quality waters. NPDES permits are issued for a period of five years, after which they must be renewed. Therefore, on average, one-fifth (20 percent) or approximately 30 of the 152 existing permit holders will renew their permits each year. Based on the frequency of past Oregon antidegradation reviews and EPA's past experience in calculating costs for its antidegradation rules for other States, EPA assumed that no more than five percent of facilities that discharge to high-quality waters would likely request an increase in an effluent limit to the extent that an antidegradation review would be required when they renew their permit. Given 30 permit renewals per year, less than two facilities would require an antidegradation analysis each year.

Next, EPA estimated the costs of preparing an antidegradation analysis to justify the need to increase discharges for these facilities. Entities seeking an antidegradation review will incur costs to develop financial and economic and social impact analyses, and the State will incur costs to review the analyses and make a determination. EPA assumed that the cost incurred by facilities in complying with the rule is the cost of a preliminary engineering analysis, and the subsequent financial analysis for which EPA provides guidance and a workbook. To estimate the potential analytical costs, EPA first calculated the average capital costs to facilities it identified as requiring additional controls in economic analyses prepared for recent water quality standards actions, including establishing criteria for toxic pollutants and upgrading receiving water use classifications in the States of Alabama, Iowa, California, and Idaho (U.S. EPA, 2001a; 2001b; 1999; and 1997). EPA's estimates of capital costs for these facilities average $1 million for major POTWs, $230,000 for minor POTWs, $2.4 million for major industrial facilities, and $1 million for minor industrial facilities. Thus, preliminary engineering analysis and financial analysis costs could range between $10,000 and $72,000 for major facilities, and between $2,300 and $30,000 for minor facilities (*see* Table IV–2). EPA did not estimate costs for installing additional control measures or limiting increased discharges because EPA would have to speculate on the multiple unknown factors including the type of facility, the pollutants being discharged, the water body in question, the requested increase in discharge, the control technologies currently being implemented, the alternative control technlogies considered, and the State's decision following review of the antidegradation analyses.

TABLE IV–2. ESTIMATED COST PER FACILITY TO PREPARE ANTIDEGRADATION REVIEW

Cost	Municipal facilities (POTWs)		Industrial facilities	
	Major	Minor	Major	Minor
Installed Controls [1]	$1,000,000	$230,000	$2,400,000	$1,000,000
Low Estimate of Review Cost [2]—(1% of Installed Capital Cost)	10,000	2,300	24,000	10,000
High Estimate of Review Cost [2]—(3% of Installed Capital Cost)	30,000	6,900	72,000	30,000

[1] Average capital costs to facilities that EPA identified as requiring additional pollution controls in analyses of recent water quality standards actions, including establishing criteria for toxic pollutants and upgrading receiving water use classifications, in the States of Alabama, Iowa, California, and Idaho (U.S. EPA, 2001a; 2001b; 1999; 1997).
[2] Use of 1 and 3 percent of Installed Capital Cost based on EPA's best professional judgment.

Costs for the proposed antidegradation provision will include the cost of the State review. EPA assumed that the State's review of the engineering cost analysis and financial impact analysis could require up to 24 hours, and that the notification and response to comments activities will require an average of 100 hours. Thus, based on a national average hourly compensation rate of $42.24 for State and local government workers in professional speciality and technical occupations, the average cost per review is $5,200.

C. Results

EPA estimated the potential costs associated with the temperature, IGDO, and antidegradation provisions of the proposed rule separately. For the temperature provision, there are 48 potentially affected facilities. EPA estimated costs for all affected major facilities individually, and estimated costs for affected minor facilities by extrapolating costs from a sample. EPA estimated that the potential total Statewide annual cost associated with proposed temperature criteria will be approximately $198,900.

EPA estimated that the potential cost associated with the proposed IGDO criterion is zero. This estimate is based on compliance with current State standards.

For the antidegradation provision, EPA estimated that the potential annual costs range from $22,500 to $50,900. This estimate is based on combined entity and State costs for two antidegradation reviews per year.

D. Total Statewide Costs Associated with NPDES Permitted Entities

The following table summarizes the total estimated potential Statewide costs of today's proposed rule associated with NPDES permitted entities.

TABLE IV–3. TOTAL ESTIMATED ANNUAL STATEWIDE COSTS ATTRIBUTABLE TO THE PROPOSED RULE ($2003/YR)

Provision	Estimated annual cost [1]
Temperature Uses and Criteria	$198,900
IGDO Criteria	$0
Antidegradation Procedures	$22,500–50,900
Total	$221,400–249,800

[1] Costs are annualized at 7 percent over 20 years.

EPA recognizes that the potential indirect costs to nonpoint sources associated with the State's implementation of these proposed water quality standards may be higher than the costs EPA has estimated since temperature exceedences on the affected water bodies could also result from nonpoint source activities. Major categories of sources that may be affected by the State's implementation of this proposed rule include forestry and agriculture, as well as dams. EPA has not quantified these costs.

E. Small Government and Business Analysis

Today's proposed rule establishes no requirements applicable to small entities, and so is not susceptible to regulatory flexibility analysis as prescribed by the Regulatory Flexibility Act. EPA has nonetheless considered the potential effects of this rule on small entities to the extent that it can, and has included that analysis in the administrative record of this rulemaking. EPA evaluated the potential economic impacts for the facilities that discharge to waters of the State of Oregon and used this information to develop the cost estimate for the proposed rule. EPA estimates that, depending on Oregon's implementation, as many as 128 small municipal entities and 85 business entities could be affected by one or more provisions of the proposed rule. Data are not available to determine if those 85 businesses potentially affected by the proposed rule would be classified as small, or what percent of revenues the estimated costs would represent. Nonetheless, EPA's analysis indicates that, depending on Oregon's implementation, only 29 small municipal entities and 13 business entities could incur costs under the temperature provision, and only 1 to 2 small municipal or business entities could incur antidegradation costs in an average year.

EPA calculated the ratio of potential compliance costs to estimated revenues for the small municipalities using the annualized facility-specific cost estimates described above, actual municipal revenues for facilities potentially affected by the temperature provision, and estimates of annual municipal revenues for facilities affected by other provisions. The estimates are based on 2002 municipal population data and a mean per capita municipal revenue estimate of $860 that EPA derived from the municipalities potentially affected by the temperature provision.

Based on its estimated costs of the proposed rule, and possible Oregon implementation, EPA observed that three small municipal entities could incur costs that equal or exceed 1 percent of revenues. For two of these entities, costs may equal or exceed 3 percent of revenues (the ratios are 4.5 percent and 8.3 percent).

V. Alternative Regulatory Approaches and Implementation Mechanisms

A. Background

Data and information may become available after the date of this rulemaking that will be material to water quality standards for Oregon. There are several mechanisms available to ensure that the water quality standards and their implementing mechanisms appropriately take into account such new information. These

mechanisms are described in sections B through E below.

The State should be aware, however, that EPA considers designated use changes and site-specific criteria to be modifications to the State's water quality standards. Federal regulations at 40 CFR 122.44(d)(1) require that NPDES permits include limitations necessary to achieve water quality standards adopted under section 303 of the CWA. Therefore, a designated use change or a site-specific criterion cannot be the basis for NPDES permit limitations until the State has adopted it as part of its water quality standards, has submitted it to EPA, and EPA has approved it. See 40 CFR 131.21(c) and (d). EPA would also need to withdraw any corresponding Federal use designation or criteria. As with any other revision to the State's water quality standards, EPA will review these revisions to determine whether they are scientifically-defensible in accordance with 40 CFR 131.11(b)(1)(iii), or meet the requirements of 40 CFR 131.10(g), as applicable. EPA will also consider whether the appropriate procedural requirements have been met, such as public participation and certification by the appropriate legal authority within the State.

While 40 CFR 131.13 allows States to adopt variances for State-adopted water quality standards, States do not have authority to change Federal regulations. Thus, State procedures may not be used to modify Federally-promulgated water quality standards. Consequently, EPA has included in today's proposed rule a Federal variance provision allowing the Region 10 Administrator to grant water quality standards variances where a person submits data indicating that an EPA-designated use is not attainable for any of the reasons in 40 CFR 131.10(g). This process is discussed in greater detail in section V.C.

B. Process for Federal Agencies Responsible for Federally Owned or Operated Dams To Request EPA Modify Water Quality Standards

The process EPA used to propose designations for the salmonid uses and setting the numeric criteria described above utilized the best scientifically credible data available to date on the water quality requirements of various life stages of salmonids. However, this data did not include the type of data that is generally considered in a waterbody-specific use attainability analysis. EPA recognizes that new and/or more accurate data may become available that would support changes to the standards on a particular water body, including data and information regarding the attainability of EPA's proposed use designations for specific waters. In the course of developing this proposal, EPA was approached by several Federal agencies that own or operate Federal dams with questions about the information requirements and the process for incorporating data on use attainability into the process for determining designated uses proposed by EPA in this rule. Specifically, these agencies indicated that they may submit information involving Federal dams during the public comment period for this rule or after promulgation. Also, they sought to better understand the information needs and process EPA would follow in considering a change in a designated use for water bodies in Oregon where Federal dams are operating.

During the public comment period, EPA will review and consider the information and the need for changes in the standards prior to promulgation. EPA recognizes that the existence of Federally-owned or operated dams in a watershed may alter the thermal regime of the associated stream system, and that even after all feasible and practicable measures to reduce thermal impacts are implemented, in some cases, attainment of certain water quality standards for temperature may not be feasible. Water quality standards should be feasibly attainable given the existence and operation of these Federally owned or operated dams. Feasibility should include consideration of whether there are reasonable alternative operations, structural modifications, or maintenance approaches a Federally-owned or operated dam could implement and still fulfill its authorized purpose. In order to be responsive to the questions raised about how EPA would handle such information after the close of the comment period and after promulgation, EPA is proposing in this rule EPA's preferred process for Federal agencies that own or operate dams to petition EPA to revise standards for water bodies covered by this rule.

EPA is mindful that the time constraints under which EPA must take final action on WQS by March 2, 2004, will, no doubt, limit the opportunities for Federal agencies which own or operate dams to develop and provide information to EPA and for EPA to fully consider any such information prior to the deadline for taking final action. Ideally, such information would be considered up-front in designating uses and establishing water quality criteria. In reality, precise information may not be available in advance because of lack of data on natural variability, varying weather and flow conditions and the difficulty in predicting the impacts on water quality of feasible management measures. Therefore, EPA is proposing to establish within the rule a process by which Federal agencies that own or operate dams may present information regarding the effect of the presence and operation of specific dams on the attainability of uses that EPA promulgates for specific waters, and petition EPA to amend standards if EPA, in coordination with the regulated agency, determines the uses are not attainable.

EPA is including this provision for those Federally-owned or operated dams because EPA believes it is important to ensure that designated uses properly account for the presence of dams, whose purposes include, but are not limited to, flood control, irrigation, navigation, and power generation that Congress has specifically authorized. EPA wants to ensure that the use designations that it adopts under the CWA for waters in Oregon fully consider any available information regarding the effects of dams that have been specifically authorized by Congress to be constructed and operated on those same waters. A clear process in the rule for these Congressionally-authorized dams will allow EPA to address expeditiously a request from another Federal agency regarding modification of a promulgated use designation based on the effects of the presence and operation of a particular dam.

EPA's current WQS regulations at 40 CFR 131.10(g) list six factors that may be used as a basis for removing a designated use that is not an existing use if it can be demonstrated that attaining the designated use is not feasible because of one of those six factors. One of those factors specifically relates to dams. 40 CFR 131.10(g)(4) provides that a designated use may be removed if "dams * * * preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate [the dam] in a way that would result in attainment of the use." EPA believes that it is important to establish a process in this regulation to clarify how a Federal agency that owns or operates a Federal dam may present information to EPA if the Federal agency believes that a standard promulgated as a result of this rulemaking is not attainable due to the presence and operation of a Congressionally-authorized dam and it is not feasible to operate the dam in a way that would result in attainment of the use.

It should be noted that EPA's current regulations also provide that at a minimum uses are deemed attainable if they can be achieved by the application of technology-based effluent limitations on point source dischargers required under CWA section 301(b) and 306 and cost-effective and reasonable best management practices for nonpoint source control. 40 CFR 131.10(d) and (h). Pursuant to this regulation, EPA would take into consideration the controls being implemented by other sources on a specific waterbody or segment in determining the attainability of any use.

Federal Agency Submission to EPA

In proposed 40 CFR 131.39(g), EPA provides a process by which a Federal agency responsible for a Federally-owned or operated dam may petition EPA to revise a water quality standard.

Federal Agency Documentation

First, proposed 40 CFR 131.39(g)(1) provides that the petition must be based on a demonstration that the operation of the dam precludes the attainment of the use, that reasonable alternatives are not feasible to restore the water to its original condition, and, that there are no feasible and practicable changes to the operation, maintenance or structure of the dam, consistent with the purposes for which it was authorized by Congress, that can be implemented that would result in attainment of the water's designated use. This language approximates the language in EPA's current regulation at 40 CFR 131.10(g)(4). As discussed below, in response to a petition, EPA will conduct a use attainability analysis (UAA) and determine whether the promulgated use is attainable. The information provided by the Federal agency with the petition will be critical to EPA's decision.

EPA expects that this demonstration would include a description of the current function and purpose of the dam (and how well the dam is performing its intended function). Further, EPA expects that this demonstration will include a discussion of potential changes in operation or maintenance of the dam and potential structural modifications, accompanied by results of trial runs where practicable, an engineering analysis, and results of modeling. EPA also expects that the demonstration would show how much improvement towards attainment of the standard could be expected from feasible and practicable alterations. This information would be relevant to EPA should it decide to revise the standard. Federal agencies that own or operate dams in Oregon must provide EPA with the following information as specified in today's proposed rule at 40 CFR 131.39(g)(2):

(1) The current purpose and function of the dam including information on how well the dam is performing in meeting the established purpose and function;

(2) Any feasible, practicable alternatives to current operation and maintenance of the dam that could improve water quality, including coordination of operations between dams;

(3) Any feasible, practicable structural modifications to the dam that could improve water quality; and

(4) Any relevant studies of the above factors.

In addition, Federal agencies that own or operate dams in Oregon are encouraged to consider and submit any results from the following analyses to expedite EPA's use attainability determination:

- With regard to the analysis of any feasible, practicable alternatives to current operation and maintenance of the dam
- Have alternative methods of operating turbines been utilized or explored to encourage better mixing where there is a horizontally- or vertically-stratified forebay?
- Have modifications to flood control rule curves been used or explored to allow additional flows in the summer months without impacting refill?
- Have modifications to upper reservoir refill probabilities been used or explored to allow additional flows in the summer months?
- Have reductions in the cross-section areas of the water columns behind the dams been utilized or explored? [Such reductions could, in turn, reduce the resident time for water particles, which reduces exposure times and surface area, which also reduces exposure history. This is related to increasing velocity, which can be done either by increasing flows, or decreasing area. Q(flow) = V(velocity) × A(area)]
- With regard to the analysis of any feasible, practicable structural modifications to the dam, have low level outlet controls been used or explored to allow selective withdrawals resulting in temperature improvements in the waterbody?

Federal Agency Public Process

Second, proposed 40 CFR 131.39(g)(1)(iii) provides that the responsible Federal agency provide an opportunity for the affected jurisdictions and public to comment on a draft of the agency's demonstration and to submit any additional information or analyses (*e.g.*, analyses of how trading could improve water quality) before it is submitted to EPA. EPA expects that the Federal agency would take these comments into consideration in preparing a final demonstration that it will submit to EPA in support of its petition to revise one or more water quality standards. The proposed rule would also require that the Federal agency submit to EPA the Federal agency's response to the comments that the agency received during its public comment process.

EPA's Process for Responding to Petitions

Once the complete petition is submitted to EPA, 40 CFR 131.39(g)(3) of the proposed rule would provide that EPA will conduct a UAA, determine if a change in water quality standards is appropriate, and respond to the petitioning agency within nine months. In making such a determination, EPA will carefully consider all of the information provided by the Federal agency and any comments by the affected jurisdictions and public. 40 CFR 131.39(g)(4) would provide that if EPA determines after developing a UAA that the promulgated standards should be revised, EPA will propose to amend the promulgated standards through a Federal rulemaking and take final action within 15 months. EPA may also extend either of these deadlines if a large number of petitions are received during this time. If EPA determines that the standards do not need to be revised, proposed 40 CFR 131.39(g)(5) provides that EPA will respond to the petition by providing its reasons for not proposing to revise the standards.

If EPA determines that a use revision is appropriate and the use revision may affect threatened or endangered species, EPA would need to consult with NOAA Fisheries and/or FWS under section 7 of the ESA. EPA is consulting with the Services regarding the promulgation of today's rule. EPA also consults with affected Tribes if designating a use that requires less stringent criteria.

Federal agencies that own or operate dams have also expressed concern over the status and potential legal vulnerability of dams during the period that EPA is considering a petition submitted under this provision. EPA requests comment on how it might address this concern in the rule.

Availability of the Petition Process to Entities Besides Federally-Owned or Operated Dams

Of course, any person may petition EPA to revise a water quality standard that EPA promulgates. Any of the six

factors at 40 CFR 131.10(g) may serve as the basis for removing a designated use as long as it is demonstrated that it is not feasible to attain the use. As discussed above, EPA is proposing to include specific provisions in this rule related to the condition regarding dams in 40 CFR 131.10(g)(4) to address Federally-owned or operated dams in recognition of the specific congressional authorization for the construction and operation of such dams. It was recognized that the tight deadlines under which EPA must propose and promulgate water quality standards for temperature in Oregon waters may not provide adequate time for the other Federal agencies to gather information related to the possible effects of Federally-owned or operated dams on the attainability of EPA's water quality standards or for EPA to fully evaluate any information that may be generated. Therefore, EPA is proposing to set out a process, as previously described, by which the submission of such information by another Federal agency and consideration by EPA would take place.

C. Variances

Water quality standards variances are a mechanism that can temporarily modify water quality standards. Today's rule contains a Federal variance procedure for the designated uses being proposed today. However, the procedures described later in this section can also be used by the State to develop variances for State-adopted water quality standards.

EPA believes variances are particularly suitable when the cause of nonattainment is discharger-specific and it appears that the designated use in question will eventually be attained or demonstrated to be nonattainable. EPA has approved the granting of water quality standards variances to NPDES permitted entities by States in circumstances that would otherwise justify changing a use designation on the grounds of unattainability (*i.e.*, one or more of the six circumstances contained in 40 CFR 131.10(g) is met). In contrast to a change in standards that removes a use designation for a water body, a water quality standards variance applies only to the NPDES permitted discharger to whom it is granted and only to the pollutant parameter(s) upon which the finding of unattainability is based, and only for a limited period of time. The underlying standard remains in effect for all other CWA purposes.

The practical effect of such a variance is to allow an NPDES permit to be written using less stringent criteria, while encouraging ultimate attainment of the underlying standard. A water quality standards variance provides a mechanism for assuring compliance with sections 301(b)(1)(C) and 402(a)(1) of the CWA, while granting temporary relief to point source dischargers.

While 40 CFR 131.13 allows States to adopt variance procedures for State-adopted water quality standards, because States cannot amend Federal law, such State procedures may not be used to grant variances for Federally-adopted standards. EPA believes that it is appropriate to provide comparable Federal procedures here. Through today's proposed rule, the Region 10 Regional Administrator may grant water quality standards variances where a person submits data indicating that an EPA-designated use proposed at 40 CFR 131.39(b) is not attainable for any of the reasons at 40 CFR 131.10(g).

Today's proposed rule spells out the process for applying for and granting such variances. Authorizing the Regional Administrator to grant variances should expedite the processing of variance requests. That process is contained in proposed 40 CFR 131.39(h) of today's rule. EPA also proposes that the Regional Administrator provide public notice of the proposed variance and provide an opportunity for public comment. EPA understands that variance-related issues can often arise in the context of permit issuance. EPA Region 10 will seek to work closely with the State permitting authorities to ensure that variance requests will be considered in tandem with the State NPDES permitting process.

The variance procedures proposed today requires an applicant for a water quality standards variance to submit a request to the Regional Administrator (or his/her delegatee) with supporting information. Under this rule, as in the national program, the burden is on the applicant to demonstrate to EPA's satisfaction that the designated use is unattainable for one of the reasons specified in 40 CFR 131.10(g). EPA believes that because a variance results in a temporary change to the designated use, the demonstrations needed to justify a variance should be analogous to those needed to justify removing the use entirely. A variance may not be granted if the use can be attained, at a minimum, by all dischargers implementing effluent limitations required under sections 301(b) and 306 of the CWA and the nonpoint sources implementing reasonable best management practices for nonpoint source control as required by the State. In addition, a variance may not be granted if it would likely jeopardize the continued existence of any threatened or endangered species listed under section 4 of the ESA or result in the destruction or adverse modification of such species' critical habitat.

Under this rule, a variance may not exceed three years or the term of the NPDES permit, whichever is less. A variance may be renewed if the permittee again demonstrates that the use in question is still not attainable. Renewal of the variance may be denied if EPA finds that the conditions of 40 CFR 131.10(g) are not met.

D. Heat Load and Thermal Plume Provisions

1. Heat Load Limit

Questions often arise regarding how to interpret water quality standards when implementing the standards under the CWA. EPA believes that with respect to this proposed rule, questions may arise during NPDES permitting or TMDL establishment as to whether the water quality temperature criteria proposed here would be attained in impaired waters by authorizing effluent limitations or establishing waste load allocations or load allocations that allow an insignificant addition of heat to impaired waters. In today's proposal, EPA is including a provision that would allow for insignificant additions of heat by anthropogenic sources to water bodies or segments that exceed the applicable temperature criterion. While this provision is not a water quality standard under CWA section 303(c), this provision will assist regulatory authorities in carrying out their responsibilities under sections 303(d) and 402 of the CWA. Specifically, EPA proposes that the addition of heat from anthropogenic sources will be determined to be insignificant if all such additions cumulatively, at the point of maximum impact, cause an instream temperature increase of 0.3°C/0.5°F or less above the otherwise applicable criterion. In addition, no single point source may cause, by itself, an instream temperature increase of 0.3°C/0.5°F or more above the otherwise applicable criterion assuming complete mixing with 25 percent of the river flow.

There are several approaches that the State may take to assure that these conditions are met. For example, to calculate the impact of single sources, the State may use a simple energy balance equation to calculate a point source effluent limitation that would meet the heat load limit, assuming the upstream temperature is at the otherwise applicable criterion, and calculating an end-of-pipe effluent limit that would result in an 0.3°C/0.5°F

increase above the applicable criterion after complete mixing of the effluent with 25 percent of the river flow. To calculate the impact of multiple sources, the State may conduct a modeling evaluation.

EPA believes that this provision will continue to protect the uses proposed to be designated by this rule. Allowing sources to no more than an increase of 0.3°C/0.5°F is not significant in view of the accuracy of temperature measurement instruments and the variability of monitoring field protocol techniques. ("Water Quality Monitoring Technical Guide Book," Oregon Plan for Salmon and Watersheds, July 1999, pp 6–3; "Monitoring Guidelines to Evaluate Effects of Forestry Activities on Streams in the Pacific Northwest and Alaska," EPA/910/9–91–001, May 1991. pp 73–76). Furthermore, the scientific studies assessing the effects of temperature on salmon species which form the basis for the Regional Temperature Guidance and this rulemaking, are at a level of resolution of 1°C/2°F (or more). For the previously stated reasons, allowing an increase of 0.3°C/0.5°F will protect the uses proposed in this rule.

Even though EPA believes this incremental heating of 0.3°C/0.5°F or less above the otherwise applicable criterion will have no adverse effect on the designated uses, even in impaired waters, such incremental heating would not be allowed by the water quality standards without this provision. EPA believes, however, that it is important for the water quality standards to allow such insignificant heat additions, as long as they meet the thermal plume provisions in proposed 40 CFR 131.39(e)(2), because of their insignificant adverse effect on the designated uses, and the adverse economic and/or environmental impacts of either prohibiting such discharges or requiring that they be cooled prior to discharge.

2. Thermal Plume

EPA's regulation at 40 CFR 131.13 recognizes that States have the discretion to adopt regulations authorizing mixing zones around point source outfalls, which are limited zones in which otherwise applicable criteria may be exceeded, subject to conditions that assure the protection of the designated use in the waterbody as a whole. In the case of temperature, areas surrounding point source outfalls could experience "thermal plumes" in which water temperatures exceed the otherwise applicable temperature criteria. In this rule, EPA proposes conditions on such thermal plumes to protect the designated uses by preventing instantaneous lethality, thermal shock, migration blockage, or adverse impact to salmon and trout spawning areas in order to protect the designated uses proposed in this rule.

EPA is proposing that for any permitted point source discharge of heat that the discharge meet the conditions described in proposed 40 CFR 131.39(e)(2). These provisions describe conditions that must be avoided in order to protect salmonids from adverse impacts. As such, EPA is proposing that these provisions apply to all NPDES-permitted dischargers, regardless of whether the permittee is discharging to a water body that is attaining or not attaining its temperature water quality criterion. In the former case (*i.e.*, where a water body is meeting its water quality standards), these provisions would work in conjunction with the State's existing mixing zone policy contained in its regulation to govern the calculation of effluent limitations for point sources.

The proposed regulation is designed to ensure that thermal plumes from point sources do not cause instantaneous lethal temperatures; thermal shock; migration blockage; adverse impact on spawning, egg incubation, and fry emergence areas; or the loss of localized cold water refugia. Based on the scientific literature's finding that certain conditions may cause adverse impacts in salmonids, EPA believes these provisions are appropriate to protect these species from conditions that may exist due to a point source discharge. The following paragraphs summarize the scientific literature and how the findings relate to EPA's proposed regulations.

- Exposures of less than ten seconds at 32°C/89.6°F can cause instantaneous lethality. (Washington Department of Ecology, December 2002, "Evaluating Standards for Protection of Aquatic Life in Washington's Surface Water Quality Standards, Temperature Criteria, Draft Discussion Paper and Literature Summary," pp. 105–108). Therefore, EPA has proposed that the maximum temperature within the plume after two seconds of travel from the point of discharge does not exceed 32°C/90°F.
- Thermal shock, which leads to increased predation, can occur when salmon and trout exposed to near optimal temperatures (*e.g.*, 15°C/58°F) experience a sudden temperature increase to 26–30°C/79–86°F for a short period of time. (Coutant, Charles, 1973, Effect of thermal shock on vulnerability of juvenile salmonids to predation, J. Fish. Res. Board Can. 30(7):965–973.). Therefore, EPA is proposing that thermal plumes be conditioned to limit the cross-sectional area of a river that exceeds 25°C/77°F to five percent of the river.
- Adult migration blockage conditions can occur at 21°C/70°F. See Table III–1. Therefore, EPA is proposing that the cross-sectional area of a river at or above 21°C/70°F be limited to less than 25 percent or, if upstream temperature exceeds 21°C/70°F, the thermal plume be limited such that 75 percent of the cross-sectional area of the river has less than a *de minimis* (*e.g.*, 0.3°C/°0.5F) temperature increase.

Adverse impacts on salmon and trout spawning, egg incubation, and fry emergence can occur when the temperatures exceed 13°C/55°F. *See* Table III–1. Therefore, EPA is proposing that the thermal plume be limited so that temperatures exceeding 13°C/55°F do not occur in the vicinity of active spawning and egg incubation areas, or that the plume does not cause more than a *de minimis* increase in the river temperature in these areas.

Determining whether or not a preliminary effluent limitation will result in localized impacts from the thermal plume can be achieved through plume modeling. The physical characteristics of the thermal plume (*e.g.*, a three-dimensional profile of temperatures) can be estimated using a near-field dilution model and adequate input data to run the model (*e.g.*, river and effluent temperatures and flows). If the model indicates that the preliminary effluent limitation is likely to result in any of the localized adverse impacts described above, the preliminary effluent limit must be lowered to ensure that such impacts are avoided or minimized.

E. EPA's Basis for Allowing Flexibility Due to Unusually Warm Weather Conditions

EPA is proposing that a waterbody shall not be determined to be a water quality-limited segment for CWA section 303(d) listing purposes if the maximum 7DADM temperature for the year with the second highest maximum 7DADM from a complete data record of 10 years is at or below the applicable criterion. EPA recognizes that historically, there were years of drought and unusually high air temperatures. When those conditions occurred, water temperatures were also elevated. Further, EPA believes it is reasonable for a State or Tribe to decide not to apply the numeric temperature criteria during unusually warm conditions for purposes of determining if a waterbody is attaining criteria (*i.e.*, for the purposes of making decisions under CWA section 303(d) or 305(b)). EPA believes such a provision is justified because unusually

warm annual peaks in water temperature typically caused by drought conditions are a natural component of the environment and that these infrequent conditions should not drive attainment determinations. Salmonids may experience some adverse effects during these periods, but by definition, they would be infrequent. It is important to note, however, that NPDES-permitted facilities would continue to be subject to the same temperature effluent limits they would be subject to during normal temperature periods, because they should not be able to discharge more heat than they would otherwise be authorized to discharge simply due to a natural event.

Even when accounting for unusually warm conditions in temperature standards, attainment determinations should be based on all climatic conditions except for those unusually warm and rare conditions in order to protect the salmonid designated uses. Thus, given that river temperatures exhibit year-to-year variation in their maximum 7DADM values, the average maximum 7DADM value from a yearly series, as a statistical matter, would need to be lower than the numeric criteria in order to meet the criteria nine out of ten years. Therefore, in most years, the maximum 7DADM temperature would also need to be lower than the numeric criteria in order to meet the criteria in the warm years. EPA took this into consideration when it formulated its proposed numeric criteria.

F. Total Maximum Daily Loads and Impaired Water Listings

A TMDL is a tool created by the CWA that expresses the total amount of a given pollutant that a particular water body may receive and still achieve applicable water quality standards. Section 303(d) of the CWA and its implementing regulations at 40 CFR part 130 establish the requirements for TMDLs. The TMDL process can broaden the opportunity for public participation, expedite water quality-based NPDES permitting, and lead to technically-sound and legally-defensible decisions for attaining and maintaining water quality standards. In addition, the TMDL process provides a mechanism for integrating the management of both point and nonpoint pollution sources that together may contribute to a water body's impairment. (*See Guidance for Water Quality-Based Decisions: The TMDL Process,* EPA 440–4–91–001, April 1991.)

If Oregon lists waters subject to today's proposed rule on its CWA section 303(d) list(s) because data or information indicate that water quality standards have not been achieved, EPA recognizes that this listing decision does not mean that a TMDL will immediately be developed. Rather, CWA section 303(d)(1) specifically provides States with the discretion to establish a priority ranking for TMDL development for listed waters, and then to establish TMDLs in accordance with that ranking. EPA notes that even if Oregon establishes a TMDL for a water body designated today for salmonid lifestage uses, the question of implementing the TMDL with respect to nonpoint sources and point sources not required to obtain an NPDES permit is entirely a matter of State law.

As discussed elsewhere in today's proposal, EPA strongly encourages the State of Oregon to adopt the appropriate uses for all of the waters subject to this rulemaking. Once EPA approves the State's adoption of a new use designation for a water body, and withdraws that water body from the Federal regulation, the State's use designation will be the applicable use for that water body for purposes of compiling the CWA section 303(d) list. Oregon will be required to list that water body under CWA section 303(d) if data and information show that the use is impaired or the water body exceeds the applicable water quality criteria for temperature or IGDO for the protection of the associated salmonid uses.

For waters that have salmonid use designations (either Federal or State) at the time Oregon assembles its CWA section 303(d) list(s), EPA notes that Oregon need not include a water on its list(s) if it lacks data and information to determine whether the use is being attained, or if the data and information it has is insufficient to make that determination. *See* 40 CFR 130.7(b)(5); "2004 Integrated Water Quality Monitoring and Assessment Report Guidance." While EPA expects Oregon to follow the requirements, if any, of its assessment and listing methodology, EPA also recognizes that it is possible that at the time Oregon compiles its 2004 CWA section 303(d) list, it will not have data or information for all of the waters designated by this rule for salmonid life stage uses. Therefore, it is possible that many of these waters will not appear on Oregon's next CWA section 303(d) list(s).

VI. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review

Under Executive Order 12866 (58 FR 51735, October 4, 1993), the Agency must determine whether the regulatory action is "significant" and therefore subject to OMB review and the requirements of the Executive Order. The Executive Order defines "significant regulatory action" as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or Tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

It has been determined that this rule is not a "significant regulatory action" under the terms of Executive Order 12866 and is therefore not subject to E.O. 12866 review.

B. Paperwork Reduction Act

This proposed action does not impose an information collection burden under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 *et. seq.* It does not include any information collection, reporting or recordkeeping requirements. Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An agency may not conduct or sponsor, and a person is not required to respond to a collection of information

unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations in 40 CFR are listed in 40 CFR part 9.

C. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA) (5 U.S.C. 601 *et. seq.*), generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations and small governmental jurisdictions.

For purposes of assessing the impacts of today's proposed rule on small entities, a small entity is defined as: (1) A small business according to RFA default definitions for small business (based on SBA size standards); (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

After considering the economic impacts of today's proposed rule on small entities, I certify that this rule will not have a significant economic impact on a substantial number of small entities. This proposed rule would not impose any requirements on small entities.

The RFA requires analysis of the impacts of a rule on the small entities subject to the rule's requirements. *See United States Distribution Companies* v. *FERC,* 88 F.3d 1105, 1170 (D.C. Cir. 1996). Today's proposed rule establishes no requirements applicable to small entities, and so is not susceptible to regulatory flexibility analysis as prescribed by the RFA. ("[N]o [regulatory flexibility] analysis is necessary when an agency determines that the rule will not have a significant economic impact on a substantial number of small entities *that are subject to the requirements of the rule,*" *United Distribution* at 1170, quoting *Mid-Tex Elec. Co-op* v. *FERC,* 773 F.2d 327, 342 (D.C. Cir. 1985) (emphasis added by *United Distribution* court).)

Under the CWA water quality standards program, States must adopt water quality standards for their waters and must submit those water quality standards to EPA for approval; if the Agency disapproves a State standard and the State does not adopt appropriate revisions to address EPA's disapproval, EPA must promulgate standards consistent with the statutory requirements. EPA also has the authority to promulgate water quality standards in any case where the Administrator determines that a new or revised standard is necessary to meet the requirements of the Act. These State standards (or EPA-promulgated standards) are implemented through various water quality control programs including the NPDES program, which limits discharges to navigable waters except in compliance with an NPDES permit. The CWA requires that all NPDES permits include any limits on discharges that are necessary to meet applicable water quality standards.

Thus, under the CWA, EPA's promulgation of water quality standards establishes standards that the State implements through the NPDES permit process. The State has discretion in developing discharge limits as needed to meet the standards. While the State's implementation of Federally promulgated water quality standards *may* result in new or revised discharge limits being placed on small entities, the standards themselves do not apply to any discharger, including small entities.

Today's proposed rule, as explained earlier, does not itself establish any requirements that are applicable to small entities. As a result of this action, the State of Oregon will need to ensure that permits it issues include any limitations on discharges necessary to comply with the standards established in this rule. In doing so, the State will have a number of choices associated with permit writing. While Oregon's implementation of the rule may ultimately result in some new or revised permit conditions for some dischargers, including small entities, EPA's action today does not impose any of these as yet unknown requirements on small entities.

D. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Pub. L. 104–4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and Tribal governments and the private sector. Under section 202 of the UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with "Federal mandates" that may result in expenditures to State, local, and Tribal governments, in the aggregate, or to the private sector, of $100 million or more in any one year. Before promulgating an EPA rule for which a written statement is needed, section 205 of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows EPA to adopt an alternative other than the least costly, most cost-effective or least burdensome alternative if the Administrator publishes with the final rule an explanation of why that alternative was not adopted. Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including Tribal governments, it must have developed under section 203 of the UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

Today's proposed rule contains no Federal mandates (under the regulatory provisions of Title II of the UMRA) for State, local or Tribal governments or the private sector. The rule imposes no enforceable duty on the State or any local or Tribal government or the private sector; rather, this rule promulgates criteria and designated uses for certain waterbodies in Oregon, which constitute water quality standards for those waterbodies. The State may use these resulting water quality standards in implementing its water quality control programs. Today's proposed rule does not regulate or affect any entity and, therefore, is not subject to the requirements of sections 202 and 205 of the UMRA.

EPA has determined that this proposed rule contains no regulatory requirements that might significantly or uniquely affect small governments. The rule imposes no enforceable requirements on any party, including small governments. Thus, this proposed rule is not subject to the requirements of section 203 of UMRA.

E. Executive Order 13132: Federalism

Executive Order 13132, entitled "Federalism" (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure "meaningful and timely input by State

and local officials in the development of regulatory policies that have Federalism implications." "Policies that have Federalism implications" is defined in the Executive Order to include regulations that have "substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government."

This proposed rule does not have Federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. The rule will not affect the nature of the relationship between EPA and States generally, for the rule only applies to waterbodies in Oregon. Further, the rule will not substantially affect the relationship of EPA and the State of Oregon, or the distribution of power or responsibilities between EPA and the various levels of government. The proposed rule will not alter the State's authority to issue NPDES permits or the State's considerable discretion in implementing these water quality standards. Finally, this proposed rule will not preclude Oregon from adopting water quality standards that meet the requirements of the CWA. Thus, Executive Order 13132 does not apply to this proposed rule.

Although section 6 of Executive Order 13132 does not apply to this rule, EPA worked closely with the State of Oregon in developing it. In the spirit of Executive Order 13132, and consistent with EPA policy to promote communications between the EPA and State and local governments, EPA specifically solicits comments on this proposed rule from State and local officials.

F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

Executive Order 13175, entitled "Consultation and Coordination with Indian Tribal Governments" (65 FR 67249, November 9, 2000), requires EPA to develop an accountable process to ensure "meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications." "Policies that have tribal implications" is defined in the Executive Order to include regulations that have "substantial direct effects on one or more Indian tribes, on the relationship between the Federal government and the Indian tribes, or on the distribution of power and responsibilities between the Federal government and Indian tribes."

This proposed rule does not have tribal implications. It will not have substantial direct effects on Tribal governments, on the relationship between the Federal government and Indian tribes, or on the distribution of power and responsibilities between the Federal government and Indian tribes as specified in Executive Order 13175. Today's rule proposes water quality standards for waters in the State of Oregon. These standards do not establish any requirements that are directly applicable to any entity, including Tribes. In addition, this proposed rule expressly excludes waters in Indian country. Thus, Executive Order 13175 does not apply to this rule.

Although Executive Order 13175 does not apply to this rule, EPA sent letters to 12 potentially interested tribal governments and held a conference call to provide additional information, answer questions, and initiate a dialogue regarding any issues or concerns the Tribes may have regarding this proposed rule. EPA expects to continue this dialogue on its proposal to establish water quality standards in Oregon to ensure that EPA's final action takes Tribal government concerns into account. In the spirit of Executive Order 13175 and consistent with EPA policies to promote coordination and consultation with tribal governments, EPA specifically solicits additional comment on this proposed rule from Tribal officials.

G. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks (62 FR 19885, April 23, 1997) applies to any rule that: (1) Is determined to be "economically significant" as defined under E.O. 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

This proposed rule is not subject to the Executive Order because it is not economically significant as defined in E.O. 12866, and because it does not concern an environmental health or safety risk that the Agency has reason to believe may have a disproportionate effect on children.

H. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use

This rule is not subject to Executive Order 13211, "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use" (66 FR 28355, May 22, 2001) because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995

(NTTAA) Public Law 104–113, 12(d) (15 U.S.C. 272 *note*) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (*e.g.*, materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. The NTTAA directs EPA to provide Congress, through the Office of Management and Budget, explanations when the Agency decides not to use available and applicable voluntary consensus standards.

This rulemaking does not involve technical standards. Therefore, EPA is not considering the use of any voluntary consensus standards. EPA welcomes comments on this aspect of the rulemaking and invites the public to identify potentially applicable voluntary consensus standards and to explain why such standards should be used in this regulation.

List of Subjects in 40 CFR Part 131

Environmental protection, Indian lands, Intergovernmental relations, Reporting and recordkeeping requirements, Water pollution control.

Dated: October 1, 2003.

Marianne Lamont Horinko,

Acting Administrator.

For the reasons set forth in the preamble, EPA proposes to amend 40 CFR part 131 as follows:

PART 131—Water Quality Standards

1. The authority citation for part 131 continues to read as follows:

Authority: 33 U.S.C. 1251 *et seq.*

Subpart D—[Amended]

2. Section 131.39 is added to read as follows:

§ 131.39 Oregon.

(a) *Definitions.*

(1) *Natural condition* means water temperatures that would exist in the absence of human activities that alter water temperature.

(2) *Seven-day average of daily maximum, or 7DADM,* means the average of daily maximum temperatures over a seven-day period.

(3) *Cold water refugia* means waters, defined either spatially or temporally, that are more than 2°C/4°F colder than the daily maximum temperature at the nearest location in the main river channel.

(b) *Designated Uses for Salmonids.* The maps at *http://www.epa.gov/r10earth/federaloregonwqs.htm* identify the salmonid designated uses for: bull trout juvenile rearing and spawning, salmon and steelhead core juvenile rearing, salmon and trout juvenile rearing and migration, salmon and steelhead migration, and salmon and steelhead spawning through fry emergence in each of the indicated water bodies or segments. The salmon and steelhead spawning through fry emergence use is designated only for the time period indicated in the map legends (fall through either May 15 or June 15); all other uses apply throughout the year. [You may also view a copy of the maps at EPA Region 10's Oregon Operations Office, 811 SW. 6th Avenue, Portland, Oregon, 97204.] Where EPA designates bull trout rearing and spawning, EPA also designates salmon and steelhead core juvenile rearing. Where EPA designates salmon and steelhead core juvenile rearing, EPA also designates salmon and trout juvenile rearing and migration. Where EPA designates salmon and trout juvenile rearing and migration, EPA also designates salmon and steelhead migration.

(c) *Temperature Criteria for Salmonid Uses.* The following water quality criteria for temperature, with temperatures expressed as a 7DADM, apply in water bodies or segments designated for the following uses, except as provided in paragraph (d) of this section:

(1) Bull Trout Juvenile Rearing and Spawning: 12°C/54°F.

(2) Salmon and Steelhead Core Juvenile Rearing: 16°C/61°F.

(3) Salmon and Trout Juvenile Rearing and Migration: 18°C/64°F.

(4) Salmon and Steelhead Migration: 20°C/68°F. In addition, the river must have well-distributed cold water refugia. Well-distributed cold water refugia means cold water refugia that are sufficiently distributed so as to allow salmon and steelhead to migrate through a river segment or rear without significant adverse effects from high water temperatures.

(5) Salmon and Steelhead Spawning through Fry Emergence: 13°C/55°F.

(d) *Alternative Temperature Criteria for Salmonid Uses.* The following criteria, where applicable, apply instead of the criteria provided in paragraph (c) of this section:

(1) Natural Conditions. Where EPA identifies a water body or segment where the water temperature under natural conditions exceeds the applicable criterion set forth in paragraph (c) of this section, the natural condition so estimated shall be the applicable water quality criterion. This determination must be based on a scientifically-defensible method utilizing best available data. Where the natural temperature conditions so estimated exceed 20°C/68°F, the river must have well-distributed cold water refugia. Well-distributed cold water refugia means cold water refugia that are sufficiently distributed so as to allow salmon and steelhead to migrate through a river segment or rear without significant adverse effects from high water temperatures.

(2) Existing Cold Waters. In a water body or segment in which salmonid species that are listed as threatened or endangered under the Endangered Species Act are present, and where available data and information within the 10-year period preceeding the date of publication of the final rule in the **Federal Register** reflect the temperature in the water body and demonstrate that the warmest summer maximum 7DADM temperature is colder than the applicable numeric criterion. In these cases, the summer maximum 7DADM temperature shall be the applicable water quality criterion, unless a complete data record of 10 years is available, in which case the maximum 7DADM temperature for the year with the second highest maximum 7DADM shall be the applicable criterion.

(e) *Temperature Standards Implementation.* (1) Heat Load Limit. In water bodies that exceed the applicable temperature criteria, attainment determinations of these water quality standards for purposes of NPDES permitting and TMDL establishment shall allow for insignificant additions of heat by anthropogenic sources to water bodies or segments that exceed the applicable temperature criteria set forth in paragraphs (c) and (d) of this section, subject to the conditions in paragraph (e)(2) of this section. For the purposes of this paragraph, such additions of heat may be deemed insignificant only if all such additions cumulatively, at the point of maximum impact, cause the water temperature to exceed the applicable criterion by 0.3°C/0.5°F or less, assuming complete mixing. In addition, in water bodies that exceed the applicable temperature criterion, no single NPDES point source may cause, by itself, a temperature increase of 0.3°C/0.5°F or more above the applicable criterion assuming complete mixing with 25 percent of the river flow.

(2) Thermal Plume Impacts. In addition to otherwise applicable numeric or narrative criteria, the following conditions may not be exceeded as a result of a discharge from a NPDES point source discharge, or a combination of NPDES point sources discharges:

(i) Lethality. The maximum temperature within the thermal plume caused by a point source, or a combination of point sources, may not exceed 32°C/90°F after two seconds of plume travel from the point of discharge.

(ii) Thermal Shock. No more than five percent of the cross-sectional area of a river or creek may exceed 25°C/77°F.

(iii) Migration Blockage.

(A) If the temperature immediately upstream of a point source discharge, or a combination of point source discharges, is less than 21°C/70°F, then no more than 25 percent of the cross-sectional area of the receiving water may exceed 21°C/70°F.

(B) If the temperature immediately upstream of a point source discharge, or a combination of point source discharges, is at or above 21°C/70°F, then no more than 25 percent of the cross-sectional area of the receiving water may be more than 0.3°C/0.5°F warmer than the upstream temperature.

(iv) Spawning Impacts. In active spawning or egg incubation areas:

(A) Water temperatures may not exceed 13°C/55°F if they would not have done so in the absence of point source discharges; and

(B) Where water temperatures would have exceeded 13°C/55°F in the absence of point source discharges, water temperatures may not exceed 0.3°C/0.5°F above the temperatures they would have achieved in the absence of point source discharges.

(v) Cold Water Refugia Impacts. A thermal plume shall not increase the temperature of spatial cold water refugia by more than 0.3°C/0.5°F.

(3) Unusually Warm Weather Conditions. A water body shall not be water quality-limited for CWA section 303(d) listing purposes if the maximum 7DADM temperature for the year with the second highest maximum 7DADM

from a complete data record of 10 years is at or below the applicable criterion.

(f) *Numeric Intergravel Dissolved Oxygen (IGDO) Criterion for Salmonid Uses.* (1) In water bodies or segments where the bull trout juvenile rearing and spawning or salmon and steelhead spawning though fry emergence designated use applies in the State of Oregon, and during the applicable time periods, IGDO shall be at least 8.0 mg/L, measured as a spatial median, except as provided in paragraph (f)(2) of this section.

(2) Where barometric pressure, altitude, and air temperature preclude attainment of the intergravel dissolved oxygen criterion set forth in paragraph (f)(1) of this section, then the criterion shall be not less than 95 percent of the maximum IGDO level attainable given the barometric pressure, altitude, and air temperature.

(g) *Process for Federal Agencies Responsible for Federally-Owned or Operated Dams to Request that EPA Modify its Water Quality Standards for Oregon.* (1) A Federal agency responsible for a Federally-owned or operated dam may petition EPA to revise a water quality standard in this section. In developing and submitting the petition to EPA, the Federal agency must ensure that:

(i) The petition includes a description of the current function and purpose of the dam.

(ii) The petition is based on a demonstration that normal operation of the dam precludes attainment of the use, that reasonable alternatives are not feasible to restore the water to its original condition, and that there are no feasible and practicable changes to operation, maintenance or structure of the dam that can be implemented that would result in attainment of the water's designated use.

(iii) The Federal agency provides an opportunity for affected jurisdictions and the public to comment on a draft of the demonstration before it is submitted to EPA. The Federal agency must provide EPA with a response to the comments.

(2) In developing the demonstration under paragraph paragraph (g)(1) of this section, the Federal agency must address each of the following:

(i) The current purpose and function of the dam including information on how well the dam is performing in meeting the established purpose and function.

(ii) Any feasible, practicable alternatives to current operation and maintenance of the dam that could improve water quality, including coordination of operations between dams.

(iii) Any feasible, practicable structural modifications to the dam that could improve water quality.

(iv) Any relevant studies of the above factors.

(3) If such a petition is submitted, EPA will conduct a use attainability analysis (UAA) as defined in § 131.3(g) and determine within nine months of the Federal agency's submission whether a modification to the water quality standard is justified. EPA may extend this deadline if a large number of such petitions are submitted during the same time period.

(4) If EPA determines that the use designation should be revised, EPA will propose for public comment a rule to revise the applicable use designation and take final action within 15 months of making the determination in paragraph (g)(3) of this section.

(5) If EPA determines that the use designation should not be revised, EPA will respond to the petition, providing EPA's reasons for not proposing to revise the use designation.

(h) *Variances.* (1) The Regional Administrator, EPA Region 10, is authorized to grant variances from the water quality standards in paragraphs (b) through (d) and (f) of this section where the requirements of this paragraph (h) are met. A water quality standard variance applies only to the permittee requesting the variance, and only to the pollutant or pollutants specified in the variance; the underlying water quality standard otherwise remains in effect.

(2) A water quality standard variance shall not be granted if:

(i) Standards will be attained by all dischargers implementing effluent limitations required under sections 301(b) and 306 of the CWA and by nonpoint sources implementing cost-effective and reasonable best management practices required by the State; or

(ii) The variance would likely jeopardize the continued existence of any threatened or endangered species listed under Section 4 of the Endangered Species Act, or result in the destruction or adverse modification of such species' critical habitat.

(3) Subject to paragraph (h)(2) of this section, a water quality standards variance may be granted if the applicant demonstrates to EPA that attaining the water quality standard is not feasible because:

(i) Naturally occurring pollutant concentrations prevent the attainment of the use; or

(ii) Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met; or

(iii) Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place; or

(iv) Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way which would result in the attainment of the use; or

(v) Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like unrelated to water quality, preclude attainment of aquatic life protection uses; or

(vi) Controls more stringent than those required by sections 301(b) and 306 of the CWA would result in substantial and widespread economic and social impact.

(4) Procedures. An applicant for a water quality standards variance shall submit a request to the Regional Administrator of EPA Region 10. The application shall include all relevant information showing that the requirements for a variance have been satisfied. The burden is on the applicant to demonstrate to EPA's satisfaction that the designated use is unattainable for one of the reasons specified in paragraph (h)(3) of this section. If the Regional Administrator preliminarily determines that grounds exist for granting a variance, he shall provide public notice of the proposed variance and provide an opportunity for public comment. Any activities required as a condition of the Regional Administrator's granting of a variance shall be included as conditions of the NPDES permit for the applicant. These terms and conditions shall be incorporated into the applicant's NPDES permit through the permit reissuance process or through a modification of the permit pursuant to the applicable permit modification provisions of Oregon's NPDES program.

(5) A variance may not exceed 3 years or the term of the NPDES permit, whichever is less. A variance may be renewed if the applicant reapplies and demonstrates that the use in question is still not attainable. Renewal of the variance may be denied if the applicant

did not comply with the conditions of the original variance, or otherwise does not meet the requirements of this section.

(i) *Antidegradation Implementation Methods.* (1) What is an existing use for purposes of § 131.12(a)(1)? An existing use is a use actually attained in the waterbody on or after November 28, 1975, as defined in § 131.3(e).

(2) How is § 131.12(a)(1) implemented? Existing uses must be protected when authorizing any discharge or conducting any assessment pursuant to the Clean Water Act.

(3) What is a high quality water for purposes of § 131.12(a)(2)? High quality waters are those which have water quality that meets or is better than all applicable water quality standards, including all water quality criteria.

(4) What does not constitute a lowering of water quality for purposes of § 131.12(a)(2)? For purposes of § 131.12(a)(2), there is no lowering of water quality in connection with:

(i) a pollutant concentration increase when there is no overall increase in the total mass load of the pollutant on at least an annual basis; or

(ii) a *de minimis* change in temperature (*i.e.*, a 7DADM stream temperature increase 0.3°C/0.5°F or less across the watershed above an applicable temperature criteria.)

(5) What information must be considered before a lowering of water quality is allowed under § 131.12(1)(2)?

(i) No other reasonable alternatives exist except to lower water quality.

(ii) The action is necessary and justifiable for economic and social development benefits and outweighs the environmental costs of lowered water quality.

(iii) All water quality standards will be met and beneficial uses protected.

(6) What process must be followed in determining whether to allow a lowering of water quality?

(i) In order to demonstrate the necessity and importance of the proposed activity in a high quality water, the discharger/applicant/source must provide the State with enough information to allow for a financial impact analysis that assesses whether allowing an activity that lowers water quality has socioeconomic benefits that outweigh the environmental costs;

(ii) After the permitting authority considers whether the activity will likely cause a lowering of water quality and whether the discharger/applicant/source has demonstrated the necessary justification, the permitting authority will issue a preliminary decision/recommendation on whether to allow or deny the proposed permit or certificate; and

(iii) This decision/recommendation will be noted prior to the intergovermental coordination and public notice phases of the antidegradation review.

(7) What process should be used by the State of Oregon in identifying Outstanding Resource Waters (ORWs) for purposes of § 131.12(a)(3)?

(i) The State may designate high quality waterbodies to be classified as ORWs in order to protect the water quality parameters that affect ecological integrity of critical habitat or special water quality values that are vital to the unique character of those waterbodies.

(ii) The State of Oregon will develop a screening process and establish a list of nominated waterbodies for ORWs designation in the Biennial Water Quality Status Assessment Report (305(b) Report). The priority waterbodies for nomination include: those in State and National Parks, National Wild and Scenic Rivers, State Scenic Waterways, those in State and National Wildlife Refuges, and those in Federally designated wilderness areas.

(iii) The State will publish a list of water bodies which are proposed for designation as ORWs as appropriate at the time of each triennial water quality standards review.

(iv) When designating ORWs, the State shall establish the water quality values to be protected and provide a process for determining what activities are allowed that would not affect the outstanding resource values.

(8) What is the significance of an ORW designation?

(i) After the designation, any regulatory authority that is required to follow water quality standards in authorizing an activity shall not allow activities that may lower water quality below the level established except on a short-term basis to respond to emergencies or to otherwise protect human health and welfare.

(ii) [Reserved]

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