



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 10

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WATER
DIVISION

September 27, 2021

Mr. Deane Osterman
Executive Director
Kalispel Natural Resources Department
P.O. Box 39
Usk, Washington 99180

Re: EPA's Clean Water Act Action on the October 27, 2017, Submittal of Revisions to the Kalispel Tribe of Indians' Surface Water Quality Standards Related to Aquatic Life

Dear Mr. Osterman:

The U.S. Environmental Protection Agency has completed the review of portions of the new and revised water quality standards (WQS) of the Kalispel Tribe of Indians, submitted to EPA by the Kalispel Natural Resources Department by letter dated October 27, 2017. Under Clean Water Act (CWA) section 303(c), 33 U.S.C. § 1313(c), states and authorized tribes must submit new and revised WQS to EPA for review and action, and EPA must ensure that those WQS are consistent with the CWA and EPA's implementing regulations. The details of EPA's action are outlined below and are further described in the enclosed technical support document.

EPA's action applies to waters within the boundaries of the Kalispel Reservation and Tribal trust lands. The action does not apply to waters outside of the Kalispel Reservation boundaries which are under Washington State jurisdiction. CWA section 518(e) authorizes EPA to treat an Indian tribe in a similar manner as a state to manage and protect water resources "within the borders of an Indian reservation," provided certain requirements are satisfied. The Kalispel Tribe received EPA approval for treatment in a similar manner as a state for the purpose of developing and administering the WQS and water quality certification programs, CWA sections 303(c) and 401, respectively, in 2002.

Summary of EPA's Action

I. Pursuant to EPA's authority under CWA section 303(c) and the implementing regulations at 40 CFR Part 131, EPA is approving the following new and revised WQS:

- Section 3(b): Revisions related to critical low flow requirements
- Section 10: New and revised aquatic life criteria for 19 toxic pollutants in Table 2 and total phosphorus in Table 3, new and revised narrative language related to the aquatic life criteria, and additional editorial revisions
- Section 11: Revisions to designated uses related to cutthroat and brown trout in Cee Cee Ah Creek
- Section 12(a): Revisions to temperature criteria for the cutthroat and brown trout uses in Cee Cee Ah Creek, and application of criteria for total dissolved gas, and pH to these uses as revised

- Sections 12(a), (b), and (e): Revisions to the human use allowance for temperature and a new narrative criterion for protection of the natural thermal regime
- Section 12(e): Revision to correct the pH criteria for the agricultural water supply use.

II. EPA is taking no action on the new and revised provisions in the following sections of the Tribe's WQS because EPA has determined they are not new or revised WQS that EPA has the authority to review and approve or disapprove pursuant to its CWA section 303(c) authority, 33 U.S.C. § 1313(c)(3).

- Section 3(b): Revisions related to analytical testing methods
- Section 10: Revisions to certain provisions related to the allowed frequency at which criteria may be exceeded, the selenium implementation narrative in Table 2, footnote J, and the conversion factor for selenium in Endnote A.

In addition, the Tribe withdrew the following provisions from the WQS submittal on September 22, 2021 because the Tribe intends to revise them as part of the next WQS update, and consequently EPA is not acting on these provisions:

- The aquatic life criteria for aluminum in section 10(1), Table 2 and footnote B
- The removal of the criteria for atrazine and mercury from Table 2, including the entries in Table 2 and footnotes x and y in the 2004 WQS, and the conversion factors for mercury in Table 4 of the 2004 WQS
- The removal of footnote f (2004 WQS) from the silver criterion without the application of the parallel footnote O, a revision of the former footnote f
- The application of the dissolved oxygen criteria in section 12(a)(2) to the revised brown trout and cutthroat trout use
- The application of the turbidity criteria in section 12(a)(3) to the revised brown trout and cutthroat trout use.

EPA appreciates the efforts you and your staff have dedicated to providing new protections for the waters of the Kalispel Tribe and looks forward to continuing close collaborations with the Tribe. If you have any questions regarding this letter, please contact me at (206) 553-1855 or Maja Eberhardt, EPA staff lead, at (206) 553-6265 or by email at Eberhardt.Maja@epa.gov.

Sincerely,

DANIEL
OPALSKI

Digitally signed by
DANIEL OPALSKI
Date: 2021.09.27
21:51:08 -07'00'

Daniel D. Opalski
Director

Enclosure: Technical Support Document

cc (e-copy): Mr. Ken Merrill, Water Resources Program, Kalispel Tribe

Technical Support Document

EPA's Clean Water Act Action on Certain Revisions to
Surface Water Quality Standards of the Kalispel Tribe of
Indians

SEPTEMBER 27, 2021

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1 Introduction

This document provides the basis for the Environmental Protection Agency’s (EPA) decision under section 303(c) of the Clean Water Act (CWA), 33 U.S.C. 1313(c), and the federal water quality standards (WQS) regulations at 40 CFR 131 to approve certain new or revised WQS that the Kalispel Tribe of Indians (Kalispel Tribe or Tribe) submitted to EPA on October 27, 2017. EPA approved new and revised WQS that were not related to aquatic life protection on March 21, 2019, and in a subsequent action on July 2, 2019, EPA approved two additional human health criteria. Today’s action addresses the remaining 2017 WQS revisions, which include aquatic life criteria that were subject to consultation under section 7 of the Endangered Species Act (ESA) and related revisions to designated uses.

The Kalispel Tribe was authorized for “treatment in a manner similar as a state” by EPA under section 518 of the CWA in 2002. EPA approved the Tribe’s initial WQS on June 24, 2004, and these are referred to in this document as “2004 WQS.” The 2004 WQS consist of the Tribe’s March 24, 2003 WQS submittal and a May 26, 2004 letter from the Tribe that identified editorial revisions to the 2003 WQS.

1.1 Clean Water Act Requirements for Water Quality Standards

Under section 303(c) of the CWA and federal implementing regulations at 40 CFR 131.4, states and authorized tribes¹ have the primary responsibility for reviewing, establishing, and revising WQS, which consist of the designated uses of a waterbody or waterbody segment, the water quality criteria necessary to protect those designated uses, and an antidegradation policy. This statutory framework allows states and tribes to adopt appropriate designated uses (as required at 40 CFR 131.10(a)) and to adopt criteria to protect those designated uses (as required at 40 CFR 131.11(a)).

States and tribes are required to hold public hearings for the purpose of reviewing applicable WQS periodically but at least once every three years and, as appropriate, modify and adopt these standards (40 CFR 131.20). Each state or tribe must follow its own legal procedures for adopting standards (40 CFR 131.5(a)(6)) and submit certification by the appropriate legal authority within the state or tribe that the WQS were duly adopted pursuant to state or tribal law (40 CFR 131.6(e)). EPA’s review authority and the minimum requirements for state and tribal WQS submittals are described at 40 CFR 131.5 and 131.6, respectively.

Section 303(c)(2)(B) of the CWA requires states and tribes to adopt water quality criteria for toxic pollutants that are listed pursuant to section 307(a)(1) and for which EPA has published criteria under section 304(a), where the discharge or presence of these toxics could reasonably be expected to interfere with the designated uses adopted by the state or tribe. In adopting such criteria, states and tribes should establish numeric values based on one of the following:

¹ The term “authorized tribe” means a tribe eligible under CWA section 518(e) and 40 CFR 131.8 for treatment in a similar manner as a state for the purpose of administering a water quality standards program. In this document, the term “tribe” refers to authorized tribe.

- (1) CWA section 304(a) guidance
- (2) CWA section 304(a) guidance modified to reflect site-specific conditions, or
- (3) Other scientifically defensible methods (40 CFR 131.11 (b)(1)).

In addition, states and tribes should establish narrative criteria where numeric criteria cannot be determined or to supplement numeric criteria (see 40 CFR 131.11(b)(2)).

Section 303(c) of the CWA also requires states and tribes to submit new or revised WQS to EPA for review and action. EPA is required to review these changes to ensure revisions to WQS are consistent with the CWA and EPA's implementing regulations.

EPA considers four questions when evaluating whether a particular provision is a new or revised WQS. If all four questions are answered "yes" then the provision would likely constitute a new or revised WQS that EPA has the authority and duty to approve or disapprove under CWA section 303(c)(3). The following four questions are considered:²

- (1) Is it a legally binding provision adopted or established pursuant to state or tribal law?
- (2) Does the provision address designated uses, water quality criteria (narrative or numeric) to protect designated uses, and/or antidegradation requirements for waters of the United States?
- (3) Does the provision express or establish the desired condition (e.g. uses, criteria) or instream level of protection (e.g. antidegradation requirements) for waters of the United States immediately, or mandate how it will be expressed or established for such waters in the future?
- (4) Does the provision establish a new WQS or revise an existing WQS?

Furthermore, the federal WQS regulations at 40 CFR 131.21 state, in part, that when EPA disapproves a state or tribe's WQS, EPA shall specify the changes that are needed to assure compliance with the requirements of the CWA and federal WQS regulations and shall explain why the WQS is not in compliance with such requirements.

Finally, EPA considers non-substantive edits to existing WQS to constitute new or revised WQS that EPA has the authority to approve or disapprove under CWA section 303(c)(3). While such edits and changes do not substantively change the meaning or intent of the existing WQS, EPA believes it is reasonable to treat such edits and changes in this manner to ensure public transparency as to which provisions are applicable for CWA purposes. EPA notes that the scope of its review and action on non-substantive edits or editorial changes extend only to the non-

² U.S. Environmental Protection Agency. 2012. *What is a New or Revised Water Quality Standard under 303(c)(3)? Frequently Asked Questions*. EPA Publication No. 820F12017 (Oct. 2012). Accessed at <https://www.epa.gov/sites/production/files/2014-11/documents/cwa303faq.pdf>.

substantive edits or changes themselves. EPA is not re-opening or reconsidering the underlying WQS which are the subject of the non-substantive edits or editorial changes.

1.2 The Kalispel Tribe's Water Quality Standards Submittal

By letter dated October 27, 2017 the Kalispel Natural Resources Department submitted revisions to various sections of the Tribe's WQS to EPA for review and action under section 303(c) of the CWA.³ The 2017 WQS include revised human health criteria, new and revised aquatic life criteria, and revisions to other provisions. The revised WQS were certified by the Kalispel Tribe's senior tribal attorney as duly adopted pursuant to tribal law, and they became effective under tribal law on October 25, 2017.

Prior to adopting the revisions, the Tribe provided the opportunity for public comment starting on January 25, 2016 and held a public hearing on March 14, 2016. The invitation for comment and announcement of the public hearing was also sent to EPA Region 10 and the Washington State Department of Ecology. The Tribe received comments only from EPA.

In a September 22, 2021 letter to Dan Opalski, Director of the EPA Region 10 Water Division, the Tribe withdrew the following criteria and other provisions from the 2017 WQS submittal:

- The aquatic life criteria for aluminum in section 10(1), Table 2 and footnote B
- The removal of the criteria for atrazine and mercury from Table 2, including the entries in Table 2 and footnotes x and y in the 2004 WQS, and the conversion factors for mercury in Table 4 of the 2004 WQS
- The removal of footnote f (2004 WQS) from the silver criterion without the application of the parallel footnote O, a revision of the former footnote f
- The application of the dissolved oxygen criteria in section 12(a)(2) to the revised brown trout and cutthroat trout use
- The application of the turbidity criteria in section 12(a)(3) to the revised brown trout and cutthroat trout use.

EPA is not addressing these provisions in this technical support document pursuant to the agency's authority under CWA section 303(c) as a result of the withdrawal by the Tribe. The Tribe's letter indicated that they are preparing to revise the withdrawn criteria and other WQS provisions pursuant to CWA section 303(c) and the federal regulations at 40 CFR 131.

1.3 Summary of EPA's Action

As described in this technical support document, EPA is approving the following new and revised WQS under CWA section 303(c):

- Section 3(b): Revisions related to critical low flow requirements

³ The Tribe submitted WQS in 2017 after making editorial revisions to several human health criteria values following a previous September 22, 2016 submittal. EPA is acting on the Tribe's 2017 WQS submittal.

- Section 10: New and revised aquatic life criteria for 19 toxic pollutants in Table 2 and total phosphorus in Table 3, new and revised narrative language related to the aquatic life criteria, and additional editorial revisions
- Section 11: Revisions to designated uses related to cutthroat and brown trout in Cee Cee Ah Creek
- Section 12(a): Revisions to temperature criteria for the cutthroat and brown trout uses in Cee Cee Ah Creek, and application of criteria for total dissolved gas, and pH to these uses as revised
- Sections 12(a), (b), and (e): Revisions to the human use allowance for temperature and a new narrative criterion for protection of the natural thermal regime
- Section 12(e): Revision to correct the pH criteria for the agricultural water supply use.

EPA is taking no action on the following new and revised language because EPA has determined they are not new or revised WQS that EPA has the authority to review and approve or disapprove pursuant to its CWA section 303(c) authority:

- Section 3(b): Revisions related to analytical testing methods
- Section 10: Certain provisions related to the allowed frequency at which criteria may be exceeded, the selenium implementation narrative in Table 2, footnote J, and the conversion factor for selenium in Endnote A.

EPA previously took CWA action on the following provisions from the 2017 WQS submittal on March 21, 2019 and July 2, 2019:

- Portions of Section 1: Background (no action)
- Introductory provisions in Section 10: Toxic Substances (no action)
- Section 4: Definitions (approved)
- Section 5: Mixing Zones (approved)
- Section 9(c): Tier 3 Antidegradation Policy (approved)
- Portions of Section 10: Toxic Substances
 - Narrative revisions to the introductory text of the toxic substances section (approved)
 - Numeric criteria pertaining to the protection of human health (approved)
 - Footnotes F, H, I, L, and Q, and portions of footnote D (approved)
 - Footnotes A, M, R, and part of footnote D (no action)
- Portions of Section 11: Beneficial Water Uses to be Protected in Waters of the Reservation (approved)
- Portions of Section 12: General Water Use and Criteria (approved).

Today's action addresses the revisions in the Kalispel Tribe's 2017 WQS submittal that are related to aquatic life uses.

2 Applicability of the Water Quality Standards

Section 3 of the Tribe’s WQS provides standards related to the application of the WQS. The Tribe submitted new and revised standards related to analytical methods and critical low flows.

2.1 Analytical Methods, Section 3(b)

Section 3(b) of the 2017 WQS provides monitoring and measurement methods for assessing compliance with WQS. The 2017 WQS include the following revisions to section 3(b) (underlined text indicates new language and text that is crossed out was deleted in the 2017 WQS):

3(b) Analytical Methods

The analytical testing methods used to measure or otherwise evaluate compliance with water quality standards shall, to the extent practicable, be in accordance with the “Guidelines Establishing Test Procedures for the Analysis of Pollutants” (40 CFR 136).

When a testing method is not available for a particular substance, or the method does not provide the lowest levels of measure, the most recent edition of the “Standard Methods for the Examination of Water and Wastewater” (American Public Health Association, American Water Works Association, and Water Pollution Control Federation), or other appropriate methods shall be used. ~~and other or superseding methods published and/or approved by EPA shall be used.~~

EPA is taking no action on the revisions to the analytical methods in section 3(b) of the 2017 WQS because the provision is not a water quality standard. The analytical methods provision refers to assessment methods and does not describe a desired ambient condition or instream level of protection of a waterbody to support a particular designated use.

2.2 Critical Low Flows, Section 3(b)

The Tribe revised Table 1 in section 3(b) by adding critical low flow requirements for ammonia and a footnote that specifies procedures for addressing flow in deriving seasonal permit limits, as follows (underlined text indicates new language in the 2017 WQS):

Table 1. Critical Low Flows

| Critical Low Flows for Aquatic Life* | |
|---|----------------------|
| Acute Criteria (CMC) | 1Q10 |
| Chronic Criteria (CCC) | 7Q10 |
| <u>Chronic Criteria (CCC) for Ammonia</u> | <u>30B3 or 30Q10</u> |
| Critical Low Flows for Human Health* | |
| Non-Carcinogens | 30Q5 |
| Carcinogens | Harmonic Mean Flow |

*If seasonally variable critical flows are used for deriving seasonal permit limits, a return frequency for each seasonal critical flow will be adjusted to provide a combined annual probability of exceeding water quality criteria of 10% or less.

Critical low flows are defined as:

...

30B3: is a biologically based low flow and indicates an allowable exceedance for 30 consecutive days once every three years

30Q10: the lowest average 30 consecutive day low flow with an average recurrence frequency of once in ten years determined hydrologically.

EPA Action

In accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR 131, EPA approves the revisions to Table 1 Critical Low Flows, which include the critical low flow requirements for ammonia, the supporting definitions, and the requirements for deriving seasonal permit limits when using seasonally variable critical flows.

Rationale

The Tribe has adopted new critical low flow requirements for the criterion continuous concentration (CCC)⁴ for ammonia. EPA's regulation at 40 CFR 131.13 provides that states and tribes may adopt critical low flow requirements for the application of water quality criteria. For the ammonia CCC, EPA recommends a design flow of 30B3, 30Q10, or 30Q5 in applying the ammonia CCC for permitting and design flow purposes (64 FR 71974, Dec. 22, 1999⁵), to ensure that the ammonia criteria are met, including the magnitude of the criterion, the averaging period (referred to as "duration"), and the maximum allowable frequency of exceedance of the criterion. The Tribe's new critical low flow requirements are consistent with EPA's recommendations and their application in permits and flow designs are expected to result in effective implementation of the ammonia CCC.

The Tribe's ammonia criteria also include a requirement that no 4-day average concentration may exceed 2.5 times the CCC, consistent with EPA's recommendations (see section 3.2.2, below). Use of the critical flow rates 30B3 and 30Q10 is also expected to result in effective implementation of this requirement for the 4-day average (64 FR 71974, section V).

The Tribe has adopted a footnote to Table 1 that allows the derivation of seasonal permit limits based on seasonally variable critical flows, and limits the combined annual probability of exceeding water quality criteria to 10% or less. The CWA allows for seasonal or tiered effluent limits, provided that the applicable water quality standards are met (CWA section 301(b)(1)(C) and 40 CFR 122.44(d)(1)(vii)(A)). Permitting authorities incorporating seasonal limits

⁴ Criterion Continuous Concentration (CCC) equals the highest concentration of a pollutant to which aquatic life can be exposed for an extended period of time (four days) without deleterious effects (Kalispel Tribe 2004 WQS, Table 2 footnote c).

⁵ U.S. Environmental Protection Agency. *Water Quality Criteria; Notice of Availability; 1999 Update of Ambient Water Quality Criteria for Ammonia*. Federal Register 64: 71974-71980. December 22, 1999.

into a permit must ensure that effluent limits are sufficient to meet the criteria magnitude for the specified averaging period (duration), as well as the maximum allowable frequency of exceedance of the of the criteria.⁶ The requirement to adjust the return frequency for each individual seasonal critical flow so as to provide a combined annual probability of exceeding water quality criteria of 10% or less is equivalent to a fixed critical low flow, such as the 30Q10, that has a 10-year return period.

3 Aquatic Life Criteria for Toxic Substances and Total Phosphorus

Section 10 of the Tribe's WQS provides numeric criteria for toxic substances for protection of aquatic life and human health. Section 10 includes introductory language that prefaces Table 2; Table 2, which includes the Tribe's numeric criteria for toxic substances; 18 footnotes labeled A through R, which include equation-based criteria and other information related to the numeric toxics criteria in Table 2; and endnote A, which provides equations and input values used to calculate hardness-dependent metals criteria and factors used for conversion between total and dissolved metals criteria.

EPA took CWA action on revisions related to human health criteria in 2019. Revisions to the acute and chronic aquatic life criteria and footnotes associated with aquatic life criteria are addressed below.

3.1 Duration and Frequency Components and Units of the Criteria, Section 10

Table 2, which provides criteria for toxic substances, is prefaced with the following paragraph regarding the duration and frequency components and the units for the criteria:

Unless otherwise noted in the table below, the aquatic life CMC is applied as a 1-hour average concentrations, and the aquatic life CCC is applied as a 4-day average concentration. The CCC and CMC should not be exceeded more than once every three years. Footnotes G and O describe the exception to the frequency and duration of the criteria stated in this paragraph.

All values are in micrograms per liter unless otherwise noted. Dashes in the criterion column means that there is no numeric criterion.

EPA Action

In accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR 131, EPA approves the above averaging periods (i.e., the first sentence of the paragraph), the statement that identifies exceptions to the averaging periods in footnotes G and O, and the units for the criteria. EPA is taking no action on the recommendation that the CCC and criterion maximum concentration

⁶ Letter from James F. Pendergast, Acting Director, EPA Permits Division, regarding the use of seasonal flows to calculate National Pollutant Discharge Elimination System permit limits. September 20, 1996, Washington, D.C. Accessed at <https://www3.epa.gov/npdes/pubs/owm0144.pdf>.

(CMC)⁷ should not be exceeded more than once every three years because the recommendation is not a water quality standard.

Rationale

The language regarding the averaging periods for toxics criteria that prefaces Table 2 represents a revision of Table 2, footnote c of the 2004 WQS. The units specified for the criteria, micrograms per liter (or µg/L), were previously noted in the first row of Table 2 and are unchanged. The above language applies to new, revised, and unrevised numeric criteria, except as indicated in footnote O. Footnote O is addressed below. Although footnote G is also referenced as an exception in the above paragraph, the duration and frequency components applied to the copper criteria that are included in footnote G are the same as those specified by above language. The copper criteria are considered below in section 3.2.3.

EPA's 1985 guidelines for deriving aquatic life criteria⁸ (the "1985 Guidelines") recommend that aquatic life criteria include three components: the magnitude of the criterion; the averaging period for the criterion, known as the duration component; and the maximum frequency at which the criterion may be exceeded. The above text establishes duration components and recommends frequency components for the acute and chronic criteria provided in Table 2. The Tribe's duration and frequency components are consistent with EPA's 1985 Guidelines and EPA's 304(a) recommendations for the individual criteria. EPA typically recommends averaging durations of one hour for the CMC and four days for the CCC for aquatic life criteria that are based on standard laboratory toxicity tests.

The units, micrograms per liter except as noted, are an integral part of the numeric criteria and are unchanged from the 2004 WQS. EPA is approving the application of the units to the new and revised criteria in Table 2 and its footnotes. For criteria that were not revised in the 2017 WQS, EPA is approving the sentence that provides the units as an editorial, non-substantive change, consistent with the CWA, 33 U.S.C. § 1313(c)(3) and 40 CFR 131.

As indicated in the 1985 Guidelines, aquatic ecosystems can generally recover from most exceedances in about three years, and therefore EPA recommends 3 years as the maximum frequency of exceedance for aquatic life criteria. However, EPA is taking no action on the Tribe's recommendation that the CCC and CMC should not be exceeded more than once every three years because it is not considered a WQS subject to EPA review and action under CWA section 303(c). The statement is not a legally binding provision because it recommends, but does not require, that criteria are not exceeded more than once in three years.

⁷ Criterion Maximum Concentration (CMC) equals the highest concentration of a pollutant to which aquatic life can be exposed for a short period (one-hour average) of time without deleterious effects (Kalispel Tribe 2004 WQS, Table 2 footnote c).

⁸ U.S. Environmental Protection Agency. 1985. *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection Of Aquatic Organisms and Their Uses*. Accessed at <https://www.epa.gov/sites/production/files/2016-02/documents/guidelines-water-quality-criteria.pdf>

During the next triennial review, EPA recommends that the Tribe adopt binding language to mandate the maximum frequency at which criteria may be exceeded.

3.2 Aquatic Life Criteria for Toxic Pollutants, Section 10

The Tribe’s 2017 WQS include new or revised aquatic life criteria for 19 toxic substances and total phosphorus, and new and revised narrative provisions related to the aquatic life criteria. EPA’s action and rationale for these WQS revisions are addressed below.

3.2.1 New Criteria for Seven Pollutants

The Kalispel Tribe adopted new aquatic life criteria for seven pollutants in Table 2 of the 2017 WQS, as follows (units are µg/L):

| Compound | CAS # | Aquatic Life CMC | Aquatic Life CCC |
|-------------------|---------|------------------|------------------|
| Tributyltin (TBT) | --- | 0.46 | 0.072 |
| Chlorine | 7782505 | 19 | 11 |
| Acrolein | 107028 | 3.0 | 3.0 |
| Carbaryl | 63252 | 2.1 | 2.1 |
| Chlorpyrifos | 2921882 | 0.083 | 0.041 |
| Diazinon | 333415 | 0.17 | 0.17 |
| Mirex | 2385855 | --- | 0.001 |

EPA Action

In accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR 131, EPA approves the new aquatic life criteria for tributyltin, chlorine, acrolein, carbaryl, chlorpyrifos, diazinon, and mirex in Table 2 of the 2017 WQS.

Rationale

EPA is approving the aquatic life criteria for these seven pollutants because the criteria meet requirements at 40 CFR 131.11(a)(1) and (b)(1)(i), which specify that states and authorized tribes must adopt water quality criteria that are based on sound scientific rationale, such as EPA’s national recommended water quality criteria. The Tribe’s criteria are consistent with EPA’s current national recommended aquatic life criteria. EPA’s recommended criteria were developed according to methods specified in EPA’s 1985 *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*. The EPA criteria document for each of the seven recommended criteria provides the detailed scientific basis and rationale for the criteria and for their protectiveness of aquatic life.⁹

⁹ U.S. Environmental Protection Agency. 2003. *Ambient Aquatic Life Water Quality Criteria for Tributyltin (TBT) – Final*. EPA 822-R-03-031. Office of Water, Washington, D.C.

For chlorine and mirex, see: U.S. Environmental Protection Agency. 1986. *Quality Criteria for Water, 1986*. EPA 440/5-86-001. Office of Water, Washington, D.C.

3.2.2 Revised Ammonia Criteria, Table 2 Footnote C

The Tribe adopted the following ammonia criteria in Table 2, footnote C of the 2017 WQS:

- C. The acute and chronic criteria for ammonia are expressed in mg/L as total ammonia nitrogen (mg TAN/L). The criteria are as follows:

ACUTE CRITERION (CMC): The acute criterion is a one hour average not to be exceeded more than once in a three year period. In the following equations, temperature (T) is in degrees Celsius, and pH is in standard units.

$$CMC = MIN \left(\left(\frac{0.275}{1+10^{7.204-pH}} + \frac{39.0}{1+10^{pH-7.204}} \right), \left(0.7249 \times \left(\frac{0.0114}{1+10^{7.204-pH}} + \frac{1.6181}{1+10^{pH-7.204}} \right) \times (23.12 \times 10^{0.036 \times (20-T)}) \right) \right)$$

CHRONIC CRITERION (CCC): The chronic criterion is a 30-day rolling average not to be exceeded more than once in a three year period.

$$CCC = 0.8876 \times \left(\frac{0.0278}{1 + 10^{7.688-pH}} + \frac{1.1994}{1 + 10^{pH-7.688}} \right) \times (2.126 \times 10^{0.028 \times (20-MAX(T,7))})$$

In addition to the above equation for the CCC, the highest four day average within the 30-day averaging period should not be more than 2.5 times the CCC more than once in three years on average (e.g., 2.5 x 1.9 mg TAN/L = 4.8 mg TAN/L at pH 7 and 20°C).

The new ammonia criteria replace the ammonia criteria in the Tribe's 2004 WQS, which were included in a footnote to Table 6.

EPA Action

In accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR 131, EPA approves the revised aquatic life criteria for ammonia provided in footnote C of Table 2.

Rationale

EPA is approving the Tribe's revised aquatic life criteria for ammonia because the criteria meet requirements at 40 CFR 131.11(a)(1) and (b)(1)(i), which specify that states and authorized tribes must adopt water quality criteria that are based on sound scientific rationale, such as

U.S. Environmental Protection Agency. 2009. *Ambient Aquatic Life Water Quality Criteria for Acrolein, 2009*. Office of Water, Washington, D.C.

U.S. Environmental Protection Agency. 2012. *Aquatic Life Ambient Water Quality Criteria for Carbaryl – 2012*. EPA 820-R-12-007. Office of Water, Washington, D.C.

U.S. Environmental Protection Agency. 1986. *Ambient Water Quality Criteria for Chlorpyrifos – 1986*. EPA 440/5-86-005. Office of Water, Washington, D.C.

U.S. Environmental Protection Agency. 2005. *Aquatic Life Ambient Water Quality Criteria for Diazinon*. EPA 822-R-05-006. Office of Water, Washington, D.C.

EPA's national recommended water quality criteria. The Tribe's ammonia criteria are consistent with EPA's national recommended aquatic life criteria for ammonia. The acute criterion is consistent with EPA's recommended criterion for waters where salmonids are present. The EPA criteria document for ammonia provides the detailed scientific basis and rationale for the development of the criteria and for their protectiveness of aquatic life.¹⁰

3.2.3 Revised Copper Criteria, Table 2 Footnote G

The Tribe adopted revised copper criteria in Table 2, footnote G of the 2017 WQS. The Tribe adopted the following narrative statement, which incorporates EPA's current national recommended copper criteria by reference:

- G.** The copper criteria are derived using the biotic ligand model (BLM) based on EPA's *Aquatic Life Ambient Freshwater Quality Criteria – Copper, 2007 Revision*. The CMC is applied as a one-hour average concentration that should not be exceeded more than once in three years. The CCC is applied as a 4-day average concentration that should not be exceeded more than once in three years.

The new copper criteria language replaces the copper criteria provided in Table 2 of the 2004 WQS.

EPA Action

In accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR 131, EPA approves the revised aquatic life criteria for copper provided in footnote G of Table 2, except EPA is taking no action on the recommendations that the criteria should not be exceeded more than once in three years because the recommendation is not a water quality standard.

Rationale

EPA is approving the magnitude and averaging period of the Tribe's aquatic life criteria for copper because they meet requirements at 40 CFR 131.11(a)(1) and (b)(1)(i), which specify that states and authorized tribes must adopt water quality criteria that are based on sound scientific rationale, such as those provided in EPA's 304(a) guidance.

The Tribe's copper criteria consist of a biotic ligand model (BLM) that is used to derive copper criteria values on a site-specific basis, which is consistent with EPA's current 304(a) recommendations for copper.¹¹ EPA's 304(a) recommendation provides the detailed scientific basis and rationale for the copper BLM and for its protectiveness of aquatic life. The copper BLM uses ten input parameters to calculate instantaneous water quality criteria, which are the protective criteria magnitudes that correspond to the water quality conditions for which they are calculated. The copper BLM more accurately reflects the aqueous toxicity of copper in a waterbody than EPA's previous recommendation, which used an equation to calculate copper

¹⁰ U.S. Environmental Protection Agency. 2013. *Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater, 2013*. EPA 822-R-13-001. Office of Water, Washington, DC.

¹¹ U.S. Environmental Protection Agency. 2007. *Aquatic Life Ambient Freshwater Quality Criteria – Copper, 2007 Revision*. EPA-822-R-07-001. Office of Water, Washington, DC.

criteria based solely on the hardness of the water. The duration component and the recommended frequency component of the copper criteria in footnote G are consistent with the recommendations outlined in EPA's 1985 Guidelines and 2007 national recommended copper criteria.

The copper narrative indicates that the criteria "should not be exceeded more than once in three years." EPA is taking no action in this statement because it is not a legally binding provision; it recommends, but does not require, that criteria are not exceeded more than once in three years. During the next triennial review, EPA recommends that the Tribe adopt binding language to mandate the maximum frequency at which the copper criteria may be exceeded.

In order to ensure that the copper BLM is applied in a protective manner, it is important to identify the most toxic conditions at a site, and to implement the criteria in a manner that ensures protection of aquatic life under the most toxic conditions. EPA encourages the Kalispel Tribe to ensure that the criteria are applied in a manner that is protective of aquatic life under all water quality conditions found in the Tribe's waters, including conditions of greatest copper toxicity.

3.2.4 Pentachlorophenol Criteria, Table 2 and Footnote N

The Kalispel Tribe made editorial revisions to the text that provides the pentachlorophenol criteria, but did not change the formulas that constitute the criteria. Table 2, footnote N provides the equations that constitute the Tribe's pentachlorophenol criteria, as follows (units are $\mu\text{g/L}$):

- N.** Freshwater aquatic life criteria for pentachlorophenol are expressed as a function of pH of the ambient water, and are calculated as follows: $\text{CMC} = \exp(1.005(\text{pH}) - 4.869)$; and $\text{CCC} = \exp(1.005(\text{pH}) - 5.134)$.

The pentachlorophenol criteria were previously in Table 2, footnote e in the 2004 WQS.

EPA Action

In accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR 131, EPA approves the editorial revisions in Table 2 and footnote N. EPA notes that the approval of this editorial, non-substantive change does not alter the EPA's prior approval of the underlying substantive aquatic life criteria for pentachlorophenol.

Rationale

The revisions in Table 2 and footnote N include the removal of the example acute and chronic criteria for waters with pH 7.8 from the pentachlorophenol entry in Table 2, the removal of a corresponding reference to the example criteria formerly included in footnote e, and the clarification in footnote N that pH in the formula refers to the pH in ambient waters. These revisions are editorial in nature, while the equations that constitute the pentachlorophenol criteria are unchanged. Because the revisions for pentachlorophenol in Table 2 and footnote N provide clarifying edits but do not change the criteria, EPA is approving these changes as non-substantive revisions to supporting information for the pentachlorophenol criteria.

3.2.5 DDT and Metabolites, Table 2 and Footnote P

The Tribe revised the DDT criteria to apply to the sum of DDT and its metabolites, rather than only to p,p'-DDT, while the numeric values of the CMC and CCC remain the same as in the 2004 WQS. The Tribe adopted the following aquatic life criteria for DDT and its metabolites in Table 2 and footnote P of the WQS (units are µg/L):

| Compound | CAS # | Aquatic Life CMC | Aquatic Life CCC |
|--|-------|---------------------|-----------------------|
| p,p'-Dichlorodiphenyltrichloroethane (DDT) | 50293 | 1.1 ^{O, P} | 0.001 ^{O, P} |

- P. This criterion applies to DDT and its metabolites (i.e., the total concentration of DDT and its metabolites should not exceed this value).

EPA Action

In accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR 131, EPA approves the revised aquatic life criteria for the total concentration of DDT and its metabolites in Table 2 and footnote P.

Rationale

Footnote P revises the criteria to include metabolites of DDT, such as DDD and DDE, while the magnitude of the acute and chronic criteria is unchanged from the 2004 WQS. The criteria values for DDT are consistent with EPA's 304(a) recommendations,¹² which also apply the numeric criteria to DDT and its metabolites. Therefore, EPA is approving footnote P as consistent with EPA's current national criteria recommendations and their underlying scientific basis.

3.2.6 Averaging Period Requirements for Certain Criteria, Table 2 Footnote O

The 2017 WQS include requirements for application of an averaging period to aldrin, chlordane, DDT, alpha-endosulfan, beta-endosulfan, heptachlor, and heptachlor epoxide criteria in Footnote O of Table 2. Footnote O consists of the following text:

- O. These criteria are based on EPA recommendations issued in 1980 that were derived using guidelines that differed from EPA's *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses* (1985 Guidelines) which update minimum data requirements and derivation procedures. The CMC for these compounds must not be exceeded at any time. The CMC may be applied using a one hour averaging period not to be exceeded more than once every three years, if the CMC values given in Table 2 are divided by 2 to obtain a value that is more comparable to a CMC value derived using the 1985 Guidelines. The CCC must not be exceeded based on a 24-hour average.

¹² U.S. Environmental Protection Agency. 1980. *Ambient Water Quality Criteria for DDT*. EPA 440/5-80-038. Office of Water, Washington, DC.

Footnote O is a revision of footnote f of Table 2 in the 2004 WQS. Footnote f identified certain criteria as instantaneous maxima and provided recommendations for the application of these criteria when an averaging period is used. In Table 2 of the 2004 WQS, the pesticide criteria identified above and the silver criterion included a reference to footnote f. These chemicals are among the CWA section 304(a) criteria recommendations that EPA issued before EPA's current guidance for deriving aquatic life criteria was issued in 1985.

In a letter dated September 22, 2021, the Kalispel Tribe withdrew the removal of footnote f from the acute silver criterion. Footnote O was intended to replace the former footnote f for all of the criteria that carried footnote f, and the Tribe has indicated that they will revise Table 2 to include footnote O for the acute silver criterion. For the acute silver criterion only, footnote f in the 2004 WQS remains in effect for CWA purposes.

EPA Action

In accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR 131, EPA approves the language of footnote O and its application in Table 2 to the criteria for aldrin, chlordane, DDT, alpha-endosulfan, beta-endosulfan, heptachlor, and heptachlor epoxide.

Rationale

Table 2, footnote O provides a 24-hour averaging period for the referenced chronic criteria and identifies the acute criteria as maxima that may not be exceeded at any time. Footnote O also allows an averaging period of 1 hour to be used when implementing the criteria and requires, rather than recommends, that the acute criteria are divided by two if the 1-hour averaging period is used.

EPA's national recommended criteria for aldrin, chlordane, DDT, alpha-endosulfan, beta-endosulfan, heptachlor, heptachlor epoxide, and silver were published before EPA developed the 1985 Guidelines¹³ and used different data requirements and derivation procedures (45 FR 79318, Nov. 28, 1980¹⁴). The 1980 national recommended criteria include a 24-hour averaging period for the CCC, while the CMC is a maximum value not to be exceeded. Based on procedures for the derivation of CMCs included in the 1985 Guidelines, EPA recommends that if a 1-hour averaging period is applied to the CMC for the 1980 criteria, the acute criteria values should be divided by 2 to obtain a value that is more comparable to a CMC derived using the 1985 Guidelines. Footnote O of Table 2 is consistent with EPA's national criteria recommendations and additional guidance for the referenced pesticides.

EPA notes that although the Tribe did not revise the criteria for dieldrin and gamma-hexachlorocyclohexane (Lindane; the chemical was referred to by the synonym gamma-

¹³ U.S. Environmental Protection Agency. 1985. Guidelines for Deriving Numerical National Water Quality Criteria for the Protection Of Aquatic Organisms and Their Uses. Accessed at <https://www.epa.gov/sites/production/files/2016-02/documents/guidelines-water-quality-criteria.pdf>

¹⁴ U.S. Environmental Protection Agency. *Water Quality Criteria Documents; Availability*. Federal Register 45: 79318-79379. November 28, 1980.

BHC in the 2004), footnote O should also be applied to these criteria. EPA recommends that the Tribe add a reference to footnote O to the aquatic life criteria for dieldrin and gamma-hexachlorocyclohexane during the next review and revision cycle to ensure that these criteria are applied correctly.

3.2.7 Hardness-Dependent Criteria for Cadmium, Chromium (III), Lead, Nickel, Silver, and Zinc

The 2017 WQS consolidate the hardness-dependent criteria for cadmium, chromium (III), lead, nickel, silver, and zinc into Endnote A. The 2004 WQS included this information in Table 2 footnotes d, h, l, u, and v, and in section 10, paragraphs 8(a) through (d).

The following entries in Table 2, footnote E, and Endnote A provide the hardness-dependent metals criteria in the 2017 WQS:

Table 2. Toxic Substances

| Compound | CAS # | Aquatic Life CMC | Aquatic Life CCC |
|----------------|---------|------------------|------------------|
| Cadmium | 7440439 | See Footnote E | See Footnote E |
| Chromium (III) | 1606583 | See Footnote E | See Footnote E |
| Lead | 7439921 | See Footnote E | See Footnote E |
| Nickel | 7440020 | See Footnote E | See Footnote E |
| Silver | 7440224 | See Footnote E | --- |
| Zinc | 7440666 | See Footnote E | See Footnote E |

FOOTNOTES FOR TABLE 2.

E. The criterion is expressed in terms of dissolved concentration in the water column. The criterion for this metal is expressed as a function of hardness (mg/L) in the water column. To calculate the criteria, use the formula in expanded Endnote A at the end of these footnotes.

ENDNOTE A – Equations for Hardness Dependent Freshwater Metals Criteria and Conversion Factor Table

The freshwater criterion for this metal is expressed as dissolved with two significant figures, and is a function of hardness (mg/L) in the water column. Criteria values for hardness are calculated using the following formulas (CMC refers to the acute criterion; CCC refers to the chronic criterion):

$$\text{CMC} = (\exp(m_A * [\ln(\text{hardness})] + b_A)) * \text{CF}$$

$$\text{CCC} = (\exp(m_C * [\ln(\text{hardness})] + b_C)) * \text{CF}$$

“CF” is the conversion factor used for converting a metal criterion expressed as the total recoverable fraction in the water column to a criterion expressed as the dissolved fraction in the water column. For ambient waters with a hardness of 400 mg/L or less, the ambient

hardness of the surface [waters] must be used in the equations. The hardness value used must be consistent with the design discharge conditions in Table 1 for design flows and mixing zones. For ambient waters with a hardness of greater than 400 mg/L, a hardness of 400 mg/L must be used in the equations.

| Compound | mA | bA | mC | bC |
|--------------|--------|--------|--------|--------|
| Cadmium | 1.0166 | -3.924 | 0.7409 | -4.719 |
| Chromium III | 0.8190 | 3.7256 | 0.8190 | 0.6848 |
| Lead | 1.273 | -1.460 | 1.273 | -4.705 |
| Nickel | 0.8460 | 2.255 | 0.8460 | 0.0584 |
| Silver | 1.72 | -6.59 | -- | -- |
| Zinc | 0.8473 | 0.884 | 0.8473 | 0.884 |

EPA Action

In accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR 131, EPA approves the revisions to the Kalispel Tribe’s hardness-dependent metals criteria in Table 2, footnote E of Table 2, and Endnote A.

Rationale

Table 2 in section 10 of the 2017 WQS provides a reference to footnote E for the metals that have hardness-dependent criteria, and footnote E serves to apply the hardness-dependent formulas in Endnote A to the relevant metals in Table 2. Footnote E also specifies that the criteria are for dissolved metals.

The following sections provide the rationale for approval for the various individual but interrelated components of the revised and reorganized language that provides the aquatic life criteria for hardness-dependent metals.

Entries for Hardness-Dependent Metals in Table 2

Revisions to the Table 2 entries for cadmium, chromium (III), lead, nickel, silver (CMC only), and zinc include removal of the example numeric criteria and inclusion of only a reference to footnote E. EPA is approving this revision as a non-substantive editorial revision because the values included in the 2004 WQS were only examples corresponding to a theoretical hardness of 100 mg/L as CaCO₃, while the formulas must be used to derive hardness-dependent criteria for each site. The hardness-dependent formulas constitute the criteria for these metals. While removal of the example values is not a substantive revision, the removal adds clarity to the criteria because example values may not reflect the waters of a given site and may therefore be confusing.

Footnote E

Footnote E serves to identify the hardness-dependent equations in Endnote A as the criteria for cadmium, chromium (III), lead, nickel, silver, and zinc, and it specifies that the criteria are for dissolved metals. Footnote E is a revision of parts of Table 2 footnotes d and l of the 2004 WQS. EPA is approving footnote E and its application to the entries for hardness-dependent metals in Table 2 as part of the editorial reorganization of the hardness-dependent metals criteria.

Endnote A

Endnote A provides the formulas that constitute the hardness-dependent aquatic life criteria for cadmium, chromium (III), lead, nickel, silver, and zinc. This information had been included in section 10, paragraph 8, “Calculating Metals Criteria,” in the 2004 WQS, and in footnotes d, l, u, and v and supporting information from other sections of the Tribe’s 2004 WQS. The components of Endnote A are addressed individually below.

Hardness-Dependent Metals Criteria Equations and Water Effect Ratio

The first paragraph of Endnote A includes the formulas used to calculate hardness-dependent criteria and states that the criteria are for the dissolved form of the metals and that criteria are rounded to two significant figures. This text replaces the following text in section 10, paragraph 8 in the 2004 WQS:

8) Calculating Metals Criteria. Final CMC and CCC values should be rounded to two significant figures.

$$(a) \text{ CMC} = \text{WER} * (\text{Acute Conversion Factor}) * (\exp\{m_A [\ln(\text{hardness})] + b_A\})$$

$$(b) \text{ CCC} = \text{WER} * (\text{Chronic Conversion Factor}) * (\exp\{m_c [\ln(\text{hardness})] + b_c\})$$

The equations in the 2004 WQS included a term that allowed for adjustment for the water effect ratio (WER) on a site-specific basis. This term was described in section 10, paragraph 8(f) and referenced in Table 2, footnote h in the 2004 WQS. It encompassed a performance-based procedure that allowed the hardness-dependent criteria to be adjusted for water quality characteristics that affect metals toxicity on a site-specific basis. The WER term was not included in the metals equations in the 2017 WQS. As a result, any revisions of the hardness-dependent metals criteria that are made to reflect water quality conditions at a site will require the adoption of site-specific criteria by the Tribe and approval by EPA under CWA section 303(c). With this revision, site-specific criteria can still be developed using a WER, or another scientifically sound method may be used.

Application of the Hardness-Dependent Metals Criteria

The second full paragraph of Endnote A defines CF, used in the preceding formulas, as the conversion factor for total to dissolved metal. The 2017 WQS mandate the use of the conversion factors, whereas the 2004 WQS recommended their use. EPA is approving this requirement as a scientifically sound WQS revision that is consistent with CWA section 303(c)(2)(B).

The second paragraph of Endnote A also includes requirements for applying the hardness of ambient water in the criteria equations and for design flows and mixing zones for National

Pollutant Discharge Elimination System (NPDES) permits, and specifies a maximum hardness of 400 mg/L as CaCO₃. This information had been included in section 10, paragraph 8(h), in the 2004 WQS. EPA is approving this revision as part of the editorial reorganization of the hardness-dependent metals criteria.

Table of Input Parameters for the Hardness-Dependent Metals Criteria

Endnote A includes a table of input parameters to be used for each metal when deriving criteria values using the hardness-dependent equations. The input parameters are unchanged from Table 3 and footnotes u and v in the 2004 criteria for cadmium, chromium (III), lead, nickel, silver, and zinc. EPA is approving these entries in the table of input parameters as a part of the editorial reorganization of the hardness-dependent metals criteria.

The entry for copper was removed as part of the adoption of new copper criteria, which are addressed above in section 3.2.3.

For silver, which only has an acute criterion (i.e., the CMC), the value for b_A was revised by the Tribe in 2004, from -6.52 to -6.59.¹⁵ EPA approved this revised b_A value in its 2004 action.

3.2.8 Conversion Factors for Dissolved Metals

The 2017 WQS include a table of metals conversion factors and language regarding their application in section 10, Endnote A. The 2004 WQS included conversion factors in section 10, paragraph 8(d), which included Table 4 and related footnotes. The following text and table in Endnote A provide the conversion factors in the 2017 WQS:

The conversion factors (CF) below must be used in the equations above for the hardness-dependent metals in order to convert total recoverable metals criteria to dissolved metals criteria. For metals that are not hardness-dependent (i.e. arsenic, chromium VI, selenium, and silver (chronic)) the criterion value associated with the metal in Table 2 already reflects a dissolved criterion based on its conversion factor below.

Conversion Factor (CF) Table for Dissolved Metals

| Compound | Freshwater | |
|--------------|---|---|
| | Acute | Chronic |
| Arsenic | 1.000 | 1.000 |
| Cadmium | $1.136672 - [(\ln \text{ hardness})(0.041838)]$ | $1.101672 - [(\ln \text{ hardness})(0.041838)]$ |
| Chromium III | 0.316 | 0.860 |
| Chromium VI | 0.982 | 0.962 |
| Lead | $1.46203 - [(\ln \text{ hardness})(0.145712)]$ | $1.46203 - [(\ln \text{ hardness})(0.145712)]$ |

¹⁵ Letter from Allen H. Sanders, Attorney, regarding the Kalispel Tribe of Indians’ water quality standards. May 26, 2004, Seattle, WA.

| Compound | Freshwater | |
|----------|------------|---------|
| | Acute | Chronic |
| Nickel | 0.998 | 0.997 |
| Selenium | --- | 0.922 |
| Silver | 0.85 | --- |
| Zinc | 0.978 | 0.986 |

EPA Action

In accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR 131, EPA approves the Kalispel Tribe’s revised language regarding the application of the conversion factors and the table of conversion factors in Endnote A, except that EPA is taking no action on the conversion factor for selenium.

Rationale

Requirements for the application of conversion factors are provided in Endnote A in the paragraph that precedes the table of conversion factors. This paragraph requires the application of the conversion factors when converting criteria from a total to dissolved basis. The 2004 WQS included a recommendation for the application of conversion factors in a note following Table 4 in section 10, paragraph 8(d), which stated, “The term ‘Conversion Factor’ represents the recommended conversion factor for converting a metal criterion expressed as the total recoverable fraction in the water column to a criterion expressed as the dissolved fraction in the water column.” The 2017 WQS include similar language as the 2004 WQS for the application of the conversion factors, but as a requirement in the 2017 WQS, rather than as an option in the 2004 WQS. EPA is approving this revision as consistent with its national recommended criteria.

The conversion factors for arsenic, cadmium, chromium III and VI, lead, nickel, silver, and zinc were not revised in the 2017 WQS, although editorial revisions were made to the table of conversion factors as part of the administrative reorganization of the hardness-dependent metals criteria into Endnote A. Table 4 of the 2004 WQS included the same conversion factors for arsenic, chromium III and VI, nickel, silver, and zinc. The conversion factors for lead and cadmium are hardness-dependent. The conversion factor equations for lead were included in Table 5 of the 2004 WQS, and the conversion factor equations for cadmium were included as part of the equations for calculating the CMC and CCC in footnotes u and v to Table 2 in the 2004 WQS. EPA is approving these conversion factors in Endnote A, which are not revised from the 2004 WQS, but are now applied as requirements, rather than as recommendations. EPA is approving the conversion factors, which are consistent with its national recommended criteria as described in the respective criteria documents.¹⁶

¹⁶ EPA’s national recommendations for metals conversion factors are summarized in Appendix A of EPA’s webpage *National Recommended Water Quality Criteria - Aquatic Life Criteria Table*, accessed at <https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table>.

Endnote A includes a new conversion factor for the chronic selenium criterion. EPA is taking no action on this conversion factor because EPA is taking no action on the narrative selenium criterion as described below in section 3.2.9.

Table 4 of the 2004 WQS included entries without conversion factors for antimony, beryllium, and thallium, which were not included in the 2017 WQS. EPA is approving the removal of these metals from the conversion factor table in Endnote A as an editorial, non-substantive revision.

A conversion factor for mercury included in the 2004 WQS remains in effect for CWA purposes as described below in section 3.2.10.

3.2.9 Selenium Implementation Provision, Table 2 Footnote J

The Tribe added a new footnote to Table 2 of the 2017 WQS regarding the chronic aquatic life criterion for selenium, as follows:

- J. EPA is in the process of revising its selenium criteria. In the interim selenium in point source discharges to tribal waters should follow the Tribe's guidance titled *The Kalispel Tribe's Selenium Implementation Guidance for Using the Narrative Toxic Criterion for Selenium*.

EPA is taking no action on the reference to footnote J in Table 2 and on Footnote J because footnote J is not a water quality standard reviewable under section 303(c) of the CWA. Footnote J refers to the Tribe's implementation guidance for selenium¹⁷ and states that the guidance should be followed, but it does not require the guidance to be implemented. The language of footnote J does not establish a legally binding requirement and is not considered a WQS subject to EPA review and approval under section 303(c) of the CWA.

EPA published updated selenium criteria recommendations that reflect the most recent scientific knowledge in 2016.¹⁸ The recommendation includes criteria values for selenium in three types of fish tissue (egg/ovary, whole body, and muscle) as well as surface waters. EPA understands that the Tribe plans to adopt the four elements of the recommended selenium criteria during the next WQS revision cycle.

3.2.10 Aquatic Life Criteria for Atrazine and Mercury

Table 2 of the 2004 WQS includes acute and chronic criteria for atrazine in footnotes x and y, and an acute criterion for mercury. A conversion factor for mercury was included in Table 4 of the 2004 WQS, but was not included in a similar table in Endnote A of the 2017 WQS. The Tribe withdrew the deletion of the atrazine and mercury criteria and the conversion factor for mercury from its WQS submittal on September 22, 2021, and therefore EPA is not addressing the deletion of these criteria in this action. The criteria for atrazine in Table 2, footnotes x and y,

¹⁷ Kalispel Tribe of Indians. *The Kalispel Tribe's Selenium Implementation Guidance for Using the Narrative Toxic Criterion for Selenium*. August 2014

¹⁸ U.S. Environmental Protection Agency. 2016. *Aquatic Life Ambient Water Quality Criterion for Selenium – Freshwater 2016* (EPA 822-R-16-006). Office of Water, Washington, DC.

the CMC for mercury in Table 2 of the 2004 WQS, and the mercury conversion factor in Table 4 of the 2004 WQS remain in effect for CWA purposes.

3.2.11 Deleted Footnotes to Table 2

Four footnotes to Table 2 that had been included in the 2004 WQS were not included in the 2017 WQS, i.e., footnotes a, b, g, and r. These footnotes provided information about criteria in Table 2, but they did not establish a legally binding requirement and are not considered a WQS subject to EPA review and approval under section 303(c) of the CWA. EPA approves the removal of these footnotes from Table 2 as editorial revisions.

3.3 Aquatic Life Criterion for Total Phosphorus, Section 10 Table 3

The Tribe adopted a new total phosphorus criterion of 10 µg/L, with an averaging period of 30 days. The criterion applies to the Tribe’s river and stream waters during the months of April through October. The new total phosphorus criterion is included in section 10, Table 3, as follows:

Table 3. Nutrients

| Compound | Criteria |
|---|---|
| Total Phosphorus in river and streams (April-October) | 10 µg/L as P, expressed as a 30 day average |

EPA Action

In accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR 131, EPA approves the new criterion for total phosphorus for river and stream waters.

Rationale

The magnitude of the Tribe’s total phosphorus criterion is consistent with EPA’s ecoregional nutrient criteria recommendation for Aggregate Level III Ecoregion II, Western Forested Mountains, which is the ecoregion that encompasses the Kalispel Reservation.¹⁹ EPA’s recommended nutrient criteria are empirically derived to reflect conditions of surface waters that are minimally impacted by human activities in each ecoregion.

The Tribe is applying their total phosphorus criterion as a monthly average, for the seasonal period of April through October. In its nutrient criteria recommendations,²⁰ EPA recommends adoption of a seasonal or annual averaging period, rather than a criterion that must be met at all

¹⁹ U.S. Environmental Protection Agency. 2000. *Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Nutrient Ecoregion II*. EPA 822-B-00-015. Accessed at: <https://www.epa.gov/sites/default/files/documents/rivers2.pdf>.

²⁰ *Id.*

times. The Tribe’s total phosphorus criterion, as a monthly average duration applied over the April through October period, will target seasonal differences in nutrient inputs prior to and during the algal growing season maximum period. Although this monthly duration differs from EPA’s recommendation to use a seasonal or annual mean recommended duration,²¹ it is consistent with the total phosphorus variability observed within the flowing waters of the reservation and is sufficient to capture the non-growing season pulses of nutrients that contribute to the peak algal growth period. The criterion represents a 10th to 25th percentile value of the Tribe’s (2007-2017) dataset during each month of the period for Calispell Creek and is at or below the mean of the data for the oligotrophic Pend Oreille River (Figures 19 and 40, respectively, in Kalispel Water Resources Program, 2019²²).

The Kalispel Water Resources Program’s assessment report indicates that pulses in total phosphorus tend to occur from June to September in the waters of the Kalispel Reservation.²³ The seasonal applicability associated with the Tribe’s criterion, April-October, encompasses this timeframe when nutrient pulses are most likely to occur in the waters of the Tribe. Nutrient pulses contribute to the growing season, when excess algal growth, respiration and other deleterious conditions (e.g., low dissolved oxygen, pH outside of criteria ranges) that harm aquatic life and human health are most likely to occur.

4 Revisions to Designated Uses and Supporting Criteria

The 2017 WQS add the designated uses of cutthroat trout spawning, incubation, and rearing and brown trout incubation and rearing as designated beneficial uses for Cee Cee Ah Creek. A correction is also made to the pH criterion that protects the agricultural water supply use.

4.1 Revised Designated Uses

Table 4 (formerly Table 7) establishes designated uses and identifies the water bodies to which the uses are applied. Two uses in Table 4 were revised as follows (underlined text indicates new language in the 2017 WQS):

Table 4. Designated Beneficial Uses of Waters of the Reservation

| Designated Use | Calispell Creek | Pend Oreille River | Cee Cee Ah Creek |
|--|-----------------|--------------------|------------------|
| <u>Cutthroat and Brown Trout Spawning, Incubation, and Rearing</u> | | | X |
| Wildlife Habitat, <u>Fishing</u> and Hunting | X | X | X |

²¹ *Id.*

²² Kalispel Water Resources Program. 2019. *Water Quality Assessment For Waters of and Pertaining to the Kalispel Indian Reservation Water Years (WY) 2016-2017*. Kalispel Tribe of Indians.

²³ *Id.*

EPA approved the revised designated use of wildlife habitat, fishing and hunting in 2019, and the brown trout spawning use, a subcategory of the aquatic life use, was approved in 2004. Today's action addresses the addition of cutthroat trout spawning and incubation, brown trout incubation, and cutthroat and brown trout rearing to the brown trout spawning use for Cee Cee Ah Creek.

EPA Action

In accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR 131, EPA approves the addition of cutthroat trout spawning and incubation, brown trout incubation, and cutthroat and brown trout rearing to the brown trout spawning use, applicable to Cee Cee Ah Creek.

Rationale

According to 40 CFR 131.10, a tribe's WQS must specify appropriate designated uses to be achieved and protected in reservation waters. Section 11 of the Kalispel Tribe's WQS establishes and describes the designated uses that are to be protected in the Tribe's waters. Minimum requirements for state and tribally adopted WQS (40 CFR 131.6) include use designations consistent with the provisions of CWA sections 101(a)(2) and 303(c)(2). CWA sections 101(a)(2) and 303(c)(2) both specify uses for the protection and propagation of fish and wildlife. The addition of uses for the protection of brown trout incubation and rearing and cutthroat trout spawning, incubation, and rearing is consistent with sections 101(a)(2) and 303(c)(2) of the CWA and regulatory requirements at 40 CFR 131.6 and 131.10(a).

4.2 Temperature Criteria for Protection of the Cutthroat and Brown Trout Spawning, Incubation, and Rearing Use, Section 12(a)

The Tribe revised the time interval during which the temperature criteria are applied to protect the seasonal spawning and incubation periods for the cutthroat and brown trout use, and adopted new temperature criteria to protect the rearing periods. The following revisions are included in section 12(a) of the WQS (underlined text indicates new language and text that is crossed out was deleted in the 2017 WQS):

12(a) Cutthroat and Brown Trout Spawning, Incubation, and Rearing

These criteria shall apply to waters used for Cutthroat and Brown Trout spawning, incubation, and rearing ~~between October 1 and March 1 although site specific designations may apply at other times.~~

- 1) Temperature criteria shall not be exceeded in each of the spawning/incubation and juvenile rearing seasons;
 - a) During the period October 1st through May 31st, temperature shall not exceed 9°C as a moving 7-day average of the daily maximum temperatures with no single daily maximum temperature greater than 13°C.
 - b) During the period June 1st through September 30th, temperature shall not exceed 16°C as a moving 7-day average of the daily maximum temperatures with no single daily maximum temperature greater than 17.6°C.

EPA Action

In accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR 131, EPA approves the revisions to the temperature criteria in section 12(a)(1) for protection of the cutthroat and brown trout spawning, incubation, and rearing use.

Rationale

The Tribe's revisions to the temperature criteria include the extension of the seasonal time interval during which the temperature criteria for spawning and incubation apply so as to include brown trout incubation and cutthroat trout spawning and incubation [section 12(a)(1)(a)], and the addition of new seasonal temperature criteria to protect cutthroat and brown trout rearing [section 12(a)(1)(b)]. The numeric temperature criteria that were previously applied to brown trout spawning were not revised in the 2017 WQS, but they are applied to the revised use that includes cutthroat trout in addition to brown trout, and egg incubation for both species in addition to spawning (see section 4.1, above). The cutthroat and brown trout spawning/incubation and juvenile rearing uses and the supporting temperature criteria apply in Cee Cee Ah Creek (Table 4 of the WQS).

Appropriate temperature criteria are typically based on the native fauna or the natural condition of the areas in question. For the Kalispel Tribe's waters, the naturally occurring fish guild includes westslope cutthroat trout (WCT) and other co-occurring native species (whitefish, sculpin). Non-native brown trout, favored as a sportfish, can co-occur with native WCT. Based on general temperatures for brown trout life history phases,²⁴ a thermal regime protective of WCT will also be suitable for brown trout.

Application of Numeric Temperature Criteria to the Revised Spawning and Incubation Use

The October 1 - May 31 timeframe encompasses the spawning period of brown trout (typically October-December²⁵) and the springtime spawning season of WCT.²⁶ The temperature criteria for the protection of cutthroat and brown trout spawning and incubation are 9°C as a 7-day average of the daily maximum (7DADM), and the temperature may not exceed 13°C at any time. These criteria were not revised in the 2017 WQS, but they are now applied to the revised timeframe of October 1 - May 31.

²⁴ Armour, C.L. 1994. *Evaluating Temperature Regimes for Protection of Brown Trout*. U.S. Dept. of Interior National Biological Survey Resource Publication 201, Washington, D.C.

²⁵ Miller, M., E. Iverson, and D. Essig. 2014. *Geography and Timing of Salmonid Spawning in Idaho*. Report commissioned by Idaho Department of Environmental Quality, Boise, ID.

²⁶ U.S. Environmental Protection Agency. 2001. *Issue Paper 2, Salmonid Distributions and Temperature*. EPA-910-D-01-002. Prepared as Part of EPA Region 10 Temperature Water Quality Criteria Guidance Development Project by Jason Dunham (U.S. Forest Service), Jeff Lockwood (National Marine Fisheries Service), and Chris Mebane (Idaho Department of Environmental Quality). Accessed at <https://www.epa.gov/sites/production/files/2018-01/documents/r10-water-quality-temperature-issue-paper2-2001.pdf>.

Water temperatures declining to less than 9°C as a 7DADM are accepted as within range of brown trout spawning initiation temperature.²⁷ In a coldwater system used by WCT, cooling to 9°C by October is likely within the typical thermograph and therefore provides the cold temperatures needed by brown trout to initiate fall spawning. Likewise, WCT spawning in spring occurs under coldwater conditions.²⁸ The specific timeframe for WCT spawning/emergence timing varies throughout their range as this timing is dictated by elevation, air/water temperature, and stream flow.

The Tribe's waters include approximately a one-mile reach of Cee Cee Ah Creek, from its confluence with Pend Oreille River upstream to the Kalispel Reservation boundary. The Tribe's time frame for the spawning and incubation criteria reflect the seasonal water temperature patterns within these waters of Cee Cee Ah Creek.²⁹ The Tribe has indicated³⁰ that as a result of the hydrology of Cee Cee Ah Creek, including substantial groundwater contributions to Cee Cee Ah Creek waters, temperatures in this lower reach of the creek are 1 – 2°C warmer by early March than waters upstream in the watershed. These temperatures are expected to be conducive to earlier initiation of WCT spawning than at higher upstream elevations, with a corresponding earlier end of the incubation period.

Limiting the daily maximum temperature to 13°C provides additional protection and is consistent with EPA guidance for the Pacific Northwest for cold water spawning and incubation.

Temperature Criteria for Cutthroat and Brown Trout Juvenile Rearing during Summer Months

The Tribe has adopted new temperature criteria of 16°C as a 7DADM and 17.6°C as a daily maximum to protect brown trout and cutthroat trout juvenile rearing during the summer months, from June 1 through September 30. EPA's Region 10 temperature guidance does not include criteria recommendations for brown trout or WCT, although information is provided for both species in the supporting documents. The 16°C 7DADM is reasonable based on EPA

²⁷ Bell, J.M. 2006. *The Assessment of thermal impacts on habitat selection, growth, reproduction, and mortality in brown trout (Salmo trutta L): A review of the literature*. AES Project 05-0206. Applied Ecological Services, Inc., Prior Lake, MN.

Raleigh, R F, L.D. Zuckerman, and P.C. Nelson. 1986. *Habitat suitability index models and instream flow suitability curves: Brown trout, revised*. U.S. Fish and Wildlife Service Biological Report 82(10.124). 65 pp.

Reiser, D. W., and T A. Wesche. 1977. *Determination of physical and hydraulic preferences of brown and brook trout in the selection of spawning locations*. Completion report for Project C-7002. Water Resources Institute, University of Wyoming. 100 pp.

²⁸ McIntyre, J.D., and B.E. Rieman. 1995. *Westslope cutthroat trout*. In: M.K. Young (Ed.). *Conservation Assessment for Inland Cutthroat Trout*. General Technical Report RM-GTR-256, USDA Forest Service.

²⁹ Kalispel Water Resources Program. 2019. *Water Quality Assessment For Waters of and Pertaining to the Kalispel Indian Reservation Water Years (WY) 2016-2017*. Kalispel Tribe of Indians.

³⁰ Merrill, Ken. 2021. Email message regarding *Basis for trout spawning and incubation seasons in Kalispel reach of Cee Cee Ah Creek*. September 17, 2021.

temperature guidance³¹ and literature reviewed for inland cutthroat trout,³² laboratory studies,³³ and other literature (e.g. Johnstone and Rahel 2003, Meeuwig et al. 2004, Sloat et al. 2005³⁴). Also, the Washington State water quality standard applicable to Cee Cee Ah Creek upstream of the Kalispel Tribe’s waters is the ‘core summer salmonid habitat’ criterion of 16°C 7DADM that applies June 15 – September 15. This is the criterion Washington State applies to inland trout waters that do not have native char (bull trout). The Kalispel Tribe has adopted the application of 16°C 7DADM for the June 1 – September 30 timeframe, which is similar to the timeframe for the Washington State criterion.

The absolute maximum temperature of 17.6 C is consistent with EPA’s temperature guidance for the Pacific Northwest and provides the additional protection of a daily maximum limitation.

4.3 Application of the Previously Approved Dissolved Oxygen, Turbidity, Total Dissolved Gas, and pH criteria to the Revised Cutthroat and Brown Trout Use

The criteria for dissolved oxygen, turbidity, total dissolved gas (TDG), and pH in section 12(a) were not revised. However, in the 2017 WQS, these criteria are applied to the modified use, i.e., to cutthroat and brown trout spawning/incubation and rearing, rather than only to brown trout spawning. The following criteria are applied to the revised use:

| Parameter | Criteria |
|------------------|---|
| Dissolved Oxygen | 12(a)(2). Dissolved oxygen shall not fall below 8 mg/L at any time. When natural background conditions prevent attainment of the numeric dissolved oxygen criteria, all human-caused conditions and activities considered cumulatively can lower dissolved oxygen levels by only an additional 0.2mg/L. |
| Turbidity | 12(a)(3). Turbidity shall not exceed 5 NTU over background turbidity when the background turbidity is 50 NTU or less, or have more than a 10% increase in turbidity when the background turbidity is more than 50 NTU. |

³¹ U.S. Environmental Protection Agency. 2003. *EPA Region 10 Guidance for Pacific Northwest state and tribal temperature water quality standards*. EPA 910-B-03-002. USEPA Region 10 Office of Water, Seattle, WA.

³² U.S. Environmental Protection Agency. 2001. *Issue Paper 5: Summary of technical literature examining the physiological effects of temperature on salmonids*. Prepared by McCullough, D.A., S. Spalding, D. Sturdevant, and M. Hicks. as Part of EPA Region 10 Temperature Water Quality Criteria Guidance Development Project. EPA-910-D-01-005. USEPA Region 10. Seattle. 114 pp.

³³ Bear, E.A., T.E. McMahon, and A.V. Zale. 2007. *Comparative Thermal Requirements of Westslope Cutthroat Trout and Rainbow Trout: Implications for Species Interactions and Development of Thermal Protection Standards*. Transactions of the American Fisheries Society 136(4):1113-1121.

³⁴ Johnstone, H.C. and F.J. Rahel. 2003. *Assessing temperature tolerance of Bonneville cutthroat trout based on constant and cycling thermal regimes*. Trans. American Fisheries Society 132: 92–99.

Meeuwig M.H., Dunham J.B., Hayes J.P., and G.L. Vinyard. 2004. *Effects of constant and cyclical thermal regimes on growth and feeding of juvenile cutthroat trout of variable sizes*. Ecology of Freshwater Fish 13:208–216.

Sloat, M.R., B.B. Shepard, R. G. White, and S. Carson. 2005. *Influence of stream temperature on the spatial distribution of westslope cutthroat trout growth potential within the Madison River Basin, Montana*. North American Journal of Fisheries Management 25:225-237.

| Parameter | Criteria |
|-----------|---|
| TDG | 12(a)(4). Total dissolved gas shall not exceed 110% of saturation at any point of sample collection. |
| pH | 12(a)(5). pH shall be within the range of 6.5 to 9.0 with a human-caused variation within the above range of less than 0.5 units. |

EPA approved the Tribe’s criteria for dissolved oxygen, turbidity, TDG, and pH in 2004 relative to brown trout spawning. The Tribe withdrew the application of the dissolved oxygen and turbidity criteria to the revised cutthroat and brown trout spawning/incubation and rearing use from its WQS submittal on September 22, 2021. The Tribe indicated their intention to revise the dissolved oxygen and turbidity criteria in the next WQS revision, and therefore EPA is not addressing the application of these criteria to the revised use in this action. For CWA purposes, the dissolved oxygen and turbidity criteria remain applicable to the brown trout spawning use in Cee Cee Ah Creek as provided in the Tribe’s 2004 WQS.

The considerations that EPA made in approving the TDG and pH criteria for brown trout spawning³⁵ were reviewed in light of the revision to include the designated uses of spawning for cutthroat trout and incubation for both species, as well as rearing for both species. Brown trout and cutthroat trout are both salmonids with similar life histories and general requirements. The dissolved oxygen, TDG, and pH criteria are consistent with EPA recommendations (EPA 1986³⁶). Additional considerations for the criteria are provided below.

Total Dissolved Gas

For TDG, EPA (1986) found that TDG greater than 110% of saturation resulted in significant gas bubble trauma in resident fish and salmonids. Recent research supports that a TDG criterion of not to exceed 110% of saturation, while resulting in some effects particularly to juvenile and larval fish if not time-limited, is generally protective of juvenile and adult salmonids. For example, data from all fish sampled in the Columbia River System Gas Bubble Trauma Monitoring Program (1996 to 2019) indicate that signs of gas bubble trauma for most species were limited below 110 percent of TDG saturation³⁷ and that gas bubble trauma is not typically observed when TDG levels do not exceed state (i.e., Oregon and Washington) water quality standards.

³⁵ U.S. Environmental Protection Agency. 2004. Letter to Glen Nenema, Chairman, Kalispel Tribe of Indians. Michael Gearheard, US EPA Region 10, Seattle WA. June 24, 2004.

³⁶ U.S. Environmental Protection Agency. 1986. *Quality Criteria for Water, 1986*. EPA 440/5-86-001. Office of Water, Washington, D.C.

³⁷ National Oceanic and Atmospheric Administration. 2019. *Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response, Continued Operation and Maintenance of the Columbia River System*. NMFS Consultation Number: WCRO-2018-00152. Accessed at: https://archive.fisheries.noaa.gov/wcr/publications/hydropower/fcrps/master_2019_crs_biological_opinion_1_.pdf.

U.S. Fish and Wildlife Service. 2020. *Biological Opinion, Columbia River System Operations and Maintenance of 14 Federal Dams and Reservoirs, Washington, Oregon, Idaho, and Montana*. U.S. Fish and Wildlife Service Reference: 01EWF00-2017-F-1650. Accessed at: <https://ecos.fws.gov/tails/pub/document/17101031>.

pH

The early life stages of inland trout (eggs through fry emergence) are the most vulnerable to low pH.³⁸ High pH levels in freshwater streams can decrease activity levels of salmonids including swimming speeds, create stress responses, and decrease feeding, and extreme low or high levels can lead to mortality.³⁹ Regarding the pH criteria range of 6.5-9, no direct adverse effects to WCT or brown trout are expected at the lower end of the range (pH below 6.5) and potentially small effects at/around pH 8.9-9 could result.⁴⁰ pH above 9 and below 6.5 could present a significant issue for salmonids' prey base, and for certain species could affect reproductive success (EPA 1986). However, as the criterion clearly states that the human-caused allowance of 0.5 pH units will only apply within range of 6.5 - 9 and the pH can't be greater or less than those values, the criterion is also protective of the brown trout and cutthroat trout prey base.

4.4 Revision to the Human Use Temperature Allowance for Three Uses

Temperature criteria are included in the WQS for the following designated uses:

- 12(a) Cutthroat and Brown Trout Spawning, Incubation, and Rearing
- 12(b) Adult Salmonid Migration
- 12(e) Wildlife Habitat, Fishing and Hunting

For each of these uses, the temperature criteria include a human use allowance for waters that do not meet temperature criteria. The human use allowance was reduced slightly for all three of the uses. The following language and revision are included for each of the three uses, in sections 12(a)(1), 12(b)(1), and 12(e)(3) (underlined text indicates new language and text that is crossed out was deleted in the 2017 WQS):

When natural background conditions prevent the attainment of the numeric temperature criteria, human-caused conditions and activities considered cumulatively can increase temperature levels by only an additional 0.25°C ~~0.3°C~~.

EPA Action

In accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR 131, EPA approves the Tribe's revision to the human-use temperature allowance from 0.3°C to 0.25°C to the temperature criteria for the uses in sections 12(a)(1), 12(b)(1), and 12(e)(3) of the 2017 WQS.

³⁸ For rainbow trout: Weiner G.S., C.B. Schreck, and H.W. Li 1986. *Effects of Low pH on Reproduction of Rainbow Trout*. Transactions of the American Fisheries Society. 115:75-82.

For brook trout: Jordahl and Benson, 1987. *Effect of Low pH on Survival of Brook Trout Embryos and Yolk-Sac Larvae in West Virginia Streams*. Transactions of the American Fisheries Society. 116:807-816.

³⁹ Charlotte A. Murray & Charles D. Ziebell. 1984. Acclimation of Rainbow Trout to High pH to Prevent Stocking Mortality in Summer, *The Progressive Fish-Culturist*, 46:3, 176-179.

Wagner, E.J., T. Bosakowski, and S. Intelmann. 1997. *Combined Effects of Temperature and High pH on Mortality and the Stress Response of Rainbow Trout after Stocking*. Transactions of the American Fisheries Society. 126:985-998.

⁴⁰ Murray and Ziebell (1984) in rainbow trout.

Rationale

The 2017 WQS reduced the magnitude of the human use temperature allowance from 0.3°C to 0.25°C, establishing a slightly more protective standard. EPA's Region 10 temperature guidance recognizes that it is reasonable to include a human use allowance in WQS that allows small anthropogenic water temperature increases above the applicable numeric criteria, with negligible human impacts.⁴¹ EPA (2003) indicates that an increase of 0.25°C for all sources cumulatively above fully protective numeric criteria or natural background temperatures would not impair the designated uses. A 0.25°C temperature difference, which is more stringent than the Tribe's previous human use allowance of 0.3°C, is insignificant in the context of our scientific understanding of the data concerning water temperature and salmonids, and the addition of 0.25°C will still protect aquatic life designated uses.

4.5 Narrative Provision for the Protection of the Natural Thermal Regime for Three Uses

Temperature criteria are included in the WQS for the following three designated uses:

- 12(a) Cutthroat and Brown Trout Spawning, Incubation, and Rearing
- 12(b) Adult Salmonid Migration
- 12(e) Wildlife Habitat, Fishing and Hunting

For each of these uses, the temperature criteria include a new narrative criterion for protection of the natural thermal regime. The following new language was added to the temperature criteria for each of the three uses, in sections 12(a)(1), 12(b)(1), and 12(e)(3):

The spatial and temporal characteristics of the natural thermal regime, including thermal refugia, must be maintained to the maximum extent practicable at all times.

EPA Action

In accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR 131, EPA approves the Tribe's natural thermal regime provision in sections 12(a)(1), 12(b)(1), and 12(e)(3) of the 2017 WQS.

Rationale

The Tribe's new narrative provision requires the protection of the spatial and temporal characteristics of the natural thermal regime, including thermal refugia, to the maximum extent practicable at all times. This provision is consistent with EPA's recommendation to include a narrative provision to protect waters that are currently colder than the biologically-based numeric criteria, in waterbodies with the designated use of salmon and trout migration.⁴² According to EPA's Region 10 guidance, the critical aspects of the natural thermal regime that should be protected and restored include the spatial extent of cold water refugia (water that is 2°C colder

⁴¹ U.S. Environmental Protection Agency. 2003. *EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards*. EPA 910-B-03-002. U.S. EPA Region 10 Office of Water, Seattle, WA. Accessed at: <https://nepis.epa.gov/Exe/ZyPDF.cgi/P1004IUI.PDF?Dockey=P1004IUI.PDF>.

⁴² *Id.*

than the surrounding water), diurnal (daily) temperature variation, seasonal temperature variation, and shifts in the annual temperature pattern.⁴³ Including a thermal regime provision protects species that rely on cold water refugia for survival, particularly during the thermally stressful summer months.

The Tribe's thermal regime provision requires the natural thermal regime to be maintained to the maximum extent practicable. The term practicable, in the context of antidegradation policy and implementation, means *technologically possible, able to be put into practice, and economically viable*. 40 CFR 131.3(n). The Tribe has confirmed their adoption of the federal regulation's definition of practicable, making the added thermal regime provision consistent with EPA's temperature guidance, which states, "the narrative provision should call for the protection, and where feasible, the restoration of these aspects of the natural temperature regime".⁴⁴

4.6 Agricultural Water Supply, Section 12(d)(6)

In section 12(d)(6), the lower bound of the pH criteria for the designated use of agricultural water supply was revised as follows (underlined text indicates new language and text that is crossed out was deleted in the 2017 WQS):

6) pH shall be within the range ~~6.4~~6.5 and 9.0 standard units.

EPA Action

In accordance with its CWA authority, 33 U.S.C. §1313(c)(3) and 40 CFR 131, EPA approves the revised pH criteria range value for the agricultural water supply use in section 12(d)(6).

Rationale

EPA is approving the revision to the pH range from 6.4-9.0 standard pH units to 6.5-9.0 standard pH units as consistent with EPA's national recommendations for protection of fresh water uses. The criterion is expected to protect the use of waters for agricultural purposes. This revision establishes a slightly more protective criterion in the 2017 WQS.

⁴³ *Id.*

⁴⁴ *Id.*