

# Technical Support Document

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## EPA's Clean Water Act Action on Idaho's Bull Trout Temperature Criteria

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## I. Introduction

This Technical Support Document provides the basis for the U.S. Environmental Protection Agency's (EPA) action under section 303(c) of the Clean Water Act (CWA), 33 U.S.C. §1313(c), and the federal regulations at 40 CFR Part 131, on certain water quality standards (WQS) regarding bull trout temperature criteria submitted to EPA by the Idaho Department of Environmental Quality (DEQ) in 1998 and 2003. The WQS set forth in Idaho's Administrative Code (IDAPA 58.01.02.) were duly adopted pursuant to state law.

Idaho's bull trout WQS addressed in this decision document include:

- Bull trout temperature spawning criterion and areas where bull trout spawning and rearing temperature criteria are applied, effective December 1, 1997, and submitted to EPA for review and action on December 16, 1998. (Idaho Docket 16-0102-9701)<sup>1</sup>
- Revised bull trout temperature rearing criterion adopted on March 30, 2001 and submitted to EPA for review and action on May 29, 2003. (Idaho Docket 58-0102-0002)<sup>2</sup>

This document is organized as follows:

- Part II describes the CWA requirements, EPA's guidance on temperature and the history of Idaho's bull trout WQS revisions.
- Part III provides an overview of Idaho's bull trout temperature criteria submittals.
- Part IV discusses the bases for this action under CWA section 303(c) and the EPA's implementing regulations at 40 CFR Part 131.
- Part V identifies a provision that is not subject to EPA CWA section 303(c) review.
- Part VI summarizes the WQS in effect for CWA purposes.

## II. Background

### A. CWA Requirements for WQS

The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters with an interim goal, where attainable, to achieve water quality that provides for the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water. Under section 303(c) of the CWA and federal implementing regulations at 40 CFR § 131.4, states (and authorized tribes) have the primary responsibility for reviewing, establishing, and revising WQS. These standards include the designated uses of a waterbody or waterbody segment, the water quality criteria necessary to protect those designated uses, and an antidegradation policy.

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<sup>1</sup> Letter dated December 16, 1998 from Larry L. Koenig, Assistant Administrator Water Quality & Remediation Division, Idaho Division of Environmental Quality, to Randall Smith, Director, Office of Water, Region 10, U.S. Environmental Protection Agency, RE: Submission of revised water quality standards for approval: Idaho Docket 16-0102-9701.

<sup>2</sup> Letter dated May 29, 2003 from David Mabe, Administrator Idaho Water Quality Programs, Idaho Department of Environmental Quality, to Randall Smith, Director, Office of Water, Region 10, U.S. Environmental Protection Agency, RE: Submission of revised water quality standards for approval: Idaho Docket 58-0102-002.

Under section 303(c)(2)(A) of the CWA, whenever a state revises or adopts new WQS, such standards shall protect the public health or welfare, enhance the quality of water and serve the purposes of the CWA, including protection and propagation of fish and wildlife. State criteria must be based on sound scientific rationale and must contain sufficient parameters or constituents to support the most sensitive use designation (40 CFR §131.11(a)).

States 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 these standards (40 CFR § 131.20). Each state must follow its own legal procedures for adopting such standards (40 CFR § 131.5(a)(6)) and is required to submit a certification by the state's attorney general, or other appropriate legal authority within the state, that the WQS were duly adopted pursuant to state law (40 CFR §131.6(e)). EPA's review authority and the minimum requirements for state WQS submittals are described at 40 CFR §§ 131.5 and 131.6, respectively.

States are required by 40 CFR § 131.11(a) to adopt water quality criteria that protect their designated uses. In establishing such criteria, states should establish numeric values based on one of the following:

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

In addition, states 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 requires states 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 § 303(c)(3).<sup>3</sup> These four questions are listed below:

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 water quality standard or revise an existing standard?

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

When EPA disapproves a state's WQS, EPA shall notify the state and explain why the WQS is not in compliance with the requirements of the CWA and federal WQS regulations and specify any changes that are needed to meet such requirements (40 CFR § 131.21).

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 § 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 purposes of the CWA. EPA notes that the scope of its review and action on non-substantive edits or editorial changes extend only to the non-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.

## **B. EPA Region 10 Temperature Guidance**

The *EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards*<sup>4</sup> (EPA Temperature Guidance) includes numeric and narrative recommendations to protect bull trout spawning and rearing. These recommendations were based on review and synthesis of available literature from both field and laboratory studies using a 'multiple lines of evidence' approach to determine the final criteria recommendations with careful consideration of the issue related to combining results from disparate sources. Numerous resource agency and academic experts contributed to the development of the recommended temperatures for bull trout life history phases included in the EPA Temperature Guidance. The EPA Temperature Guidance and six supporting technical documents<sup>5</sup> were developed through an interagency technical workgroup to examine: 1) the most recent science on how temperature affects salmonid physiology and behavior; 2) the combined effects of temperature and other stressors on threatened fish stocks; 3) the pattern of temperature fluctuations in the natural environment; and 4) other issues relevant to developing the EPA Temperature Guidance to

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<sup>4</sup> USEPA. 2003. *EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards*. EPA 910-B-03-002. Region 10 Office of Water, Seattle, WA. Hereafter, EPA Temperature Guidance 2003.

<sup>5</sup> USEPA. 2001a. Issue Paper 1: Salmonid Behavior and Water Temperature, Prepared by Sauter, S.T., J. McMillan, and J. Dunham. as Part of EPA Region 10 Temperature Water Quality Criteria Guidance Development Project. EPA-910-D-01-001. USEPA Region 10. Seattle.

USEPA. 2001b. Issue Paper 2: Salmonid Distribution and Temperature, Prepared by Dunham, J., J. Lockwood, and C. Mebane as Part of EPA Region 10 Temperature Water Quality Criteria Guidance Development Project. EPA-910-D-01-002. USEPA Region 10. Seattle. 22 pp.

USEPA. 2001c. 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. USEPA Region 10. Seattle.

USEPA. 2001d. Issue Paper 4: Temperature Interaction. Prepared as Part of EPA Region 10 Temperature Water Quality Criteria Guidance Development Project. EPA-910-D-01-004. USEPA Region 10. Seattle.

USEPA. 2001e. 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.

protect salmonids. The EPA Temperature Guidance includes optimal threshold temperatures, temperature measurement metrics, and period of application for bull trout at various life history phases.

The EPA Temperature Guidance recommends a 9°C maximum seven-day average of the daily maxima (7DADM) as protective of spawning bull trout when applied to waterbodies used by adult spawners, generally in the upper basins (the same waters that bull trout juveniles use for summer rearing). EPA recommends that the 9°C be applied in fall, from the average date that spawning begins to the average date incubation ends in the spring. The justification is that bull trout waters with summer maximum temperatures of 12°C, will naturally decrease to levels that are protective of bull trout spawning (9°C) in the late summer and fall, and further decrease to protect egg incubation (2-6°C) over the winter, assuming the typical annual thermal patterns in western streams.<sup>6</sup>

EPA also recommends a 12°C maximum 7DADM criterion for protection of moderate to high density summertime bull trout juvenile rearing near their natal streams in their first years of life prior to making downstream migrations. The 12°C criterion is recommended as it ensures the following conditions for juvenile bull trout: 1) protect juvenile bull trout from lethal temperatures (22-23°C constant); 2) provide conditions during the period of summer maximum temperature and other times of the year that are in the optimal range when food is limited for juvenile growth (8-12°C constant); 3) provide temperatures where juvenile bull trout are not at a competitive disadvantage with other salmonids (greater than 12°C 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 daily maximum).<sup>7</sup>

### C. History of Idaho's Bull Trout Temperature Criteria Submittals

In 1994, Idaho submitted revised WQS to EPA for review and action. In a letter dated June 25, 1996, EPA disapproved several of Idaho's submitted provisions. Among the WQS provisions disapproved were cold water biota temperature criteria in specific water body segments, which EPA determined were inadequate for the protection of bull trout.

In 1996, because of a CWA citizen's suit, EPA was placed on an expedited court-ordered schedule to promulgate WQS to supplant the disapproved provisions that Idaho had not remedied. In the April 28, 1997 Federal Register, EPA proposed temperature criteria for bull trout spawning and rearing and identified the water segments where the proposed temperature would apply.

On June 19, 1997 Idaho adopted a temporary rule<sup>8</sup> (Docket 16-0102-9701) which addressed the

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<sup>6</sup> USEPA. 2003. *EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards*. EPA 910-B-03-002. Region 10 Office of Water, Seattle, WA.

<sup>7</sup> *Id.*, pp. 26

<sup>8</sup> Under the Idaho Administrative Procedure Act a "temporary rule" is defined to mean a rule that is authorized by the governor to become effective before it is submitted to the legislature for review and which expires no later than the conclusion of the next succeeding regular legislative session unless extended or replaced by a final rule. Idaho Code 67.5201(23).

WQS that were disapproved by EPA and submitted these WQS revisions to EPA for approval or disapproval on June 25, 1997. This temporary rule included bull trout temperature criteria (12°C daily average during June, July and August for bull trout rearing and 9°C daily average during September and October for bull trout spawning). In a letter dated July 15, 1997, EPA conditionally approved all the WQS revisions submitted, except the bull trout temperature criteria. EPA disapproved Idaho's bull trout temperature criteria on the basis that Idaho did not provide information explaining the scientific basis for the criteria and did not specify the water bodies where the criteria would apply.

As a result of Idaho not having remedied this provision of their WQS, EPA promulgated a final WQS rule on July 31, 1997, establishing, among other things, a federal bull trout spawning and rearing temperature criterion, and a list of specific waters where this criterion applied. EPA promulgated a 10°C daily maximum temperature criterion for June, July, August, and September for the same waters on the list.

After a public comment period ending on September 22, 1997, DEQ amended the temporary rule for bull trout temperature criteria. This rule along with other rules in Docket 16-0102-9701 were adopted as final rules on March 23, 1998 and submitted to EPA on April 10, 1998. DEQ noted that the April 1998 submittal was not its official submission of the bull trout temperature criteria revisions because, although it included some of the required submittal documents, additional supporting materials would be submitted at a later date.

On December 16, 1998 EPA received Idaho's bull trout temperature criteria and technical justification, entitled *Review of Bull Trout Temperature Requirements*, prepared by BioAnalysts, Inc. and DEQ.<sup>9</sup> The receipt of this supporting documentation for the bull trout criteria conveyed DEQ's official submission of the revised bull trout WQS. After the submittal, EPA conducted a peer review of Idaho's technical justification but did not take a CWA 303(c) action on the submittal.

On September 6, 2000, DEQ proposed a revised bull trout temperature rearing criterion and it became effective under state law on March 30, 2001. DEQ delayed submission of this rule revision until the EPA Temperature Guidance was finalized and released in 2003.

On May 29, 2003, DEQ submitted a revised bull trout temperature criterion for rearing (Docket 58-0102-0002). DEQ included an updated analysis of Hillman and Essig (1998) in the report entitled *Update of Bull Trout Temperature Requirements*, to justify the revised criterion.<sup>10</sup> After this, there were no further bull trout temperature criteria revisions submitted to EPA for action. This Technical Support Document provides EPA's review and analysis of DEQ's December 16, 1998 and May 29, 2003 criteria submissions.

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<sup>9</sup> Hillman, T. W. and D. Essig. 1998. Review of bull trout temperature requirements: a response to the EPA bull trout temperature rule. Idaho Division of Environmental Quality, Boise, ID.

<sup>10</sup> DEQ. 2003. Update of Bull Trout Temperature Requirements. Prepared by D. A. Essig and C. A. Mebane. Idaho Department of Environmental Quality and T.W. Hillman. BioAnalysts for Idaho Department of Environmental Quality. Boise, ID.

### III. Idaho's Bull Trout Temperature Criteria Submittals

EPA is taking CWA action on bull trout temperature criteria contained in two separate submittals from DEQ (Dockets 16-0102-9701 submitted in 1998 and 58-0102-0002 submitted in 2003). Both submittals contain information and supporting analysis relevant to EPA's review.

#### A. Docket 16-0102-9701 Submitted Rule Language and Additional Documentation

DEQ began the state negotiated rulemaking process on March 5, 1997. The DEQ Board of Environmental Quality (Board) adopted the initial proposed rule as a temporary rule on June 19, 1997 and published it for public comment on August 6, 1997. DEQ further revised the rule and presented it to the Board for approval on November 17, 1997. After Board approval, the Attorney General certified the temporary rule on November 25, 1997 and the pending rule became effective on December 1, 1997. The Idaho State Legislature adopted the rule on March 23, 1998. DEQ provided most of the submittal package required documents for the bull trout temperature criteria on April 10, 1998. DEQ officially submitted the criteria and additional supporting analysis to EPA for CWA 303(c) action on December 16, 1998. The revised rule language is as follows. (Note: The bull trout criteria rules were renumbered between 1998 and 2001 due to additional provisions under Subsection 250.)

Subsection 250.02.e. Bull Trout Temperature Criteria. Water temperatures for the waters identified under Section 250.02.e.i. shall not exceed twelve degree Celsius (12°C) daily average during June, July and August for juvenile bull trout rearing, and nine degree Celsius (9°C) daily average during September and October for bull trout spawning. For the purposes of measuring these criteria, the daily average shall be generated from a recording device with a minimum of six (6) evenly spaced measurements in a twenty-four (24) hour period.

Subsection 250.02.e.i. The bull trout temperature criteria shall apply to all tributary waters, not including fifth (5<sup>th</sup>) order main stem rivers, located within the areas above 1400 meters elevation south of the Salmon River basin-Clearwater River basin divide, and above 600 meters elevation north of the Salmon River basin- Clearwater River basin divide, in the 59 Key Watersheds listed in Table 6, Appendix F of Governor Batt's Idaho Bull Trout Conservation Plan, 1996, or as designated under Sections 110 through 160 of this rule.

The submittal included the following documents:

1. Attorney's General Certification that the standards were duly adopted pursuant to state law;
2. Board's Adoption Declaration;
3. Authority checklist;
4. Table summary;
5. Administrator's response to oral and written comments; and
6. Initial proposed revisions, oral and written comments, and the final proposal which contains the portions revised in response to comments

## B. Docket 58-0102-0002 Submitted Rule Language and Additional Documentation

DEQ proposed the revised bull trout temperature rearing criterion on September 6, 2000. DEQ conducted a public hearing on September 13, 2000 and the Idaho Board of Environmental Quality approved the final rule on November 9, 2000. The Idaho State Legislature adopted the rule on March 30, 2001 and the Idaho Attorney General certified the rule on September 25, 2001. DEQ submitted the rule and updated scientific justification to the EPA for review and action on May 29, 2003. (Note: The bull trout criteria rules were renumbered between 1998 and 2001 due to additional provisions under Subsection 250.)

**Subsection 250.02.g Bull Trout Temperature Criteria.** Water temperatures for the waters identified under Subsection 250.02.g.i shall not exceed thirteen degrees Celsius (13C) maximum weekly maximum temperature (MWMT) during June, July and August for juvenile bull trout rearing, and nine degrees Celsius (9C) daily average during September and October for bull trout spawning. For the purposes of measuring these criteria, the values shall be generated from a recording device with a minimum of six (6) evenly spaced measurements in a twenty-four (24) hour period. The MWMT is the mean of daily maximum water temperatures measured over the annual warmest consecutive seven (7) day period occurring during a given year.

**Subsection 250.02.g.i** The bull trout temperature criteria shall apply to all tributary waters, not including fifth order main stem rivers, located within areas above fourteen hundred (1400) meters elevation south of the Salmon River basin, Clearwater River basin divide, and above six hundred (600) meters elevation north of the Salmon River basin, Clearwater River basin divide, in the fifty-nine (59) Key Watersheds listed in Table 6, Appendix F of Governor Batt's State of Idaho Bull Trout Conservation Plan, 1996, or as designated under Sections 110 through 160 of this rule.

The submittal included the following documents:

1. Notice of Proposed Rulemaking, consisting of a descriptive summary of proposed revisions, invitation for public review, contact information for the public to obtain technical information supporting the proposed revision, and the revisions with proposed deletions struck out and proposed additions underlined;
2. Notice of Pending Rule, showing the substantive changes from the proposed rule text that resulted from public participation through the public hearing, written comments, and testimony at the meeting of the Board of Environmental Quality;
3. DEQ Response to Comments;
4. The attorney general's certification that the rules were adopted according to state law; and
5. Supporting analyses for the revised water quality standards.

## C. Idaho's Supporting Analyses and Justification

40 CFR §§ 131.6 and 131.11 require DEQ to demonstrate that criteria are protective and based on scientifically sound rationale. DEQ provided two reports with supporting analyses and justification for the bull trout spawning and rearing criteria. The first report, Hillman and Essig (1998), examined the temperature requirements of bull trout and particularly examined the EPA federal rule of 10°C MWMT for maintaining optimal juvenile growth and rearing as it applied to the temperature requirements of juvenile bull trout. The report provided background information

regarding temperature effects on fish, temperature metrics and relationships, guidelines for establishing temperature criteria, and effects of temperature on competitive interactions. DEQ agreed that bull trout required colder temperatures for juvenile growth and rearing than other salmonids. However, based on their analysis, DEQ concluded that the EPA federal rule was too conservative and 12° to 14°C was more appropriate.<sup>11</sup>

In 2003, DEQ updated the analysis of Hillman and Essig (1998) to justify the submittal of a revised bull trout rearing temperature criterion. DEQ collected and examined new information regarding temperature criteria to protect juvenile bull trout during summer rearing. Based on review of laboratory studies, field studies, and presence-absence studies, DEQ determined that optimal temperatures for juvenile bull trout rearing occurred between 11°C and 14°C MWMT. DEQ concluded that the weight of the evidence indicated that when summer stream temperatures do not exceed an MWMT of 13°C, thermal conditions should fully protect and not jeopardize the continued existence of or impede recovery of bull trout.<sup>12</sup>

#### **D. Overview of Endangered Species Act Consultation and Coordination with Tribes**

On June 6, 2021, pursuant to the Endangered Species Act section 7 consultation, EPA transmitted the Biological Evaluation of the Bull Trout Temperature Criteria (BT BE 2021) to the U.S. Fish and Wildlife Service (USFWS) and requested concurrence with the agency’s “Not Likely to Adversely Affect” determination for the proposed CWA action to approve the Idaho bull trout temperature criteria.<sup>13</sup> On August 4, 2021, the USFWS concurred that the approval of the bull trout temperature criteria may affect, but is not likely to adversely affect bull trout (*Salvelinus confluentus*), Kootenai River white sturgeon (*Acipenser transmontanus*), and their designated critical habitats.<sup>14</sup>

EPA offered government-to-government consultation to the tribal governments in Idaho on July 22, 2021, and conducted a coordination session on August 11, 2021, to share information and answer questions regarding EPA’s proposed action on the Idaho bull trout temperature criteria. EPA did not receive any formal requests for government-to-government consultation.

#### **E. Scope of EPA’s Action**

EPA’s action pertains to IDAPA 58.01.02.250.02.g. and IDAPA 58.01.02.250.02.g.i. regarding bull trout temperature criteria and supporting analyses submitted to EPA by DEQ in 1998 and 2003. EPA’s action applies only to waterbodies in the State of Idaho and does not apply to

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<sup>11</sup> Hillman and Essig. 1998

<sup>12</sup> DEQ 2003

<sup>13</sup> Letter dated June 4, 2021, from Hanh Shaw, Manager, EPA Region 10 Standards and Assessment Section, to Christina Hacker, Supervisory Biologist, U.S. Fish and Wildlife Service, IFWO-Coeur d’Alene Field Office, RE: Request for Concurrence with EPA’s “Not Likely to Adversely Affect” Determinations under Endangered Species Act Section 7 Consultation for the Agency’s Proposed Action to Approve the Bull Trout Temperature Criteria of the Idaho Water Quality Standards.

<sup>14</sup> Letter dated August 4, 2021, from Patricia Johnson-Hughes for Christopher Swanson, State Supervisor, U.S. Fish and Wildlife Service (FWS/IR9/ES/IFWO/2021-I-1727) to Hanh Shaw, Manager, EPA Region 10 Standards and Assessment Section, RE: EPA’s Proposed Approval of the Bull Trout Temperature Criteria of Idaho Water Quality Standards-State of Idaho-Concurrence.

waters that are within Indian Country as defined in 18 U.S.C. §1151. In addition, nothing in this action shall constitute an approval or disapproval of a water quality standard that applies to waters within Indian Country. EPA, or authorized Indian Tribes, as appropriate, will retain responsibilities for water quality standards for waters within Indian Country.

## IV. EPA Action on Idaho's Water Quality Standards

EPA has completed its review and is acting on Idaho's submittal, as described below. The following sections summarize EPA's action and rationale for each provision.

### A. Bull Trout Temperature Numeric Criteria

#### EPA Action

In accordance with its CWA authority, 33 U.S.C. §1313(c)(3) and 40 CFR Part 131, EPA approves the first and third sentences in IDAPA 58.01.02.250.02.g. that are underlined below. EPA has determined that the second sentence is not a new or revised WQS subject to EPA CWA 303(c) review (see Section V).

Subsection 250.02.g. Bull Trout Temperature Criteria. Water temperatures for the waters identified under Subsection 250.02.g.i shall not exceed thirteen degrees Celsius (13C) maximum weekly maximum temperature (MWMT) during June, July and August for juvenile bull trout rearing, and nine degrees Celsius (9C) daily average during September and October for bull trout spawning. For the purposes of measuring these criteria, the values shall be generated from a recording device with a minimum of six (6) evenly spaced measurements in a twenty-four (24) hour period. The MWMT is the mean of daily maximum water temperatures measured over the annual warmest consecutive seven (7) day period occurring during a given year.

#### 1. Spawning Criterion: 9°C MDAT (Sept – Oct)

##### EPA Rationale

As discussed in the EPA Temperature Guidance, bull trout populations and life histories are closely tied to water temperatures.<sup>15</sup> Bull trout generally spawn in September through October and have a long incubation time with fry emergence generally from March through May.<sup>16</sup> Spawning typically occurs after temperatures drop below 9°C, during periods of increasing flows and decreasing water temperatures.<sup>17</sup> EPA believes that meeting 9°C at the onset of spawning provides protective temperatures for egg incubation (2 - 6°C) that occurs over the winter assuming the typical annual thermal pattern.<sup>18</sup>

The Idaho bull trout spawning temperature criterion is 9°C maximum daily average temperature (MDAT) during September and October. The EPA Temperature Guidance recommends the

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<sup>15</sup> EPA Temperature Guidance 2003

<sup>16</sup> Id., pp. 14

<sup>17</sup> USFWS. 2015. Recovery Plan for the Coterminous United States Population of Bull Trout (*Salvelinus confluentus*). Pacific Region U.S. Fish and Wildlife Service. Portland, Oregon. Available at: <https://www.fws.gov/pacific/bulltrout/Planning.html>.

<sup>18</sup> EPA Temperature Guidance 2003

application of a 9°C maximum 7DADM (MWMT) for protection of bull trout spawning starting in the fall, from the average date that spawning begins to the average date incubation ends in the spring.

In comparing the Idaho bull trout spawning temperature criterion to the criterion recommended in the EPA Temperature Guidance, EPA identified differences in the metrics and time periods applied. EPA reviewed literature sources<sup>19</sup> including DEQ reports,<sup>20</sup> and conducted analyses comparing the two metrics (MDAT and MWMT) and the seasonal temperature trends.<sup>21</sup> Based on literature examples and metric analysis of Idaho waters subject to IDAPA 58.01.02.250.02.g.i, EPA determined that the Idaho 9°C MDAT translates to an estimated 10-10.5°C MWMT, which is 1-1.5°C higher than the EPA Temperature Guidance recommendation.<sup>22</sup>

The protectiveness of Idaho's 9°C MDAT must be considered within the context of the time period applied and seasonal temperature trends. In reviewing seasonal temperature trends, EPA noted that the EPA Temperature Guidance applies 9°C in fall and spring because fall is a critical period where temperatures must decline from maximum summer temperatures to those that will cue bull trout spawning (i.e.  $\leq 9^\circ\text{C}$ ). As temperatures cool, spawning commences, and temperatures continue to decline into winter, remaining cold into the spring. EPA recommends applying the 9°C to the spring period to maintain temperatures protective through the end of the incubation period. Determining that the 9°C criterion in September and October protects egg incubation into spring may be reasonable if: 1) the cool temperature persists through the end of the incubation period in the spring before temperatures increase and 2) after spring emergence, stream temperatures for bull trout juveniles are protected by the application of another protective criterion (in Idaho's case, the 13°C rearing criterion that is applied starting in June). EPA's analysis of all available fall temperature trend data for Idaho waters where the bull trout spawning rule applies (waters defined under IDAPA 58.01.02.250.02.g.i.) confirms that temperatures do decline steadily in the fall, with average temperatures below 9°C MWMT by October 1<sup>st</sup>.<sup>23</sup> Also, EPA's literature review for the BT BE 2021 indicates variation in bull trout spawning initiation temperatures and that 9°C MDAT is within that range.<sup>24</sup>

EPA's analysis of April to May water temperature data for Idaho waters (defined under IDAPA 58.01.02.250.02.g.i.) confirmed that temperatures remain cool enough in the spring to protect pre-emerging and emerging bull trout. A majority of the streams warm gradually through this period and are in the 9-10°C range at the end of May. For these reasons, the application of 9°C MDAT in September through October provides a reasonably comparable level of protection to the 9°C MWMT recommended criterion magnitude and duration and recommended period of application to protect bull trout spawning.<sup>25</sup>

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<sup>19</sup> USEPA. 2021. Biological Evaluation - EPA's Proposed Approval of the Bull Trout Temperature Criteria of Idaho Water Quality Standards. June 2021. USEPA Region 10 Office of Water, Seattle, WA. Hereafter, referred to as BT BE 2021

<sup>20</sup> Hillman and Essig 1998 and DEQ 2003

<sup>21</sup> EPA BT BE 2021

<sup>22</sup> Ibid.

<sup>23</sup> Ibid.

<sup>24</sup> Ibid.

<sup>25</sup> Id., pp. 81

For the seasonal temperature trends discussed above to hold true, DEQ must protect the natural thermal regime of waters supporting bull trout spawning and rearing. As part of the BT BE 2021 conservation measures, DEQ confirmed that it would implement existing water quality standards to protect natural thermal regimes (i.e., temperatures colder than numeric criteria) to ensure that temperatures conducive to bull trout spawning and fry emergence are maintained through the spring. EPA's BT BE 2021 effects analysis and determination of not likely to adversely affect was based on EPA's understanding that DEQ will use its authorities to protect the natural thermal regime to meet bull trout spawning and rearing temperature requirements throughout the year. For this action, EPA referred to the BT BE 2021 conservation measures<sup>26</sup> and DEQ's existing authorities to protect natural thermal regimes and ensure the bull trout spawning criterion and time period will remain adequately protective.

The USFWS concurred with EPA that the approval of the Idaho bull trout temperature spawning criterion may affect individuals, but is not likely to adversely affect bull trout (*Salvelinus confluentus*), Kootenai River white sturgeon (*Acipenser transmontanus*), and their designated critical habitats.<sup>27</sup> The USFWS concurred with EPA's conclusion that the Idaho criterion is within the acceptable range to protect bull trout spawning and rearing.

This concurrence and EPA's analyses for the BT BE 2021 demonstrate that Idaho's criterion is protective and based on scientifically sound rationale, as required under 40 CFR §§ 131.6 and 131.11.

Based on the above information, EPA has determined that Idaho's 9°C MDAT temperature criterion during September and October will provide protection for bull trout spawning and incubation.

## **2. Rearing Criterion: 13°C MWMT (Jun - Aug)**

### **EPA Rationale**

The Idaho juvenile bull trout rearing criterion of 13°C MWMT that applies June through August was derived from analyses by DEQ.<sup>28, 29</sup> In the *Update of Bull Trout Temperature Requirements - Final Report*, DEQ incorporated Hillman and Essig (1998) with more up-to-date analysis of the protectiveness of the Idaho bull trout rule.<sup>30</sup> Like the EPA Temperature Guidance, DEQ's conclusions are based on weighing results of laboratory, field, and presence/absence studies taking care to rectify temperature metrics in making comparisons and interpretations. DEQ noted its objective was to determine a temperature limit that meets the requirements of juvenile bull trout, but not to specifically determine a temperature that maximizes growth. DEQ concluded from its literature review that optimal temperatures for juvenile bull trout rearing were between 11°C and 14°C MWMT and from a weight-of-evidence approach that temperatures not

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<sup>26</sup> EPA BT BE 2021

<sup>27</sup> USFWS NLAA Concurrence, August 2021

<sup>28</sup> Hillman and Essig 1998

<sup>29</sup> DEQ 2003

<sup>30</sup> Id., pp. 16

exceeding MWMT of 13°C were fully protective of bull trout.<sup>31</sup>

The EPA Temperature Guidance recommends a 12°C maximum 7DADM criterion for protection of moderate to high density summertime bull trout juvenile rearing near their natal streams in their first years of life prior to making downstream migrations. The only deviation between IDAPA 58.01.02.250.02.g. and the EPA Temperature Guidance is one degree (13°C v. 12°C MWMT) as both the metric (MWMT and maximum 7DADM) and the period of application (June-August and ‘summer’) are in accord.

EPA<sup>32</sup> and DEQ<sup>33</sup> reviewed similar literature, with the DEQ reviewing more Idaho-specific information. EPA’s literature review for the BT BE 2021 showed that the optimum rearing temperature using the MWMT metric is between 12°C - 14°C. Field studies indicated juvenile and small bull trout inhabit streams that are <14°C and laboratory studies show optimum growth in the 12-16°C range (constant temperature). Additionally, recently reviewed literature from broad-scale assessments of habitat use related to field temperature data provide another line of evidence for this temperature range. EPA concluded that the body of literature reviewed did not show that 13°C would lead to sublethal or lethal effects to juvenile bull trout since it was within the optimum ranges.<sup>34</sup> This evaluation and the DEQ updated justification show that the revised criterion is protective and based on scientifically sound rationale, as required under 40 CFR §§ 131.6 and 131.11.

Based on the above information, EPA has determined that the 13°C MWMT temperature criterion during June, July and August will provide protection for juvenile bull trout rearing.

## **B. Bull Trout Temperature Criteria Area**

### **EPA Action**

In accordance with its CWA authority, 33 U.S.C. §1313(c)(3) and 40 CFR Part 131, EPA approves the following provision at IDAPA 58.01.02.250.02.g.i.

**Subsection 250.02.g.i** The bull trout temperature criteria shall apply to all tributary waters, not including fifth order main stem rivers, located within areas above fourteen hundred (1400) meters elevation south of the Salmon River basin, Clearwater River basin divide, and above six hundred (600) meters elevation north of the Salmon River basin, Clearwater River basin divide, in the fifty-nine (59) Key Watersheds listed in Table 6, Appendix F of Governor Batt’s State of Idaho Bull Trout Conservation Plan, 1996, or as designated under Sections 110 through 160 of this rule.

### **EPA Rationale**

As required by 40 CFR §§ 131.6 and 131.10, the bull trout spawning and rearing use and temperature criteria (IDAPA 58.01.02.250.02.g.) apply to waters described in IDAPA

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<sup>31</sup> Id., pp. 43-44

<sup>32</sup> EPA Temperature Guidance 2003.

<sup>33</sup> DEQ 2003

<sup>34</sup> EPA BT BE 2021, pp. 82

58.01.02.250.02.g.i. DEQ developed this provision based on analysis and guidance from Governor Batt's State of Idaho Bull Trout Conservation Plan.<sup>35</sup> DEQ also referenced this plan in the rule. According to the plan, the Idaho strategy for the protection and recovery of bull trout uses an ecosystem approach to riparian and aquatic management.<sup>36</sup>

The plan considered historical and more current distribution (as of 1996) to designate 59 bull trout key watersheds. The bull trout key watersheds were designated on the basis of bull trout biology and life history needs. Idaho selected the watersheds based on several criteria including critical bull trout habitat elements and the historical range of the species.<sup>37</sup>

Rather than identifying specific waterbodies, IDAPA 58.01.02.250.02.g.i. uses elevation delineations to broadly apply the bull trout temperature criteria to 1<sup>st</sup> through 4<sup>th</sup>-order streams above the specified elevations within bull trout key watersheds. In the BT BE 2021, EPA reviewed bull trout distribution data and habitat requirements.<sup>38</sup> EPA agrees that these higher elevation waterbodies identified under IDAPA 58.01.02.250.02.g.i. provide for bull trout spawning and rearing areas with cold temperatures and substrate of sufficient amount, size, and composition to ensure success of bull trout egg and embryo overwinter survival, fry emergence, and young-of-the-year and juvenile survival.<sup>39</sup> EPA concurs that the waters identified at IDAPA 58.01.02.250.02.g.i. should be protected for the bull trout spawning and rearing use. Since the bull trout spawning and rearing use is the most sensitive aquatic life use, the criteria will be protective of other aquatic life uses.

In addition to the waters specifically identified in IDAPA 58.01.02.250.02.g.i., DEQ can designate additional waterbodies for the bull trout spawning and rearing use. The DEQ memorandum, *Application of Idaho Bull Trout Criteria to Waters Not Identified in Rule*,<sup>40</sup> reiterates that Idaho will apply bull trout criteria when and where bull trout spawning and rearing is an existing use.<sup>41</sup> The provision and DEQ's memo provide further clarification that additional waterbodies can be designated and protected for bull trout spawning and rearing. If DEQ, based on new information, identifies additional waters where the use is occurring, DEQ has committed to requesting designation for those waters.<sup>42</sup>

Based on EPA's review of available information, EPA has determined that the application of Idaho's bull trout temperature criteria (IDAPA 58.01.02.250.g.) to waters identified in IDAPA 58.01.02.250.g.i. is an appropriate area in which to provide protection for bull trout spawning and rearing.

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<sup>35</sup> Batt, Governor P. E. 1996. State of Idaho Bull Trout Conservation Plan. Boise, Idaho. <https://species.idaho.gov/wp-content/uploads/sites/82/2016/05/bulltroutconservationplan-96.pdf>

<sup>36</sup> Id., p.2

<sup>37</sup> Rieman, B.E. and J.D.McIntyre. 1993. Demographic and habitat requirements of bull trout. United States Forest Service, Intermountain Research Station, General Technical Report INT-302, Boise, Idaho. p. 9

<sup>38</sup> EPA BT BE 2021, pp. 17-22

<sup>39</sup> One of the physical or biological features (PBFs) determined to be essential to the conservation of bull trout as stated by USFWS (FR vol.71, no.229, 69060)

<sup>40</sup> DEQ. 2021. Application of Idaho Bull Trout Criteria to Waters Not Identified in Rule. Memorandum Mar. 29, 2021. Signed Apr. 15, 2021. From Jason Pappani, Surface Water Bureau Chief, to Robert Esquivel, Federal Reporting Lead. Idaho Department of Environmental Quality. Boise, ID.

<sup>41</sup> DEQ, 2021

<sup>42</sup> EPA BT BE 2021, Section 2.6 Conservation Measures, p. 10

## V. Provision that is Not Subject to EPA 303(c) Review

IDAPA 58.01.02.250.02.g. includes the following language in the second sentence, “*For the purposes of measuring these criteria, the values shall be generated from a recording device with a minimum of six (6) evenly spaced measurements in a twenty-four (24) hour period.*”

This sentence in the water quality standards is related to data sufficiency for assessing compliance with the temperature criteria. The sentence itself does not express or establish the desired condition (e.g., uses, criteria) or instream level of protection (e.g., antidegradation requirements) for any waterbody, but rather specifies the data requirements for measuring the bull trout temperature criteria.<sup>43</sup> EPA has therefore determined that this sentence is not a new or revised water quality standard that is subject to EPA CWA section 303(c) review.

## VI. Water Quality Standards in Effect for CWA Purposes

Although EPA’s action approves the new and revised Idaho bull trout spawning and rearing criteria, the EPA federal rule promulgated on July 31, 1997 (see 62 FR 4116) still is effective until EPA withdraws the federal rule. Consequently, the EPA federal temperature criterion may still apply for CWA purposes depending on the specific waterbody. The more stringent criteria for a specific waterbody/time of year combination applies if both rules protect the same waterbody.

The federal bull trout temperature criterion is 10°C MWMT from June through September for waters specified in 40 CFR § 131.33. The federal criterion still applies for CWA purposes to a waterbody listed in 40 CFR § 131.33 if it is more stringent than the Idaho bull trout spawning and rearing temperature criteria at IDAPA 58.01.02.250.02.g. As discussed above in the rationale for the *Spawning Criterion: 9°C MDAT (Sep – Oct)*, the applied temperature of the Idaho 9°C MDAT translates to an estimated 10-10.5°C MWMT. From a practical sense, the federal criterion is comparable to, or more stringent than, the Idaho criteria from June through September. However, because the Idaho spawning criterion applies in October and the federal criterion does not, Idaho’s spawning criterion would be the criterion in effect for that month for CWA purposes.

If the Idaho criteria (IDAPA 58.01.02.250.02.g.) apply to a waterbody not listed in 40 CFR § 131.33, then the Idaho criteria apply for waters identified in IDAPA 58.01.02.250.02.g.i. or waters determined by DEQ to have bull trout spawning and rearing existing uses.<sup>44</sup>

Table 1 below provides a brief summary of the criteria from the federal and Idaho rules.

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<sup>43</sup> EPA 303(c) FAQs, 2012

<sup>44</sup> To determine if bull trout spawning and rearing applies to a particular waterbody, check both of these GIS resources. For designated and existing uses for assessed waterbodies, see Interactive Mapping and GIS at: <https://mapcase.deq.idaho.gov/wq2020/default.html> . For non-assessed waterbodies, search “DEQ” at <https://insideidaho.org/search.html> to access the Idaho bull trout federal and state rule GIS layers.

**Table 1. Idaho state and federal bull trout temperature criteria currently in effect for CWA purposes. The more stringent criteria for a specific waterbody/time of year combination applies if both rules protect the same waterbody.**

<b>EPA Federal Rule</b> 40 CFR 131.33	<b>Idaho Rule</b> (IDAPA 58.01.02.250.02.g. and g.i.)
Spawning and Juvenile Rearing: 10°C MWMT (June - September)	Spawning: 9°C MDAT (September – October)  Juvenile Rearing: 13°C MWMT (June – August)