

WQ Permitting Policy



State of Oregon
Department of
Environmental
Quality

Implementation of Water Quality Standards for Temperature in NPDES Permits

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Effective Date: March 19, 2018	Next Scheduled Revision Date: As needed
Approval: Ron Doughten	Title: WQ Manager
Section: WQ Permitting and Program Development	Division: Operations

Intent/Purpose/ Statement of Need	<p>DEQ's water quality standards for temperature and temperature total maximum daily loads (TMDLs) have been the subject of litigation for many years. The intent of this document is to provide guidance to permit writers on how to apply the temperature criterion in permitting given the status of that litigation. On Feb. 28, 2012, the U.S. District Court for the District of Oregon invalidated EPA's approval of DEQ's natural conditions criterion for water temperature. As a result of the court's decision, in August 2013, EPA disapproved Oregon's natural conditions criterion (NCC) at OAR 340-041-0028(8), leaving the remainder of the temperature standard effective. Also as a result of the court decision, the Environmental Quality Commission repealed portions of the narrative criteria in the temperature standard relating to agriculture and forestry. The NCC is not effective for purposes of National Pollutant Discharge Elimination System (NPDES) permitting.</p> <p>Following the decision on the NCC, a petition was filed challenging temperature TMDLs based on the NCC. On April 11, 2017, the U.S. District Court for the District of Oregon ordered that EPA's decision approving TMDLs based on the NCC on or after 9/27/2006 was "arbitrary and capricious." The order based this holding on the conclusion in the 2012 case that EPA's decision to approve the Natural Conditions Criteria under CWA 303(c) was arbitrary and capricious. To reach this decision the court concluded that the invalidation of the NCC in the temperature standard applied retroactively (i.e. the NCC was never valid). The decision concluded these TMDLs could not have been properly approved by EPA because they were not based on the proper criteria and reflected an invalid change in the standard.</p> <p>Litigation is ongoing as of the date of this document (March 19, 2018). The temperature TMDLs that are subject to the TMDL litigation are still in effect and should be implemented until the Court orders otherwise. NPDES permits need to meet the more stringent of either the TMDL waste load allocation (WLA) or the pre-TMDL condition based on the biologically based numeric criteria (BBNC).</p> <p>401 certification of projects take a similar approach as described in this document. Where applicable, 401 certifications would need to meet the more stringent of their NCC TMDL allocation or the temperature water quality standard based on BBNC.</p>
Authority	<p>ORS 468.020, 468B.030, 468B.035 & 468B.048 OAR 340-041-0028</p>
Applicability	All NPDES permits
POLICY	<p>Until such time as DEQ revises the water quality standard for temperature, permit writers will issue NPDES permits that ensure compliance with the currently effective temperature standard at OAR 340-041-0028 (see attached), which includes (4) biologically based numeric criteria (BBNC), (9) protection of cool water species, (11) the protecting cold water criteria and (12)(b) the human use allowance, and all other sections of 340-041-0028 except (8) the natural conditions criterion, as well as any waste load allocation that remains in effect.</p>

This memo describes five scenarios listed below and discusses how the remaining criteria apply. Attached to this memo is a table showing all the currently effective TMDLs for temperature and which scenario most likely applies for each TMDL.

Scenario A. The receiving stream is not impaired by temperature.

Permit writers will continue to issue or reissue NPDES permits and effluent limits for temperature as appropriate to ensure compliance with the still effective portions of OAR 340-041-0028 described above, and the additional mixing zone requirements in OAR 340-041-0053(2)(d) (Temperature Thermal Plume Limitations).

Scenario B. The receiving stream is impaired, but there is no TMDL in place.

Permit writers will issue and reissue permits to ensure compliance with the applicable BBNC, and the human use allowance as described in OAR 340-041-0028(12)(b)(A), and the additional mixing zone requirements in OAR 340-041-0053(2)(d) (Temperature Thermal Plume Limitations).

Scenario C. The receiving stream is impaired for temperature and there is a TMDL based on the biologically based numeric criteria.

Permit writers will continue to issue and reissue permits developed to be consistent with waste load allocations in accordance with OAR 340-041-0028(12)(b)(B) and the additional mixing zone requirements in OAR 340-041-0053(2)(d).

Scenario D. The receiving stream is impaired for temperature and there is a TMDL based on natural conditions criteria (or natural thermal potential).

For permit renewals, permit writers will determine the thermal loads that are consistent with TMDL waste load allocations and compare it to the thermal loads based on BBNC with the human use allowance of 0.3°C (see OAR 340-041-0028(12)(b)(A)). The more stringent of the two loads must be addressed in the permit. The permit evaluation report should clearly describe how the temperature limits were developed. The additional mixing zone requirements in OAR 340-041-0053(2)(d) also will be applied to the permit.

For new sources, permit writers will need to consult with DEQ Headquarters staff.

Scenario E: The receiving stream is impaired for temperature and the TMDL was developed and approved with temperature criteria effective before December 2003.

Some of these TMDLs include waste load allocations based on site potential or system potential temperatures rather than BBNC. As permits are renewed, DEQ must demonstrate that permits are consistent with current water quality standards. Permits will be consistent with waste load allocations or include effluent limits based on BBNC and human use allowance, as in scenario C or D above.

Meeting WQBELs

Some NPDES sources will not be able to comply with WQBELs for temperature at the time of permit reissuance. Measures for reducing temperature impacts (i.e. heat loads) to the receiving water that may be available to point sources include, but are not limited to, the following: natural treatment systems, indirect discharge, riparian restoration via trading, cooling technology (i.e. cooling towers), effluent reuse or land application (non-discharge) and/or flow augmentation.

Permit holders who cannot meet permit limits for temperature in the short term, but are reasonably likely to meet the limits in a certain timeframe after taking identified steps, may qualify for a compliance schedule. OAR 340-041-0061(15) allows compliance schedules for WQBELs that are newly applicable to the permit.

If it is not reasonably certain when or if a permit holder can meet a permit limit even after implementing pollutant control programs, the permit holder may discuss with DEQ whether a variance is available under OAR 340-041-0059. That rule allows a variance from the requirement

to meet a water quality standard when one or more circumstances described in the rule exists (e.g., pollutant control measures would cause more environmental damage than caused by the exceedance; natural conditions prevent attainment of the standard; or when controls to reduce the pollutant would cause substantial and widespread economic and social impact). Permit holders seeking variances must submit pollution reduction plans subject to DEQ approval and incorporation into the permit. Measures for reducing temperature that DEQ may consider include, but are not limited, to natural treatment systems, indirect discharge, riparian restoration via trading, and flow augmentation. All variances granted by DEQ must be approved by EPA, in consultation with the National Marine Fisheries Services and/or the U.S. Fish & Wildlife Service, similar to the process used when the EQC adopts a new water quality standard.

Currently Effective Temperature TMDLs

Below is a list of all the currently effective temperature TMDLs, and which of the scenarios described in the memo applies. Permit writers should verify the approach used to develop each WLA with the basin coordinator, as some TMDLs incorporate NCC as well as BBNC depending on data availability and modeling approaches.

Basin	TMDL	Date approved by EPA	Basis for WLA	Permitting Scenarios
Grande Ronde	Lower Grande Ronde	September 2010	NCC	D
	Upper Grande Ronde	March 2000	Pre-12/2003 criteria	E
John Day	John Day	December 2010	BBNC	C
Klamath	Upper Klamath Lake	August 2002	Pre-Dec. 2003 criteria	E
	Upper Klamath and Lost River	December 2010	NCC	See note 1.
Malheur	Malheur River Basin	September 2010	BBNC	N/A See note 2.
Middle Columbia – Hood	Miles Creek	December 2008	BBNC	C
	Western Hood	December 2001	Pre-12/2003 criteria	E
North Coast/Lower Columbia	North Coast	November 2006 Addendum	Addendum issued 11/2006 modifies TMDLs for North Coast Subbasins, Tillamook Bay and Nestucca Bay. The revised WLAs are all based on the applicable BBNC.	C
Oregon Closed Lake Basins	Alvord Lake		Pre-2003 criteria, but no point sources in basin.	N/A
Rogue	Rogue	December 2008	NCC	D
	Applegate	February 2004	NCC (site potential), but no point sources in basin.	N/A
	Bear Creek	October 2007	BBNC (Ashland POTW)	C
Sandy	Sandy	April 2005	NCC	See note 3.
Snake	Snake River/Hells Canyon	September 2004 Revised	BBNC	See note 4.
Umatilla	Umatilla	March 2001	Original TMDL based on criteria that were replaced Dec.2003. A document issued 9/07 states that the system potential temperature profile of the TMDL meets the definition of the NCC in the post-12/03 standard. It also lists WLAs based on a HUA of 0.3C.	D
	Walla Walla	September 2005	NCC however there are no point sources discharging during the critical period.	N/A
	Willow Creek	February 2008	NCC same as BBNC	C
Umpqua	Umpqua	April 2007	NCC	D
	Little River	January 2002	Pre-12/03 criteria	E

	Willamette – Mainstem Only	September 2006	BBNC and NCC	D
	Mollala-Pudding	December 2008	NCC	D
	Tualatin	August 2001	Original TMDL based on pre-12/03 criteria.	E
<p>Notes:</p> <ol style="list-style-type: none"> 1. WLAs for point sources in the Klamath River are defined in the OAR 340-041-0185. 2. Page 9-44 of the Malheur Basin TMDL report shows only 2 individual point sources in the basin and they are both for irrigation districts. 3. There are 3 point sources in the Sandy basin and the TMDL effectively provides permit limits for them in Table 3-10 on page 65 of the TMDL report. 4. The TMDL for Snake River/Hells Canyon does not include a table with explicit WLAs for temperature for individual point sources. Instead, the Executive Summary states on page r, that “Point sources discharging directly to the Snake River within the SR-HC TMDL reach have been allocated heat loads corresponding to discharge loads applied to design flows to ensure that no measurable increase requirements will not be exceeded.” The following rationale is given on page 394: <p style="margin-left: 40px;">The point source discharges represent no-measurable-increase in the water temperature of the mainstem Snake River within the SR-HC TMDL reach. (No-measurable-increase is defined by the State of Oregon as 0.25 °F (0.14 °C), and by the State of Idaho as 0.3 °C.) The point source discharges are calculated to contribute less than 0.012 °F (0.0066 °C) increase in mainstem water temperature in the Upstream Snake River segment (RM 409 to 335).</p> <p style="margin-left: 40px;">Under the current temperature standard for Oregon, the HUA is 0.3C rather than 0.14C.</p> 				
Definitions				
History				
	Version	Author	Comments	
	1.0	Jane Hickman	New policy – never finalized	
	1.1	Rob Burkhart	Minor changes to 1.0	
Attachments				
	OAR 340-041-0028 Temperature (Water Quality Standards)			

Attachment

OAR 340-041-0028

Temperature

(1) Background. Water temperatures affect the biological cycles of aquatic species and are a critical factor in maintaining and restoring healthy salmonid populations throughout the State. Water temperatures are influenced by solar radiation, stream shade, ambient air temperatures, channel morphology, groundwater inflows, and stream velocity, volume, and flow. Surface water temperatures may also be warmed by anthropogenic activities such as discharging heated water, changing stream width or depth, reducing stream shading, and water withdrawals.

(2) Policy. It is the policy of the Commission to protect aquatic ecosystems from adverse warming and cooling caused by anthropogenic activities. The Commission intends to minimize the risk to cold-water aquatic ecosystems from anthropogenic warming, to encourage the restoration and protection of critical aquatic habitat, and to control extremes in temperature fluctuations due to anthropogenic activities. The Commission recognizes that some of the State's waters will, in their natural condition, not provide optimal thermal conditions at all places and at all times that salmonid use occurs. Therefore, it is especially important to minimize additional warming due to anthropogenic sources. In addition, the Commission acknowledges that control technologies, best management practices and other measures to reduce anthropogenic warming are evolving and that the implementation to meet these criteria will be an iterative process. Finally, the Commission notes that it will reconsider beneficial use designations in the event that man-made obstructions or barriers to anadromous fish passage are removed and may justify a change to the beneficial use for that water body.

(3) Purpose. The purpose of the temperature criteria in this rule is to protect designated temperature-sensitive, beneficial uses, including specific salmonid life cycle stages in waters of the State.

(4) Biologically Based Numeric Criteria. Unless superseded by the natural conditions criteria described in section (8) of this rule, or by subsequently adopted site-specific criteria approved by EPA, the temperature criteria for State waters supporting salmonid fishes are as follows:

(a) The seven-day-average maximum temperature of a stream identified as having salmon and steelhead spawning use on subbasin maps and tables set out in OAR 340-041-0101 to 340-041-0340: Tables 101B, and 121B, and Figures 130B, 151B, 160B, 170B, 220B, 230B, 271B, 286B, 300B, 310B, 320B, and 340B, may not exceed 13.0 degrees Celsius (55.4 degrees Fahrenheit) at the times indicated on these maps and tables;

(b) The seven-day-average maximum temperature of a stream identified as having core cold water habitat use on subbasin maps set out in OAR 340-041-101 to 340-041-340: Figures 130A, 151A, 160A, 170A, 180A, 201A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A, may not exceed 16.0 degrees Celsius (60.8 degrees Fahrenheit);

(c) The seven-day-average maximum temperature of a stream identified as having salmon and trout rearing and migration use on subbasin maps set out at OAR 340-041-0101 to 340-041-0340: Figures 130A, 151A, 160A, 170A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A, may not exceed 18.0 degrees Celsius (64.4 degrees Fahrenheit);

(d) The seven-day-average maximum temperature of a stream identified as having a migration corridor use on subbasin maps and tables OAR 340-041-0101 to 340-041-0340: Tables 101B, and 121B, and Figures 151A, 170A, 300A, and 340A, may not exceed 20.0 degrees Celsius (68.0 degrees Fahrenheit). In addition, these water bodies must have coldwater refugia that are sufficiently distributed so as to allow salmon and steelhead migration without significant adverse effects from higher water temperatures elsewhere in the water body. Finally, the seasonal thermal pattern in Columbia and Snake Rivers must reflect the natural seasonal thermal pattern;

(e) The seven-day-average maximum temperature of a stream identified as having Lahontan cutthroat trout or redband trout use on subbasin maps and tables set out in OAR 340-041-0101 to 340-041-0340: Tables 121B, 140B, 190B, and 250B, and Figures 180A, 201A, 260A and 310A may not exceed 20.0 degrees Celsius (68.0 degrees Fahrenheit);

(f) The seven-day-average maximum temperature of a stream identified as having bull trout spawning and juvenile rearing use on subbasin maps set out at OAR 340-041-0101 to 340-041-0340: Figures 130B, 151B, 160B, 170B, 180A, 201A, 260A, 310B, and 340B, may not exceed 12.0 degrees Celsius (53.6 degrees Fahrenheit). From August 15 through May 15, in bull trout spawning waters below Clear Creek and Mehlhorn reservoirs on Upper Clear Creek (Pine Subbasin), below Laurance Lake on the Middle Fork Hood River, and below Carmen reservoir on the Upper McKenzie River, there may be no more than a 0.3 degrees Celsius (0.5 Fahrenheit) increase between the water temperature immediately upstream of the reservoir and the water temperature immediately downstream of the spillway when the ambient seven-day-average maximum stream temperature is 9.0 degrees Celsius (48 degrees Fahrenheit) or greater, and no more than a 1.0 degree Celsius (1.8 degrees Fahrenheit) increase when the seven-day-average stream temperature is less than 9 degrees Celsius.

(5) Unidentified Tributaries. For waters that are not identified on the "Fish Use Designations" maps referenced in section (4) of this rule, the applicable criteria for these waters are the same criteria as is applicable to the nearest downstream water body depicted on the applicable map. This section (5) does not apply to the "Salmon and Steelhead Spawning Use Designations" maps.

(6) Natural Lakes. Natural lakes may not be warmed by more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the natural condition unless a greater increase would not reasonably be expected to adversely affect fish or other aquatic life. Absent a discharge or human modification that would reasonably be expected to increase temperature, DEQ will presume that the ambient temperature of a natural lake is the same as its natural thermal condition.

(7) Oceans and Bays. Except for the Columbia River above river mile 7, ocean and bay waters may not be warmed by more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the natural condition unless a greater increase would not reasonably be expected to adversely affect fish or other aquatic life. Absent a discharge or human modification that would reasonably be expected to increase temperature, DEQ will presume that the ambient temperature of the ocean or bay is the same as its natural thermal condition.

(8) Natural Conditions Criteria. Where the department determines that the natural thermal potential of all or a portion of a water body exceeds the biologically-based criteria in section (4) of this rule, the natural thermal potential temperatures supersede the biologically-based criteria, and are deemed to be the applicable temperature criteria for that water body.

NOTE: On August 8, 2013, the Environmental Protection Agency disapproved rule section OAR 340-041-0028(8). Consequently, section (8) is no longer effective as a water quality criterion for purposes of CWA Section 303(c) and it cannot be used for issuing certifications under CWA Section 401, permits under CWA Section 402, or total maximum daily loads under CWA section 303(d).

(9) Cool Water Species.

(a) No increase in temperature is allowed that would reasonably be expected to impair cool water species. Waters of the State that support cool water species are identified on subbasin tables and figures set out in OAR 340-041-0101 to 340-041-0340; Tables 140B, 190B and 250B, and Figures 180A, 201A and 340A.

(b) See OAR 340-041-0185 for a basin specific criterion for the Klamath River.

(10) Borax Lake Chub. State waters in the Malheur Lake Basin supporting the Borax Lake chub may not be cooled more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) below the natural condition.

(11) Protecting Cold Water.

(a) Except as described in subsection (c) of this rule, waters of the State that have summer seven-day-average maximum ambient temperatures that are colder than the biologically based criteria in section (4) of this rule, may not be warmed by more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the colder water ambient temperature. This provision applies to all sources taken together at the point of maximum impact where salmon, steelhead or bull trout are present.

(b) A point source that discharges into or above salmon & steelhead spawning waters that are colder than the spawning criterion, may not cause the water temperature in the spawning reach where the physical habitat for spawning exists during the time spawning through emergence use occurs, to increase more than the following amounts after complete mixing of the effluent with the river:

(A) If the rolling 60 day average maximum ambient water temperature, between the dates of spawning use as designated under subsection (4)(a) of this rule, is 10 to 12.8 degrees Celsius, the allowable increase is 0.5 Celsius above the 60 day average; or

(B) If the rolling 60 day average maximum ambient water temperature, between the dates of spawning use as designated under subsection (4)(a) of this rule, is less than 10 degrees Celsius, the allowable increase is 1.0 Celsius above the 60 day average, unless the source provides analysis showing that a greater increase will not significantly impact the survival of salmon or steelhead eggs or the timing of salmon or steelhead fry emergence from the gravels in downstream spawning reach.

(c) The cold water protection narrative criteria in subsection (a) do not apply if:

(A) There are no threatened or endangered salmonids currently inhabiting the water body;

(B) The water body has not been designated as critical habitat; and

(C) The colder water is not necessary to ensure that downstream temperatures achieve and maintain compliance with the applicable temperature criteria.

(12) Implementation of the Temperature Criteria.

(a) Minimum Duties. There is no duty for anthropogenic sources to reduce heating of the waters of the State below their natural condition. Similarly, each anthropogenic point and nonpoint source is responsible only for controlling the thermal effects of its own discharge or activity in accordance with its overall heat contribution. In no case may a source cause more warming than that allowed by the human use allowance provided in subsection (b) of this rule.

(b) Human Use Allowance. Insignificant additions of heat are authorized in waters that exceed the applicable temperature criteria as follows:

(A) Prior to the completion of a temperature TMDL or other cumulative effects analysis, no single NPDES point source that discharges into a temperature water quality limited water may cause the temperature of the water body to increase more than 0.3 degrees Celsius (0.5 Fahrenheit) above the applicable criteria after mixing with either twenty five (25) percent of the stream flow, or the temperature mixing zone, whichever is more restrictive; or

(B) Following a temperature TMDL or other cumulative effects analysis, waste load and load allocations will restrict all NPDES point sources and nonpoint sources to a cumulative increase of no greater than 0.3 degrees Celsius (0.5 Fahrenheit) above the applicable criteria after complete mixing in the water body, and at the point of maximum impact.

(C) Point sources must be in compliance with the additional mixing zone requirements set out in OAR 340-041-0053(2)(d).

(D) A point source in compliance with the temperature conditions of its NPDES permit is deemed in compliance with the applicable criteria.

(c) Air Temperature Exclusion. A water body that only exceeds the criteria set out in this rule when the exceedance is attributed to daily maximum air temperatures that exceed the 90th percentile value of annual maximum seven-day average maximum air temperatures calculated using at least 10 years of air temperature data, will not be listed on the section 303(d) list of impaired waters and sources will not be considered in violation of this rule.

(d) Low Flow Conditions. An exceedance of the biologically-based numeric criteria in section (4) of this rule, or an exceedance of the natural condition criteria in section (8) of this rule will not be considered a permit violation during stream flows that are less than the 7Q10 low flow condition for that water body.

(e) Other Nonpoint Sources. The department may, on a case-by-case basis, require nonpoint sources (other than forestry and agriculture), including private hydropower facilities regulated by a 401 water quality certification, that may contribute to warming of State waters beyond 0.3 degrees Celsius (0.5 degrees Fahrenheit), and are therefore designated as water-quality limited, to develop and implement a temperature management plan to achieve compliance with applicable temperature criteria or an applicable load allocation in a TMDL pursuant to OAR 340-042-0080.

(A) Each plan must ensure that the nonpoint source controls its heat load contribution to water temperatures such that the water body experiences no more than a 0.3 degrees Celsius (0.5 degree Fahrenheit) increase above the applicable criteria from all sources taken together at the maximum point of impact.

(B) Each plan must include a description of best management practices, measures, effluent trading, and control technologies (including eliminating the heat impact on the stream) that the nonpoint source intends to use to reduce its temperature effect, a monitoring plan, and a compliance schedule for undertaking each measure.

(C) The Department may periodically require a nonpoint source to revise its temperature management plan to ensure that all practical steps have been taken to mitigate or eliminate the temperature effect of the source on the water body.

(f) Compliance Methods. Anthropogenic sources may engage in thermal water quality trading in whole or in part to offset its temperature discharge, so long as the trade results in at least a net thermal loading decrease in anthropogenic warming of the water body, and does not adversely affect a threatened or endangered species. Sources may also achieve compliance, in whole or in part, by flow augmentation, hyporheic exchange flows, outfall relocation, or other measures that reduce the temperature increase caused by the discharge.

(g) Release of Stored Water. Stored cold water may be released from reservoirs to cool downstream waters in order to achieve compliance with the applicable numeric criteria. However, there can be no significant adverse impact to downstream designated beneficial uses as a result of the releases of this cold water, and the release may not contribute to violations of other water quality criteria. Where the Department determines that the release of cold water is resulting in a significant adverse impact, the Department may require the elimination or mitigation of the adverse impact.

(13) Site-Specific Criteria. The Department may establish, by separate rulemaking, alternative site-specific criteria for all or a portion of a water body that fully protects the designated use.

(a) These site-specific criteria may be set on a seasonal basis as appropriate.

(b) The Department may use, but is not limited by the following considerations when calculating site-specific criteria:

(A) Stream flow;

(B) Riparian vegetation potential;

(C) Channel morphology modifications;

(D) Cold water tributaries and groundwater;

(E) Natural physical features and geology influencing stream temperatures; and

(F) Other relevant technical data.

(c) DEQ may consider the thermal benefit of increased flow when calculating the site-specific criteria.

(d) Once established and approved by EPA, the site-specific criteria will be the applicable criteria for the water bodies affected.

[ED. NOTE: Tables referenced are available from the agency.]

Stat. Auth.: ORS 468.020, 468B.030, 468B.035 & 468B.048

Stats. Implemented: ORS 468B.030, 468B.035 & 468B.048

Hist.: DEQ 17-2003, f. & cert. ef. 12-9-03; DEQ 1-2007, f. & cert. ef. 3-14-07; DEQ 2-2007, f. & cert. ef. 3-15-07; DEQ 10-2011, f. & cert. ef. 7-13-11; DEQ 5-2013, f. & cert. ef. 6-21-13; DEQ 1-2015, f. & cert. ef. 1-7-15