6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 131

[EPA-HQ-OW-2016-0694; FRL-9967-13-OW]

RIN 2040-AF70

Aquatic Life Criteria for Aluminum in Oregon

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The Environmental Protection Agency (the EPA) proposes to establish federal Clean Water Act (CWA) aquatic life criteria for fresh waters under the State of Oregon's jurisdiction, to protect aquatic life from the effects of exposure to harmful levels of aluminum. In 2013, the EPA disapproved the State's freshwater acute and chronic aluminum criteria. The CWA directs the EPA to promptly propose water quality standards (WQS) that meet CWA requirements if a state does not adopt WQS addressing the Agency's disapproval. The State has not adopted and submitted revised freshwater acute and chronic aluminum criteria to the EPA to address the EPA's 2013 disapproval. Therefore, in this notice, the EPA proposes federal freshwater acute and chronic aluminum criteria to protect aquatic life uses in Oregon.

DATES: Comments must be received on or before **[iNSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].**

ADDRESSES: Submit your comments, identified by Docket ID No. **EPA-HQ-OW-2016-0694**, at http://www.regulations.gov (our preferred method), or the other methods identified in this ADDRESSES section. Once submitted, comments cannot be edited or removed from the docket.

The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (i.e. on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit https://www.epa.gov/dockets/commenting-epa-dockets.

The EPA is offering two online public hearings so that interested parties may provide oral comments on this proposed rule. The first public hearing will be on Tuesday, June 11, 2019, from 4:00 pm to 6:00 pm Pacific Time. The second public hearing will be on Wednesday, June 12, 2019, from 9:00 am to 11:00 am Pacific Time. The EPA plans to make a transcript of the public hearings available to the public in the rulemaking docket. The EPA will respond to substantive comments received as part of developing the final rule and will include comment responses in the rulemaking docket. For more details on the public hearings and a link to register, please visit http://www.epa.gov/wqs-tech/water-quality-standards-regulations-oregon.

FOR FURTHER INFORMATION CONTACT: Heather Goss, Office of Water, Standards and Health Protection Division (4305T), Environmental Protection Agency, 1200 Pennsylvania Avenue, NW, Washington, DC 20460; telephone number: (202) 566-1198; email address: OregonAluminumCriteriaRule@epa.gov.

SUPPLEMENTARY INFORMATION: This proposed rule is organized as follows:

I. General Information

Does This Action Apply to Me?

Aluminum naturally occurs in surface waters, but under certain environmental conditions, it can be converted to toxic forms that can be toxic to aquatic life. Anthropogenic activities such as bauxite mining, alumina refining, production of aluminum products, and manufacturing processes can contribute aluminum to surface waters.[1] In addition, alum (potassium aluminum sulfate), used in clarification processes in drinking water and wastewater processes, can contribute to levels of aluminum in surface waters. Lastly, certain activities, such as wastewater discharges, stormwater runoff, mining, or agriculture can influence a waterbody's pH, dissolved organic carbon (DOC), or total hardness and, therefore, the toxicity of aluminum in that waterbody.

Entities such as industrial facilities, stormwater management districts, or publicly owned treatment works (POTWs) that discharge pollutants to fresh waters of the United States under the State of Oregon's jurisdiction could be indirectly affected by this rulemaking, because federal WQS promulgated by the EPA would be applicable WQS for the State for CWA purposes. These WQS are the minimum standards which must be used in CWA regulatory programs, such as National Pollutant Discharge Elimination System (NPDES) permitting[2] and identifying impaired waters under CWA section 303(d). Citizens concerned with water quality in Oregon could also be interested in this rulemaking. Categories and entities that could potentially be affected include the following:

[1] Agency for Toxic Substances and Disease Registry (ATSDR) Toxicological Profile for Aluminum, 2008 (https://www.atsdr.cdc.gov/toxprofiles/tp22.pdf)

[2] Before any water quality based effluent limit is included in an NPDES permit, the permitting authority (here, the State of Oregon), will first determine whether a discharge "will cause or has the reasonable potential to cause, or contribute to an excursion above any WQS." 40 CFR 122.44 (d)(1)(i) and (ii).

Category	Examples of potentially affected entities
Industry	Industries discharging pollutants to fresh waters of the United States in Oregon.
Municipalities	Publicly owned treatment works or other facilities discharging pollutants to fresh waters of the United States in Oregon.
Stormwater Management Districts	Entities responsible for managing stormwater runoff in the State of Oregon.

This table is not intended to be exhaustive, but rather provides a guide for readers to identify entities that could potentially be affected by this action. Any parties or entities who depend upon or contribute to the water quality of Oregon's waters could be affected by this proposed rule. To determine whether your facility or activities could be affected by this action, you should carefully examine this proposed rule. If you have questions regarding the applicability of this action to a particular entity, consult the person listed in the FOR FURTHER INFORMATION CONTACT section.

II. Background

A. Statutory and Regulatory Authority

CWA section 303(c) (33 U.S.C. 1313(c)) directs states to adopt WQS for their waters subject to the CWA. CWA section 303(c)(2)(A)[3] provides that WQS shall consist of designated uses of the waters and water quality criteria based on those uses. The EPA's regulations at 40 CFR 131.11(a)(1) provide that "[s]uch criteria must be based on sound scientific rationale and

[3] CWA section 303(c)(2)(A): Whenever the State revises or adopts a new standard, such revised or new standard shall be submitted to the Administrator. Such revised or new water quality standard shall consist of the designated uses of the navigable waters involved and the water quality criteria for such waters based upon such uses. Such standards shall be such as to protect the public health or welfare, enhance the quality of water and serve the purposes of this chapter. Such standards shall be established taking into consideration their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and agricultural, industrial, and other purposes, and also taking into consideration their use and value for navigation.

must contain sufficient parameters or constituents to protect the designated use [and] [f]or waters with multiple use designations, the criteria shall support the most sensitive use." In addition, 40 CFR 131.10(b) provides that "[i]n designating uses of a water body and the appropriate criteria for those uses, the [s]tate shall take into consideration the water quality standards of downstream waters and shall ensure that its water quality standards provide for the attainment and maintenance of the water quality standards of downstream waters."

States are required to review applicable WQS at least once every three years and, if appropriate, revise or adopt new WQS (CWA section 303(c)(1)[4] and 40 CFR 131.20). Any new or revised WQS must be submitted to the EPA for review and approval or disapproval (CWA section 303(c)(2)(A) and (c)(3)[5] and 40 CFR 131.20 and 131.21). If the EPA disapproves a state's new or revised WQS, the CWA provides the state 90 days to adopt a revised WQS that meets CWA requirements, and if it fails to do so, the Agency shall promptly propose and then within 90 days promulgate such WQS unless the Agency approves a state replacement WQS first (CWA section 303(c)(3) and (c)(4)[6]).

[4]CWA section 303(c)(1): The Governor of a State or the state water pollution control agency of such State shall from time to time (but at least once each three year period beginning with October 18, 1972) hold public hearings for the purpose of reviewing applicable water quality standards and, as appropriate, modifying and adopting standards. Results of such review shall be made available to the Administrator.

[5]CWA section 303(c)(3): If the Administrator, within sixty days after the date of submission of the revised or new standard, determines that such standard meets the requirements of this chapter, such standard shall thereafter be the water quality standard for the applicable waters of that State. If the Administrator determines that any such revised or new standard is not consistent with the applicable requirements of this chapter, he shall not later than the ninetieth day after the date of submission of such standard notify the State and specify the changes to meet such requirements. If such changes are not adopted by the State within ninety days after the date of notification, the Administrator shall promulgate such standard pursuant to paragraph (4) of this subsection.

[6]CWA section 303(c)(4): The Administrator shall promptly prepare and publish proposed regulations setting forth a revised or new water quality standard for the navigable waters involved – (A) if a revised or new water quality standard submitted by such State under paragraph (3) of this subsection for such waters is determined by the Administrator not to be consistent with the applicable requirements of this Act…The Administrator shall promulgate any revised or new standard… not later than ninety days after he publishes such proposed standards, unless prior to

Under CWA section 304(a), the EPA periodically publishes criteria recommendations for states to consider when adopting water quality criteria for particular pollutants to meet the CWA section 101(a)(2) goals. Where the EPA has published recommended criteria, states should establish numeric water quality criteria based on the Agency's CWA section 304(a) recommended criteria, CWA section 304(a) recommended criteria modified to reflect site-specific conditions, or other scientifically defensible methods (40 CFR 131.11(b)(1)). In all cases criteria must be sufficient to protect the designated use and be based on sound scientific rationale (40 CFR 131.11(a)(1)).

B. The EPA's Disapproval of Oregon's Freshwater Aluminum Criteria

On July 8, 2004, Oregon submitted 89 revised aquatic life criteria for 25 pollutants to the EPA for review under CWA section 303(c) including acute and chronic criteria for aluminum. Many of Oregon's revised criteria were the same as the EPA's national recommended CWA section 304(a) aquatic life criteria at the time. Oregon subsequently submitted revised WQS to the EPA for CWA section 303(c) review on April 23, 2007. The EPA did not take CWA section 303(c) action to approve or disapprove within the statutorily mandated timeline (CWA 303(c)(3)). On May 29, 2008, the U.S. District Court for the District of Oregon entered a consent decree setting deadlines for the EPA to take action under section 303(c) of the CWA on Oregon's July 8, 2004, submission of aquatic life criteria (*Northwest Environmental Advocates v. U.S. EPA*, No. 06-479-HA (D. Or. 2006)). On November 27, 2012, the District Court issued an extension of the applicable deadlines for the EPA's CWA section 303(c) action and amended the

---

such promulgation, such State has adopted a revised or new water quality standard which the Administrator determines to be in accordance with this chapter."

decree to require the Agency to act by January 31, 2013, on Oregon's July 8, 2004, submission of aquatic life criteria, as amended by subsequent submissions by Oregon dated April 23, 2007, and July 21, 2011.

The EPA initially considered approving Oregon's aluminum criteria. Prior to taking a final action on the aquatic life criteria, however, the EPA requested formal consultation with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) on its proposed approval of the State's criteria, consistent with section 7(a)(2) of the Endangered Species Act (ESA). The EPA initiated this consultation on January 14, 2008, by submitting a biological evaluation to NMFS and USFWS, which contained an analysis of the potential effects of the Agency's proposed approval of Oregon's criteria, including criteria for aluminum, on threatened and endangered species in Oregon.

Before receiving a biological opinion from NMFS or USFWS, the EPA realized that the Agency's initial understanding that Oregon's criteria were entirely equivalent to the Agency's 1988 CWA section 304(a) recommended criteria was incorrect. While the EPA's 1988 CWA section 304(a) recommended aluminum criteria "apply at pH values of 6.5–9.0," the Agency later identified a footnote to Oregon's revised aluminum criteria table specifying that Oregon's aluminum criteria applied "to waters with pH values less than 6.6 and hardness values less than 12 mg/L (as $CaCO_3$)." The State had not supplied a scientific rationale to justify the application of the criteria to pH values less than 6.6 and hardness values less than 12 mg/L. As a result, the EPA prepared to disapprove the aluminum criteria. The EPA sent a letter to NMFS and USFWS identifying this change. USFWS had already completed and transmitted its biological opinion to the EPA by that point and the Agency was therefore unable to withdraw the consultation request

for aluminum. USFWS biological opinion (provided to the EPA on July 31, 2012) found that the Agency's proposed approval of Oregon's aquatic life criteria (which at the time of the consultation, was based on the application of the aluminum criteria to waters with pH 6.5 – 9.0) would not jeopardize the continued existence of listed species or result in the destruction or adverse modification of designated critical habitat under USFWS jurisdiction.

NMFS had not yet transmitted its analysis to the EPA at that time, so the Agency sent a letter to NMFS withdrawing its request for consultation on Oregon's acute and chronic aluminum criteria. NMFS acknowledged the EPA's request to withdraw the aluminum criteria from consultation in the biological opinion; however, NMFS did not modify the document to exclude the acute and chronic aluminum criteria. On August 14, 2012, NMFS concluded in its biological opinion that seven of Oregon's revised freshwater criteria would jeopardize the continued existence of endangered species in Oregon for which NMFS was responsible, including acute and chronic aluminum (applied to waters with pH 6.5 - 9.0).[7] NMFS acknowledged the EPA's request to withdraw the aluminum criteria from consultation and indicated that it would await a further request from the EPA regarding the EPA's future actions on Oregon's aluminum criteria.

On January 31, 2013, the EPA disapproved several of the State's revised aquatic life criteria under CWA section 303(c). The EPA disapproved the State's aluminum criteria because the State had not supplied a scientific rationale for the conditions under which the criteria would apply. On April 20, 2015, the EPA was sued for failing to promptly prepare and publish

[7] In addition to acute and chronic aluminum, the other criteria were the freshwater criteria Oregon adopted to protect aquatic life from adverse acute and chronic effects from ammonia and copper, as well as the criterion to prevent adverse acute effects from cadmium.

replacement criteria for seven of the aquatic life criteria disapproved in its January 31, 2013 action (*Northwest Environmental Advocates v. U.S. EPA*, 3:15-cv-00663-BR (D. Or. 2015)). This lawsuit was resolved in a consent decree entered by the District Court on June 9, 2016 which established deadlines for the EPA to address the disapproved aquatic life criteria by either approving replacement criteria submitted by Oregon or by proposing and promulgating federal criteria. The State and the EPA have addressed the disapprovals for five of the criteria subject to the consent decree,[8] but the State has not yet addressed the EPA's 2013 disapproval of its freshwater criteria for acute and chronic aluminum (the sixth and seventh of the disapproved criteria). For the freshwater aluminum criteria, the consent decree originally established deadlines for the EPA to propose federal criteria by December 15, 2017, and to take final action on the proposal by September 28, 2018. On December 5, 2017, the District Court granted an extension of the applicable deadlines for the EPA's proposal and final action. At that time, the consent decree required the EPA to propose federal criteria for the State by March 15, 2018, and to take final action on the proposal by March 27, 2019. On March 1, 2018, the District Court again granted an extension of the consent decree deadlines for the EPA's proposed and final actions. The consent decree required that by March 15, 2019, the EPA will either approve aluminum criteria submitted by Oregon or the EPA will sign a notice of federal rulemaking proposing aluminum criteria for Oregon. The consent decree includes a *force majeure* clause relating to "circumstances outside the reasonable control of EPA [that] could delay compliance with the deadlines specified in this Consent Decree. Such circumstances include…a government

[8]For more information on how the State and the EPA proceeded with regard to the other parameters, the proposed rule for copper and cadmium and final rule for cadmium are included in the docket for this rule.

shutdown." Due to the 35-day government shutdown that occurred between December 22, 2018, and January 25, 2019, the deadline for signing a rule proposal is April 19, 2019. As a result, the EPA is proposing freshwater acute and chronic criteria for aluminum in Oregon in this rule in accordance with CWA section 303(c)(3) and (c)(4) requirements, and consistent with the schedule established in the consent decree. The consent decree also requires that by March 27, 2020, the EPA will either approve aluminum criteria submitted by Oregon or sign a notice of final rulemaking.

C. General Recommended Approach for Deriving Aquatic Life Criteria

The proposed aluminum criteria for Oregon are based on the EPA's 2018 final CWA section 304(a) national recommended freshwater aquatic life criteria for aluminum (Final Aquatic Life Ambient Water Quality Criteria for Aluminum 2018, EPA 822-R-18-001, as cited in 83 FR 65663), which were developed consistent with the EPA's *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses* (referred to as the "Aquatic Life Guidelines").[9] These criteria apply to fresh waters and account for water chemistry characteristics that affect aluminum bioavailability and toxicity. The final 2018 CWA section 304(a) national recommended freshwater aquatic life criteria for aluminum replaced the previous CWA section 304(a) national recommended freshwater aquatic life criteria for aluminum which were issued in 1988.[10] While the earlier criteria were in place at

[9] USEPA. 1985. *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*. U.S. Environmental Protection Agency, Office of Research and Development, Duluth, MN, Narragansett, RI, Corvallis, OR. PB85-227049. https://www.epa.gov/sites/production/files/2016-02/documents/guidelines-water-quality-criteria.pdf

[10] Ambient Water Quality Criteria for Aluminum - 1988, EPA 440/5-86-008, August 1988, https://nepis.epa.gov/Exe/ZyPDF.cgi/2000M5FC.PDF?Dockey=2000M5FC.PDF

the time that EPA disapproved the State's aluminum criteria, the EPA has since updated its CWA 304(a) national recommended criteria and is proposing criteria for Oregon consistent with the new recommendations.

Under the Agency's CWA section 304(a) authority, the EPA develops recommended criteria and methodologies to protect aquatic life and human health for specific pollutants and pollutant parameters. These recommended criteria and methodologies are subject to public comment as well as scientific expert review before the EPA releases them as formal Agency recommendations for states to consider when developing and adopting water quality criteria. The EPA derives criteria for the protection of aquatic life consistent with its Aquatic Life Guidelines. The EPA's Aquatic Life Guidelines describe an objective way to estimate the highest concentration of a substance in water that will not present a significant risk to the aquatic organisms in the water. If a CWA section 304(a) recommendation exists, states may use it as a basis for their WQS or, alternatively, can use a modified version that reflects site-specific conditions, or another scientifically defensible method. 40 CFR 131.11(b).

Numeric criteria derived consistent with the EPA's Aquatic Life Guidelines are expressed as short-term (acute) and long-term (chronic) values. The combination of a criterion maximum concentration (CMC), a one-hour average value, and a criterion continuous concentration (CCC), typically specified as a four-day average value, protects aquatic life from acute and chronic toxicity, respectively. Neither value is to be exceeded more than once in three years. The EPA selected the CMC's one-hour averaging period because high concentrations of certain pollutants can cause death in one to three hours, and selected the CCC's four-day averaging period to prevent increased adverse effects on sensitive life stages. The EPA based its

maximum exceedance frequency recommendation of once every three years on the ability of aquatic ecosystems to recover from the exceedances. An exceedance occurs when the average concentration over the duration of the averaging period is above the CCC or the CMC.

The Aquatic Life Guidelines recommend having toxicity test data from a minimum of eight taxa of aquatic organisms to derive criteria. These taxa are intended to be representative of a wide spectrum of aquatic life, and act as surrogates for untested species. Therefore, the specific test organisms do not need to be present in the water(s) where the criteria will apply. However, a state may develop site-specific criteria using species residing at a local site. In developing site-specific criteria, the EPA recommends that the state maintain similar broad taxonomic representation in calculating the site-specific criteria to ensure protection of the most sensitive species at the site and so the state can demonstrate that the species included in the derivation of the EPA's national criteria recommendation is not present/does not serve as a surrogate for other species at the site.

III. Freshwater Aluminum Aquatic Life Criteria

A. The EPA's CWA section 304(a) National Recommended Freshwater Aluminum Criteria

In December 2018, the EPA published in the Federal Register (83 FR 65663) CWA section 304(a) national recommended freshwater aquatic life criteria for aluminum (referred to in this notice as "final 2018 recommended national criteria"). The published final 2018 recommended national criteria represent the latest scientific knowledge and understanding of the interaction between water chemistry and aluminum toxicity and is a scientifically defensible

method upon which the EPA is basing this CWA action.[11] The final 2018 recommended national criteria are based upon Multiple Linear Regression (MLR) models for fish and invertebrate species that use pH, DOC, and total hardness to quantify the effects of these water chemistry parameters on the bioavailability and resultant toxicity of aluminum to aquatic organisms. The MLR models are then used to normalize the available toxicity data to accurately reflect the effects of the water chemistry (pH, DOC, total hardness) on the toxicity of aluminum to tested species. These normalized toxicity test data are then used in a criteria calculator to generate criteria for specific water chemistry conditions, the water-chemistry-condition-specific CMC and CCC outputs.

The final 2018 recommended national aluminum criteria are expressed as total recoverable metal concentrations. The EPA notes that while the criteria values for metals are typically expressed as dissolved metal concentrations, the current EPA-approved CWA Test Methods[12] for aluminum in natural waters and waste waters measure total recoverable aluminum. The use of total recoverable aluminum may be considered conservative because it includes monomeric (both organic and inorganic) forms, polymeric and colloidal forms, as well as particulate forms and aluminum sorbed to clays. However, toxicity data comparing toxicity of aluminum using total recoverable aluminum and dissolved aluminum demonstrated that toxic effects increased with increasing concentrations of total recoverable aluminum even though the concentration of dissolved aluminum was relatively constant. If aluminum criteria were based on dissolved concentrations, toxicity would likely be underestimated, as colloidal forms and

[11] Aquatic Life Ambient Water Quality Criteria for Aluminum, EPA 822-R-18-001, December 2018, https://www.epa.gov/wqc/2018-final-aquatic-life-criteria-aluminum-freshwater
[12] 40 CFR Part 136.3 and Appendix C

hydroxide precipitates of the metal that can dissolve under natural conditions and become biologically available would not be measured. The criteria document contains more discussion of the studies that informed the choice to use total recoverable aluminum as the basis for the final 2018 recommended national criteria.

The numeric outputs of the final 2018 recommended national criteria models for a given set of conditions will depend on the specific pH, DOC, and total hardness entered into the models. The model outputs (CMC and CCC) for a given set of input conditions are numeric values that would be protective for that set of input conditions. Users of the models can determine outputs in two ways: 1) use the look-up tables provided in the criteria document to find the numeric aluminum CMC and CCC most closely corresponding to the local conditions for pH, DOC, and total hardness or 2) use the provided Aluminum Criteria Calculator V.2.0 to enter the pH, DOC, and total hardness conditions at a specific site to calculate the numeric aluminum CMC and CCC corresponding to the local input conditions.

As with all scientific analyses, there are potential uncertainties in the aluminum criteria approaches to quantifying the toxic effects of aluminum to aquatic life in the environment, particularly when the input parameters fall outside the bounds of the toxicity data underlying the MLR model that supports the criteria calculator. Section 5 of the EPA's final 2018 recommended national criteria document contains more detailed information regarding these uncertainties and the ways the EPA has addressed these uncertainties in developing the criteria document and calculator to ensure the criteria values are protective of applicable aquatic life designated uses. In the case of Oregon waters, an estimated 99% of the State's waters fall within the bounds of the model, and criteria values generated by the calculator are expected be protective of applicable

aquatic life designated uses.[13] In situations where water chemistry for a particular water falls outside the bounds of the model and the results are more uncertain, the State should use its discretion and risk management judgment to determine if additional toxicity data should be generated to further validate toxicity predictions or if it should develop new or modified models for site specific criteria for such locations.

In order to calculate numeric water quality criteria that will protect the aquatic life designated uses of a site over the full range of ambient conditions and toxicity, multiple model outputs will need to be reconciled. The following section describes options for reconciling model outputs.

B. Proposed Acute and Chronic Aluminum Criteria for Oregon's Fresh Waters

To protect aquatic life in Oregon's fresh waters, the EPA proposes aluminum criteria for Oregon that incorporate by reference the calculation of CMC and CCC freshwater aluminum criteria values for a site using the final 2018 recommended national criteria. That means that the proposed CMC and CCC freshwater aluminum criteria values for a site shall be calculated using the 2018 Aluminum Criteria Calculator V.2.0 (*Aluminum Criteria Calculator V.2.0.xlsx*) or a calculator in R[14] or other software package using the same 1985 Guidelines calculation approach and underlying model equations as in the *Aluminum Criteria Calculator V.2.0.xlsx* as established in the final 2018 recommended national criteria. Consistent with the final 2018 recommended national criteria, the EPA proposes to express the CMC as a one-hour average total recoverable aluminum concentration (in µg/L) and the CCC as a four-day average total recoverable

[13] "Analysis of the Protectiveness of Default Ecoregional Aluminum Criteria Values," which can be found in the docket

aluminum concentration (in µg/L), and that the CMC and CCC are not to be exceeded more than once every three years.

The EPA concludes that its final 2018 recommended national criteria represent the latest scientific knowledge on aluminum speciation, bioavailability, and toxicity, and provides predictable and repeatable outcomes. Consistent with the Aquatic Life Guidelines, the final 2018 recommended national criteria protect aquatic life for acute effects (mortality and immobility) as well as chronic effects (growth, reproduction, and survival) at a level of 20% chronic Effects Concentration (EC20) for the 95th percentile of sensitive genera. The final 2018 recommended national criteria are based on a range of toxicological data including data on Oregon threatened and endangered species or their closest taxonomic surrogates. The models on which the criteria are based are therefore appropriate for deriving CMC and CCC values that will protect aquatic life in Oregon. The EPA recommends that commenters consult the docket for the final 2018 recommended national criteria document for information on the science underlying that recommendation [Docket: EPA-HQ-OW-2017-0260].

The EPA requests comment on the proposal to promulgate aluminum criteria for freshwaters in Oregon based on the final 2018 recommended national criteria. The EPA also requests comment on any alternative scientifically defensible criteria calculation methods or models that differ from the final 2018 recommended national criteria. The EPA may consider modifications to the criteria the EPA is proposing for Oregon if warranted based on, among other things, public input, tribal consultation, new data, or evaluations of listed species completed

[14] R is a free software environment for statistical computing that compiles and runs on a wide variety of UNIX platforms, Windows and MacOS. (https://www.r-project.org/)

during ESA consultation, or the results of ESA consultation. The docket for this rule contains more information on possible considerations.

The EPA's proposed rule provides that the criteria calculator, which incorporates pH, DOC, and total hardness as input parameters, be used to calculate protective acute and chronic aluminum criteria values for a site as set forth in the final 2018 recommended national criteria. These calculated criteria values would protect aquatic life under the full range of ambient conditions found at each site, including conditions when aluminum is most toxic given the spatial and temporal variability of the water chemistry at the site. Characterization of the parameters that affect the bioavailability, and associated toxicity, of aluminum is the primary feature to determine protectiveness of aquatic life at a site at any given time. Oregon will need to use ambient water chemistry data (i.e., pH, DOC, total hardness) as inputs to the model in order to determine protective aluminum criteria values for specific sites, unless the State develops default values to be used in implementation. Oregon has the discretion to select the appropriate method to reconcile model outputs and calculate the final criteria values for each circumstance as long as the resulting calculated criteria values shall protect aquatic life throughout the site and throughout the range of spatial and temporal variability, including when aluminum is most toxic. The EPA strongly recommends that the State develop implementation materials to outline its approach.

The EPA suggests three methods that the State could use to reconcile model outputs and calculate criteria values that will result in protection of aquatic life at a site. Alternatively, the State may use its own alternate methods to reconcile outputs to generate protective criteria values. The appropriate method for each circumstance will depend primarily on data availability.

With method one, users identify protective criteria values by selecting one or more individual model outputs based upon spatially and temporally representative site-specific measured values for model inputs. Method one can be used where input datasets are complete and inputs are measured frequently enough to statistically represent changes in the toxicity of aluminum, including conditions under which aluminum is most toxic. In this case, the criteria values are determined by selecting one or more individual outputs that will be protective of aquatic life under the full range of ambient conditions, including conditions of high aluminum toxicity. Method one could be used to also establish criteria values to apply on a seasonal basis where the data are sufficient.

When using method two, users calculate protective criteria values from the lowest 10^{th} percentile of the distribution of individual model outputs, based upon spatially and temporally representative site-specific measured model input values. While the 10^{th} percentile of outputs should be protective in a majority of cases, certain circumstances may warrant use of a more stringent model output (e.g. consideration of listed species). Sufficient data to characterize the appropriate distribution of model outputs are necessary to derive a protective percentile so that the site is protected under conditions of high aluminum toxicity.

In method three, users select the lowest model outputs (the lowest CMC and the lowest CCC) calculated from spatially and temporally representative input datasets that capture the most toxic conditions at a site as the criteria values. Method three should be used where ten or fewer individual model outputs are available.

The EPA solicits comments on these methods and any other scientifically defensible methods that could be used to select criteria values to protect aquatic life by reconciling model

outputs, as well as whether the Agency should promulgate any or all of these suggested methods for Oregon as part of this rulemaking.

Additionally, the EPA solicits comment on promulgating ecoregional default criteria values for aluminum in the final rule to ensure protection of the designated use when available data are insufficient to characterize a site.

The EPA calculated ecoregional default aluminum criteria values from measured pH and measured or estimated DOC and total hardness based on existing concentrations of these variables in waters within each of Oregon's Level III Ecoregions.[15] These defaults are provided in Table 1 below.

Table 1 – Ecoregional Default Aluminum Criteria Values for Each Level III Ecoregion in Oregon

Level III Ecoregion	CMC (µg/L)	CCC (µg/L)
1 Coast Range	680	350
3 Willamette Valley	870	440
4 Cascades	600	350
9 Eastern Cascades Slopes and Foothills	1100	600
10 Columbia Plateau	1400	840
11 Blue Mountains	1300	780
12 Snake River Plain	3000	1200
78 Klamath Mountains	1300	780
80 Northern Basin and Range	1400	790

[15] USEPA. 2013. U.S. Environmental Protection Agency, 2013, Level III ecoregions of the continental United States: Corvallis, Oregon, U.S. EPA - National Health and Environmental Effects Research Laboratory, map scale 1:7,500,000, http://www.epa.gov/wed/pages/ecoregions/level_iii_iv.h. Omernik, J.M. 1987. Ecoregions of the conterminous United States. Annals of the Association of American Geographers 77:118-125.

To calculate ecoregional default criteria values, the EPA relied on publicly available data (U.S. Geological Survey (USGS) National Water Information System (NWIS); Oregon DEQ) [16] collected in accordance with quality assurance procedures established by each collecting entity. From 2001 – 2015, a total of 19,274 samples across all Level III Ecoregions in Oregon provided adequate data to calculate corresponding acute and chronic criteria magnitudes. Adequate data to calculate criteria magnitudes included samples with paired measurements of pH, DOC, and total hardness, where available (1,689 samples). When paired measurements of pH, DOC, and total hardness were not available, the EPA paired empirical pH measurements with DOC and/or total hardness data estimated from measured Total Organic Carbon (TOC) and specific conductivity, respectively (17,585 samples). The EPA used DOC and total hardness estimates to expand available data and better represent the potential distribution of criteria magnitudes across Level III Ecoregions in Oregon. The calculation of the default criteria values presented here incorporates the EPA's effort to closely follow Oregon DEQ's approach to developing default DOC input values for Oregon's copper aquatic life criteria rule. More information on the data sources and transformations is available in the docket for this proposal. The EPA then calculated the 10^{th} percentile CMC and CCC for each ecoregion from the distributions of model outputs. The EPA selected the 10^{th} percentile as a statistic that represents a lower bound of spatially and temporally variable conditions that will be protective in the majority of cases.

The EPA solicits comments on the Agency's use of the 10^{th} percentile of the ecoregional model output distributions of the measured and transformed data to derive ecoregional default

[16] USGS NWIS, https://waterdata.usgs.gov/nwis. Oregon Wastewater Permits Database, http://www.deq.state.or.us/wq/sisdata/sisdata.asp.

aluminum criteria values. The EPA also solicits comment on whether a different percentile of the model output distribution should be used, or if combined ecoregional (georegional) distributions of outputs should be used instead of the Level III ecoregional distributions to derive the defaults. Additional information on the inputs used to derive outputs and how the ecoregional default criteria values were selected using percentiles of the model output distribution is provided in the document entitled "Analysis of the Protectiveness of Default Ecoregional Aluminum Criteria Values" which can be found in the docket. The EPA solicits comment on alternative methods to developing default ecoregional criteria values, as presented in the Analysis of the Protectiveness of Default Ecoregional Aluminum Criteria Values. The EPA solicits comment on the inclusion of such default criteria values in the final rule. The EPA also solicits comment on whether there are alternative approaches to ensure that protective model outcomes can be identified for all waterbodies using the proposed criteria, and to ease implementation.

In addition to soliciting comment on including default ecoregional criteria, the EPA also solicits comment on whether the Agency should include default DOC input values in the final rule. Among the input parameters, ambient data are least likely to be available for DOC. DOC influences aluminum toxicity unidirectionally. Higher levels of DOC provide more mitigation of aluminum toxicity. For water bodies for which sufficient pH and total hardness data are available, but DOC data are not available, the EPA solicits comment on whether to promulgate in the final rule the default DOC input values provided in Table 2. If the EPA were to promulgate both the default ecoregional aluminum criteria values provided in Table 1 and the default DOC input values in Table 2, in addition to the EPA's the calculation of CMC and CCC freshwater aluminum criteria values for a site using the final 2018 recommended national

criteria, the State could choose to use the default ecoregional aluminum criteria values or use the default DOC input values in Table 2 and calculate criteria. The default DOC input values could be used in combination with measured data for pH and total hardness to calculate aluminum criteria outputs that are more specific to site conditions than the ecoregional default criteria values provided in Table 1. The EPA derived the default DOC input values as the 15^{th} or 20^{th} percentile of the distribution of data from a compilation of high quality data available for Oregon's georegions (aggregated ecoregions with similar water quality characteristics), compiled by Oregon DEQ and the US Geological Survey (see the "Analysis of the Protectiveness of Default Dissolved Organic Carbon Options," which can be found in the docket.) The calculation of the default DOC input values presented in this preamble reflects the EPA's effort to closely follow Oregon DEQ's approach to developing default DOC input values for Oregon's copper aquatic life criteria rule. The EPA selected the 15^{th} or 20^{th} percentiles as low-end percentile of georegional DOC concentrations as a statistic that represents a lower bound of spatially and temporally variable conditions that will be protective in the majority of cases. The use of default DOC input values would ensure protection of the designated use when site-specific ambient DOC inputs are unavailable. Additional information on the derivation of the default DOC input values is provided in the Analysis of the Protectiveness of Default Dissolved Organic Carbon Options, which can be found in the docket.

The EPA solicits comments on the Agency's use of the 15^{th} and 20^{th} percentiles of the georegional distributions of the available US Geological Survey and Oregon DEQ DOC data to derive default DOC input values for calculating aluminum outputs when DOC data are unavailable. More information on the data and input analysis is available in the Analysis of the

Protectiveness of Default Dissolved Organic Carbon Options. The EPA solicits comment on alternative methods to developing default DOC input values, as presented in the Analysis of the Protectiveness of Default Dissolved Organic Carbon Options. The EPA also solicits comments on using default DOC input values based on a different percentile, such as the 5th or 25th percentile of the distribution (or another protective percentile within that range), as well as using default DOC values for ecoregions rather than georegions.

Table 2 – Default DOC Input Values for Each Georegion in Oregon

EPA Ecoregion	ODEQ Georegion	Percentile	DOC (mg/L)
Willamette Valley (03)	Willamette	15th	0.83
Coast Range (01)	Coastal	20th	0.83
Klamath Mountains (78)			
Cascades (04)	Cascades	20th	0.83
Eastern Cascades Slopes (09)	Eastern	15th	0.83
Columbia Plateau (10)			
Northern Basin and Range (80)			
Blue Mountains (11)			
Snake River Plain (12)			
NA	Columbia River	20th	1.39

The EPA is not considering the development of default input values for pH and total hardness because the relationship between these parameters and aluminum toxicity is not unidirectional, which means that a given percentile of pH and total hardness may be conservative in some circumstances but not others (see the EPA's final 2018 recommended national criteria document for more information). Also, data for these parameters are more likely to be available (Analysis of the Protectiveness of Default Dissolved Organic Carbon Options). Given the complex nature of aluminum toxicity and how it dynamically varies with water chemistry (especially with pH and total hardness), it is not possible to calculate a universally protective set

of water chemistry conditions in cases where the water chemistry is unknown. For example, total hardness at low pH tends to increase criteria magnitudes whereas total hardness at high pH tends to reduce criteria magnitudes. That relationship is also dependent on DOC concentration (see final 2018 recommended national criteria document for further details). Therefore, measured pH and total hardness data are essential to calculate reliable aluminum criteria.

C. Implementation of Proposed Freshwater Acute and Chronic Aluminum Criteria in Oregon

This proposal, if finalized, would likely be the first occasion that a state or authorized tribe would have aluminum criteria based on the final 2018 recommended national criteria. The EPA understands that states have certain flexibility under 40 CFR part 131 with how they implement water quality standards such as these aluminum criteria. The EPA is recommending possible approaches below for the State's consideration and for public comment. The State may choose to use these recommendations or to implement the final aluminum criteria in other ways that are consistent with 40 CFR part 131.

For NPDES permitting, monitoring and assessment, and total maximum daily load (TMDL) development purposes, the State can use different methods to process model outputs in order to generate criteria values for a specific site, as discussed in section III.B. Because of this flexibility, the State should ensure public transparency and predictable, repeatable outcomes. When Oregon calculates aluminum criteria values, the EPA recommends that the State make each site's ambient water chemistry data, including the inputs used in the aluminum criteria value calculations, resultant criteria values, and the geographic extent of the site, publicly available on the State's website.

Where a NPDES permitted discharge is present, the EPA recommends that Oregon ensure that sufficiently representative ambient pH, DOC, and total hardness data are collected to have confidence that conditions in the water body are being adequately captured both upstream of and downstream from the point of discharge. The State should use the criteria calculated values that will be protective at the most toxic conditions to develop water quality-based effluent limits (WQBELs). Input parameter values outside the empirical ranges of the MLR models (as identified in sections 2.7.1 and 5.3.6 of the final 2018 recommended national criteria document) may indicate other potential toxicity issues at a site. When input parameters fall outside those stated ranges, the EPA makes the following recommendations that the State could implement for the protection of designated uses. NPDES permit conditions could include: 1) additional monitoring approaches such as Whole Effluent Toxicity (WET) testing or biological monitoring; and 2) increased frequency of input parameter and aluminum concentration monitoring. Once criteria values protective of the most toxic conditions are calculated, critical low flows for the purposes of dilution of the pollutant concentration in effluent, combined with critical effluent concentrations of the pollutant, may be used to establish whether there is reasonable potential for the discharge to cause or contribute to an excursion above the applicable criteria and therefore, a need to establish WQBELs, per the EPA's *NPDES Permit Writers' Manual*.[17] Critical low flows and mixing zones for NPDES permitting purposes are further discussed in Section IV.

In addition, for transparency the EPA recommends that Oregon describe in its NPDES permit fact sheets or statements of basis how the criteria values were calculated, including the

[17] USEPA. 2010. *NPDES Permit Writers' Manual*. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA-833-K-10-001. September 2010.

input data or summary of input data and source of data. The EPA also recommends that the fact sheets or statements of basis include descriptions of how the criteria values were used to determine whether there is reasonable potential for the discharge to cause or contribute to an excursion above the criteria ("reasonable potential") and if so, how they were used to derive WQBELs. Similarly, for TMDLs, the EPA recommends that Oregon describe in the TMDL document how the criteria values were calculated and used to determine TMDL targets. In the assessment and impaired waters listing context, the EPA recommends that Oregon describe how it calculated criteria values and the process used to make water quality attainment decisions in the assessment methodology for the Integrated Report.[18]

The water quality conditions that determine the bioavailability and toxicity of metals, including aluminum, are unique to each site and can vary widely in both space and time, changing with biological activity, flow, geology, human activities, watershed landscape, and other features of the water body. It is important that the State capture the spatial and temporal variability at sites, and consider establishment of site boundaries carefully. As mentioned above in Section III. B., Oregon should ensure that sufficiently representative data are collected for the model's input parameters (pH, DOC, and total hardness) to have confidence that the most toxic conditions are adequately characterized. To accomplish this, Oregon may evaluate the input parameter data and resultant criteria values that are calculated over time for different flows and

[18] The Integrated Report is intended to satisfy the listing requirements of Section 303(d) and the reporting requirements of Sections 305(b) and 314 of the Clean Water Act (CWA).

seasons through the use of appropriate analytical methods, such as a Monte Carlo[19] simulation or another analytical tool. Also, when defining a site to which to apply criteria for aluminum, the EPA recommends that Oregon consider that metals are generally persistent, so calculating a criterion value using input parameter values from a location at or near the discharge point could result in a criterion value that is not protective of areas that are outside of that location. For example, if downstream waters have different pH conditions that might increase aluminum toxicity downstream from the facility, the permit should account for that. The EPA also recommends that Oregon consider that as the size of a site increases, the spatial and temporal variability is likely to increase; thus, more water samples may be required to adequately characterize the entire site.

Substantial changes in a site's ambient input parameter concentrations will likely affect aluminum toxicity and the relevant criteria values for aluminum at that site. In addition, as a robust, site-specific dataset is developed with regular monitoring, criteria values can be updated to more accurately reflect site conditions. Therefore, the EPA recommends that Oregon revisit each water body's aluminum criteria values periodically (for example, with each CWA section 303(d) listing cycle or WQS triennial review) and re-run the models when changes in water chemistry are evident or suspected at a site and as additional monitoring data become available. This will ensure that the criteria values accurately reflect the toxicity of aluminum and maintain protective values.

[19] Given sufficient data, Monte Carlo simulation or equivalent analysis such as bootstrapping can be used to determine the probability of identifying the most toxic time period for a series of monitoring scenarios. From such an analysis, the State can select the appropriate monitoring regime.

The State may use multiple methods to calculate site-specific criteria values in order to implement the criteria for CWA purposes. For example, the State could use Method one, after collecting sufficiently representative model input data for all parameters, as well as corresponding ambient aluminum measurements as described in section III.B, to determine whether the paired aluminum measurements exceed the calculated model output magnitude more than once in three years for assessment purposes. Alternatively, the State could use the output dataset to select a single CMC and a single CCC that are sufficiently protective at the most toxic conditions for the purposes of permitting an aluminum discharge or establishing a TMDL. In contrast, using Methods two or three, the State could calculate a single numeric expression of the criteria that would be the basis for all monitoring, assessment, TMDL, and NPDES permitting purposes.

D. Incorporation by Reference

The Agency is proposing that the final EPA regulatory text incorporate one EPA document by reference. In accordance with the requirements of 1 CFR 51.5, the EPA is proposing to incorporate by reference the EPA's Final Aquatic Life Ambient Water Quality Criteria for Aluminum 2018 (EPA 822-R-18-001), discussed in Section III.A of this preamble. Incorporating this document by reference will allow the State to access all of the underlying information and data the EPA used to develop the final 2018 recommended national criteria. With access to this information, the State will have the flexibility to create its own version of the calculator built upon the underlying peer-reviewed model. The EPA has made, and will continue to make, this document generally available electronically through www.regulations.gov at the

docket associated with this rulemaking and at https://www.epa.gov/wqc/aquatic-life-criteria-aluminum.

IV. Critical Low Flows and Mixing Zones

To ensure that the proposed criteria are applied appropriately to protect Oregon's aquatic life uses, the EPA recommends Oregon use critical low flow values consistent with longstanding EPA guidance[20] when calculating the available dilution for the purposes of determining the need for and establishing WQBELs in NPDES permits. Dilution is one of the primary mechanisms by which the concentrations of contaminants in effluent discharges are reduced following their introduction into a receiving water. During a low flow event, there is less water available for dilution, resulting in higher instream pollutant concentrations. If criteria are implemented using inappropriate critical low flow values (i.e., values that are too high), the resulting ambient concentrations could exceed criteria values when low flows occur.[21]

The EPA notes that in ambient settings, critical low flow conditions used for NPDES permit limit derivation purposes may not always correspond with conditions of highest aluminum bioavailability and toxicity. The EPA's *NPDES Permit Writers' Manual* describes the importance of characterizing effluent and receiving water critical conditions, because if a discharge is controlled so that it does not cause water quality criteria to be exceeded in the receiving water under critical conditions, then water quality criteria should be attained under all

[20] USEPA. 1991. *Technical Support Document For Water Quality-based Toxics Control*. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA/505/2-90-001. http://www3.epa.gov/npdes/pubs/owm0264.pdf.

[21] USEPA. 2014. *Water Quality Standards Handbook-Chapter 5: General Policies*. U.S. Environmental Protection Agency, Office of Water. Washington, D.C. EPA-820-B-14-004. http://www.epa.gov/sites/production/files/2014-09/documents/handbook-chapter5.pdf.

other conditions.[22] The State's implementation procedures should clearly define how the State will consider critical conditions related to critical low flows and the greatest aluminum bioavailability and toxicity to ensure that reasonable potential is assessed and, if needed, appropriate permit limits are established that fully protect aquatic life uses under the full range of ambient conditions.

The EPA's March 1991 *Technical Support Document for Water Quality-based Toxics Control* recommends two methods for calculating acceptable critical low flow values: the traditional hydrologically-based method developed by the USGS and a biologically based method developed by the EPA.[23] The hydrologically-based critical low flow value is determined statistically, using probability and extreme values, while the biologically-based critical low flow is determined empirically using the specific duration and frequency associated with the criterion. For the acute and chronic aluminum criteria, the EPA recommends the following critical low flow values, except where modeling demonstrates that the most significant critical conditions occur at other than low flow:

Acute Aquatic Life (CMC): 1Q10 or 1B3

Chronic Aquatic Life (CCC): 7Q10 or 4B3

Using the hydrologically-based method, the 1Q10 represents the lowest one-day average flow event expected to occur once every ten years, on average, and the 7Q10 represents the lowest seven-consecutive-day average flow event expected to occur once every ten years, on average.

[22] The same principle holds for developing a TMDL target.
[23] USEPA. 1991. *Technical Support Document For Water Quality-based Toxics Control*. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA/505/2-90-001. http://www3.epa.gov/npdes/pubs/owm0264.pdf.

Using the biologically-based method, 1B3 represents the lowest one-day average flow event expected to occur once every three years, on average, and 4B3 represents the lowest four-consecutive-day average flow event expected to occur once every three years, on average.[24] The EPA seeks comment on whether the Agency should promulgate these acute and chronic critical low flow values in the final rule or should promulgate alternative critical low flow values.

The criteria in this proposed rule, once finalized, must be attained at the point of discharge unless Oregon authorizes a mixing zone. Where Oregon authorizes a mixing zone, the criteria would apply at the locations allowed by the mixing zone (i.e., the CMC would apply at the defined boundary of the acute mixing zone and the CCC would apply at the defined boundary of the chronic mixing zone).[25]

V. Endangered Species Act

The EPA's final 2018 recommended national criteria for aluminum represent the best available science. The EPA proposes to promulgate acute and chronic aquatic life aluminum criteria for Oregon based on the EPA's final 2018 recommended national criteria. The EPA is proposing these criteria pursuant to CWA section 303(c)(4)(A), as described in Section II.A of this document, and in compliance with the consent decree described in Section II.B of this document. Section 7(a)(2) of the ESA requires that each Federal Agency ensure that any action authorized, funded, or carried out by such Agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat. The EPA has initiated ESA consultation on this proposed action

[24] *See* USEPA, 2014.
[25] *See* USEPA, 1991.

and will continue to work closely with NMFS and USFWS to ensure that any acute and chronic aluminum criteria that the Agency finalizes are not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat in Oregon. The EPA will continue ESA consultation with NMFS and USFWS while the Agency develops final aluminum criteria for Oregon that are consistent with the requirements of ESA section 7(a)(2), as well as with the EPA's Aquatic Life Guidelines.

VI. Under What Conditions Will Federal Standards Not Be Promulgated or Be Withdrawn?

Under the CWA, Congress gave states and authorized tribes primary responsibility for developing and adopting WQS for their navigable waters (CWA section 303(a)–(c)). Although the EPA is proposing aluminum aquatic life criteria for Oregon's fresh waters to remedy the Agency's 2013 disapproval of Oregon's 2004 criteria, Oregon continues to have the option to adopt and submit to the Agency acute and chronic aluminum criteria for the State's fresh waters consistent with CWA section 303(c) and the Agency's implementing regulation at 40 CFR part 131. The EPA encourages Oregon to expeditiously adopt protective aluminum aquatic life criteria. Consistent with CWA section 303(c)(4), if Oregon adopts and submits aluminum aquatic life criteria, and the EPA approves such criteria before finalizing this proposed rule, the Agency would not proceed with the promulgation for those waters and/or pollutants for which the Agency approves Oregon's criteria. Under those circumstances, federal promulgation would no longer be necessary to meet the requirements of the Act.

If the EPA finalizes this proposed rule, and Oregon subsequently adopts and submits aluminum aquatic life criteria, the Agency would approve the State's criteria if those criteria

meet the requirements of section 303(c) of the CWA and the Agency's implementing regulation at 40 CFR part 131. If the EPA's federally-promulgated criteria are more stringent than the State's criteria, the EPA's federally-promulgated criteria are and will be the applicable water quality standard for purposes of the CWA until the Agency withdraws those federally-promulgated standards. The EPA would expeditiously undertake such a rulemaking to withdraw the federal criteria if and when Oregon adopts, and the Agency approves corresponding criteria that meet the requirements of section 303(c) of the CWA and the EPA's implementing regulation at 40 CFR part 131. After the EPA's withdrawal of federally promulgated criteria, the State's EPA-approved criteria would become the applicable criteria for CWA purposes. If the State's adopted criteria are as stringent or more stringent than the federally-promulgated criteria, then the State's criteria would become the CWA applicable WQS upon the EPA's approval (40 CFR 131.21(c)).

VII. Alternative Regulatory Approaches and Implementation Mechanisms

The federal WQS regulation at 40 CFR part 131 provides several tools that Oregon has available to use at its discretion when implementing or deciding how to implement these aquatic life criteria, once finalized. Among other things, the EPA's WQS regulation: (1) specifies how states and authorized tribes establish, modify, or remove designated uses (40 CFR 131.10); (2) specifies the requirements for establishing criteria to protect designated uses, including criteria modified to reflect site-specific conditions (40 CFR 131.11); (3) authorizes and provides regulatory guidelines for states and authorized tribes to adopt WQS variances that provide time to achieve the applicable WQS (40 CFR 131.14); and (4) allows states and authorized tribes to authorize the use of compliance schedules in NPDES permits to meet WQBELs derived from the

applicable WQS (40 CFR 131.15). Each of these approaches are discussed in more detail in the next sections. Whichever approach a state pursues, however, all NPDES permits would need to comply with the EPA's regulations at 40 CFR 122.44(d)(1)(i).

A. Designating Uses

The EPA's proposed aluminum criteria apply to fresh waters in Oregon where the protection of fish and aquatic life is a designated use (see Oregon Administrative Rules at 340-041-8033, Table 30). The federal regulation at 40 CFR 131.10 provides regulatory requirements for establishing, modifying, and removing designated uses. If Oregon removes designated uses such that no fish or aquatic life uses apply to any particular water body affected by this rule and adopts the highest attainable use,[26] the State must also adopt criteria to protect the newly designated highest attainable use consistent with 40 CFR 131.11. It is possible that criteria other than the federally promulgated criteria would protect the highest attainable use. If the EPA finds removal or modification of the designated use and the adoption of the highest attainable use and criteria to protect that use to be consistent with CWA section 303(c) and the implementing regulation at 40 CFR part 131, the Agency would approve the revised WQS. The EPA would then undertake a rulemaking to withdraw the corresponding federal WQS for the relevant water(s).

B. WQS Variances

[26] If a state or authorized tribe adopts a new or revised WQS based on a required use attainability analysis, then it must also adopt the highest attainable use (40 CFR 131.10(g)). Highest attainable use is the modified aquatic life, wildlife, or recreation use that is both closest to the uses specified in section 101(a)(2) of the Act and attainable, based on the evaluation of the factor(s) in 40 CFR 131.10(g) that preclude(s) attainment of the use and any other information or analyses that were used to evaluate attainability. There is no required highest attainable use where the state demonstrates the relevant use specified in section 101(a)(2) of the Act and sub-categories of such a use are not attainable (see 40 CFR 131.3(m)).

Oregon's WQS provide sufficient authority to apply WQS variances when implementing federally promulgated criteria for aluminum, as long as such WQS variances are adopted consistent with 40 CFR 131.14 and submitted to the EPA for review under CWA section 303(c). Federal regulations at 40 CFR 131.3(o) define a WQS variance as a time-limited designated use and criterion, for a specific pollutant or water quality parameter, that reflects the highest attainable condition during the term of the WQS variance. WQS variances adopted in accordance with 40 CFR 131.14 (including a public hearing consistent with 40 CFR 25.5) provide a flexible but defined pathway for states and authorized tribes to comply with NPDES permitting requirements, while providing dischargers with the time they need to meet a WQS that is not immediately attainable but may be in the future. When adopting a WQS variance, states and authorized tribes specify the interim requirements of the WQS variance by identifying a quantitative expression that reflects the highest attainable condition (HAC) during the term of the WQS variance, establishing the term of the WQS variance, and describing the pollutant control activities expected to occur over the specified term of the WQS variance. WQS variances provide a legal avenue by which NPDES permit limits can be written to comply with the WQS variance rather than the underlying WQS for the term of the WQS variance. If dischargers are still unable to meet the WQBELs derived from the applicable WQS once a WQS variance term is complete, the regulation allows the State to adopt a subsequent WQS variance if it is adopted consistent with 40 CFR 131.14. The EPA is proposing a criterion that applies to use designations that Oregon has already established. Oregon's WQS regulations currently include the authority to use WQS variances when implementing criteria, as long as such WQS variances are adopted

consistent with 40 CFR 131.14. Oregon may use the EPA-approved WQS variance procedures when adopting such WQS variances.

C. NPDES Permit Compliance Schedules

The EPA's regulations at 40 CFR 122.47 and 40 CFR 131.15 address how permitting authorities can use permit compliance schedules in NPDES permits if dischargers need additional time to undertake actions like facility upgrades or operation changes to meet their WQBELs based on the applicable WQS. The EPA's regulation at 40 CFR 122.47 allows permitting authorities to include compliance schedules in their NPDES permits, when appropriate and where authorized by the state, in order to provide a discharger with additional time to meet its WQBELs implementing applicable WQS. The EPA's regulation at 40 CFR 131.15 requires that states that intend to allow the use of NPDES permit compliance schedules adopt specific provisions authorizing their use and obtain EPA approval under CWA section 303(c) to ensure that a decision to allow permit compliance schedules is transparent and allows for public input (80 FR 51022, August 21, 2015). Oregon already has an EPA-approved provision authorizing the use of permit compliance schedules (see OAR 340-041-0061), consistent with 40 CFR 131.15. That State provision is not affected by this rule. Oregon is authorized to grant permit compliance schedules, as appropriate, based on the federal criteria, as long as such permit compliance schedules are consistent with the EPA's permitting regulation at 40 CFR 122.47.

VIII. Economic Analysis

The proposed criteria would serve as a basis for development of new or revised NPDES permit limits in Oregon for regulated dischargers found to have reasonable potential to cause or

contribute to an excursion of the proposed aluminum criteria. However, the EPA cannot anticipate how Oregon would chose to calculate criteria values based on the proposed criteria and what impact they would have on dischargers. Oregon also has NPDES permitting authority, and retains discretion in implementing standards. While Oregon may choose to incorporate the ecoregional default criteria values (from Table 1) directly into certain permits, it has other options available to it as well as discussed in section III.C. For example, the State can calculate criteria values using ambient data. Furthermore, if the State calculates criteria values using ambient data in the model, the State can choose its own method of reconciling multiple outputs. Despite this discretion, if Oregon determines that a permit is necessary, such permit would need to comply with the EPA's regulations at 40 CFR 122.44(d)(1)(i). Still, to best inform the public of the potential impacts of this proposed rule, the EPA made some assumptions to evaluate the potential costs associated with State implementation of the EPA's proposed criteria. The EPA chose to evaluate the expected costs associated with State implementation of the Agency's proposed aluminum criteria based on available information. This analysis is documented in *Economic Analysis for the Proposed Rule: Aquatic Life Criteria for Aluminum in Oregon*, which can be found in the record for this rulemaking. The EPA seeks public comment on all aspects of the economic analysis including, but not limited to, its assumptions relating to the baseline criteria, affected entities, implementation, and compliance costs.

For the economic analysis, the EPA assumed that in the baseline, Oregon fully implements existing water quality criteria (i.e., "baseline criteria") and then estimated the incremental impacts for compliance with the aluminum criteria in this proposed rule. As Oregon has not promulgated numeric aquatic life criteria for aluminum, the "baseline criteria" for

aluminum are assumed to be the State's narrative criteria. Because the baseline criteria are narrative, and because few data on aluminum NPDES discharges and assessments are available, there is uncertainty regarding how to numerically express the baseline criteria. The EPA therefore, assumed that the narrative criteria are fully implemented, and in the absence of information to the contrary, the EPA had to make assumptions based on the available data to determine how to attribute costs to comply with the numeric aluminum criteria in this proposed rule. For point source costs, the EPA assumed any NPDES-permitted facility that discharges aluminum and is found to have reasonable potential would be subject to effluent limits and would incur compliance costs if it chose to continue operating. The types of affected facilities include industrial facilities, drinking water treatment plants, and publicly owned treatment works (POTWs) discharging sanitary wastewater to surface waters (i.e., point sources). For nonpoint sources, those that contribute aluminum loadings to waters that would be considered impaired for aluminum under the proposed criteria may incur incremental costs for additional best management practices (BMPs). It is possible that the narrative criteria are not being fully implemented; in that case, some of the impacts and costs assumed to be attributed to this proposal in this analysis would actually be baseline costs, and thus the costs here would be overestimated.

A. Identifying Affected Entities

To evaluate potential costs to NPDES-permitted facilities and the potential for impaired waters, the EPA used the ecoregional default criteria values, calculated from the 10^{th} percentile of the distribution of individual MLR-based calculated criteria outputs for each of Oregon's nine Level III ecoregions, as provided in Table 1. EPA is not proposing these default values as a

component of Oregon's aluminum criteria, but is soliciting comment on whether EPA should include them in Oregon's final criteria. For the purposes of this economic analysis, the EPA refers to the ecoregional default criteria values as the "economic analysis criteria." The economic analysis criteria are likely different from and possibly lower (more stringent) than the actual site-specific criteria that Oregon would calculate using ambient data from each water body and therefore, may be conservative cost estimates. As described earlier in this proposed rule, the EPA recommends that Oregon collect sufficiently representative ambient data to calculate the most accurate and protective aluminum criteria values.

The EPA identified one point source facility, a major discharger, with sufficient data for evaluation[27] of reasonable potential and therefore potentially be affected by the rule. The EPA also identified one minor facility with aluminum effluent limits, however, aluminum effluent data are not available in ICIS-NPDES for the EPA to readily evaluate this facility. The EPA did not include facilities covered by general permits in its analysis because none of the general permits reviewed include specific effluent limits or monitoring requirements for aluminum. Because of the lack of data for aluminum in point source discharges in the State, along with the potential incremental impairments described below, the EPA took additional steps to identify potential costs for point source dischargers that utilize aluminum in their operations. These steps focused on facilities in specific industries that could be affected by the rule: aluminum anodizing facilities, drinking water treatment plants, and wastewater treatment facilities. For these facilities, the EPA considered both additional controls and product substitution. This analysis

[27] The EPA initially used ICIS-NPDES to identify facilities in Oregon whose NPDES permits contain effluent limitations and/or monitoring requirements for aluminum. The EPA obtained facility-specific information from NDPES permits and fact sheets.

supplements the standard analysis that uses data from specific facilities in Oregon to determine potential point source costs based on reasonable potential to cause or contribute to an exceedance of a WQS. See the Economic Analysis for more details.

B. Method for Estimating Costs

For the one NPDES-permitted facility with available data, the EPA evaluated the reasonable potential to exceed the economic analysis criteria. There was no reasonable potential to exceed the economic analysis criteria and therefore no basis for estimating projected effluent limitations based on reasonable potential analysis.

For the supplemental point source analysis, the EPA evaluated potential costs to three types of facilities that would incur costs under the proposed rule if they were found to have reasonable potential and were therefore subject to effluent limits. First, several aluminum anodizing facilities discharge to local publicly owned treatment works (POTWs). The proposed criteria could result in the POTWs establishing local (pretreatment) limits for these aluminum anodizers. The EPA identified two options for potential treatment upgrades that may be required (countercurrent cascade rinsing and countercurrent cascade rinsing plus chemical precipitation/flocculation). The EPA developed cost estimates for each of those. Second, drinking water treatment plants often use alum in treatment processes as a coagulant, and discharge filter backwash that may contain aluminum. The proposed criteria may result in the State's drinking water systems needing to reduce aluminum concentrations in their wastewater discharges. For this analysis, the EPA assumed that all water treatment plants in Oregon that discharge directly to surface waters currently use alum as a coagulant and estimated costs to the plants if they were to reduce their wastewater discharges of aluminum and divert the aluminum

to sludge disposal. If these assumptions are incorrect, the costs estimated here would be either an overestimate or an underestimate. Third, wastewater treatment facilities often use chemical precipitation followed by filtration to remove phosphorus from the wastewater prior to discharge. The EPA examined the wastewater treatment facilities in the State that have permit limits for total phosphorus and therefore may use alum for phosphorus removal. The EPA assumed that these facilities would substitute ferrous coagulants for the aluminum coagulants, and estimated costs for that change.

If waters were to be identified as impaired when applying the economic analysis criteria, resulting in the need for TMDL development, there could be some costs to nonpoint sources of aluminum. Using available ambient monitoring data, the EPA compared total recoverable aluminum concentrations to the economic analysis criteria, and identified waterbodies that are potentially impaired. There are 826 samples across 260 stations. Note that the EPA was not able to identify BMPs for aluminum and therefore cannot make an estimate of potential nonpoint source costs associated with these discharges.

C. Results

The NPDES-permitted facility for which monitoring data are available does not have reasonable potential to exceed the economic analysis criteria. Therefore, there are no data indicating that point source dischargers will incur annual costs to comply with the proposed rule.

For the supplemental point source analysis, the EPA made both a low-end and a high-end estimate for the costs to the State's 12 aluminum anodizers, based on two different technology upgrade options. Without information to know which option each facility would choose if they had to upgrade, the EPA estimated that if all 12 facilities upgraded to countercurrent cascade

rinsing technology, the total annual cost would be $51,600 (at a 3% discount rate over the 20-year life of the capital equipment). On the high end, the EPA estimated that if all 12 facilities upgraded to countercurrent cascade rinsing technology plus chemical precipitation and settling, the total annual cost would be $5.77 million (at a 3% discount rate over the 20-year life of the capital equipment). For the 57 drinking water treatment plants assumed to use alum as a coagulant, the EPA estimated the annual costs for chemical and sludge disposal at $1.35 million (no additional capital equipment). For the four wastewater treatment facilities currently using alum as a coagulant, the EPA found that if they were to switch to a ferrous coagulant, they would realize $0.64 million in annual cost savings. Although the analysis would suggest potential cost savings, the EPA assumes that, in absence of the proposed rule, the facilities would already be using the lowest cost treatment. Therefore, the EPA estimated that the rule would result in no change in cost for these facilities. Because these estimates are based on assumed need for control strategies simply based on the projected presence of aluminum in various operations, with no specific knowledge of actual levels in any waste stream, these costs are highly speculative.

Based on available monitoring data and the economic analysis criteria, water quality may be impaired for 53 stations. Without additional information about how Oregon might categorize water bodies for the purpose of defining reaches impaired for aluminum, the EPA assumed that the 53 stations represent an upper bound on the number of incremental TMDLs. It may be possible to combine TMDLs for common water bodies (i.e., if the State decides to combine development of TMDLs for a class of waters with impairments for similar causes) and reduce development costs, though the EPA has no way to know in advance whether the State will do this, or for how many waters. If there is water quality impairment under the economic analysis

criteria, there could be costs for TMDL development. The EPA (2001) reports that the average cost to develop a TMDL for a single source of impairment ranges from $27,000 to $29,000 (in 2000 dollars) or $37,000 to $40,000 when updated to 2017 dollars.[28] TMDL development costs are one-time costs that the EPA assumed would be uniformly spread out over several years (e.g., a 10-year time period). Spread uniformly over a 10-year period, the annual average costs for TMDL development would range from $196,000 to $212,000 for the development of 53 TMDLs.

Combining the potential costs for point source compliance from the supplemental point source analysis with the incremental cost of TMDL development, the total cost annualized at a 3% discount rate would range from $1.6 million to $7.3 million for the first 10 years. The cost would be slightly less in subsequent years after the TMDL development is complete.[29] The fully annualized costs of the rule[30] are $1.5 million to $7.2 million at a 3% discount rate; results at the, 7% discount rate are included in the *Economic Analysis for the Proposed Rule: Aquatic Life Criteria for Aluminum in Oregon*, but are quite similar.

Note that, while this analysis is based on the best publicly available data and Oregon's current practices regarding water quality impairments, it may not fully reflect the impact of the proposed criteria to nonpoint sources and implementing authorities. If additional monitoring data were available, or if ODEQ increases its monitoring of ambient conditions in future assessment

[28] These unit cost estimates derive from values provided in a U.S. EPA draft report from 2001, entitled The National Costs of the Total Maximum Daily Load Program (EPA 841-D-01-003), escalated to $2017. The EPA used the Implicit Price Deflator for Gross Domestic Product (from the Bureau of Economic Analysis to update the costs (2000 = 78.078; 2017 = 107.948). These unit costs per TMDL represent practices from nearly 20 years ago, and therefore, may not reflect increased costs of analysis using more sophisticated contemporary methods.
[29] After the 10-year period of TMDL development ends, the annual costs would drop to $1.4 million to $7.1 million.
[30] That is, the costs when abstracting from the difference in costs between the first ten years and subsequent years.

periods, additional impairments may be identified under the baseline criteria and/or final criteria. Conversely, there may be fewer waters identified as impaired for aluminum after Oregon has fully implemented activities to address sources of existing impairments for other contaminants (e.g., metals in stormwater runoff from urban, industrial, or mining areas).

The total costs presented in the *Economic Analysis for the Proposed Rule: Aquatic Life Criteria for Aluminum in Oregon* are a product of a series of assumptions and subsequent analyses that are intended to be both conservative and as comprehensive as possible. This proposed rule includes several safeguards inherent in both how aluminum criteria would be calculated for a given water body in practice, and in the implementation of WQS, in general. Permitting procedures such as reasonable potential analysis and TMDL development procedures ensure that entities that are significant contributors and have the capability of load reduction are properly identified and their impacts are accurately quantified. Furthermore, WQS allow for consideration of natural conditions, anthropogenic impacts that cannot be remedied, and social and economic impacts of additional controls through discharger-specific WQS variances and designated use modifications. In short, there are systems in place to evaluate tradeoffs that are central to any benefit-cost analysis. However, these tradeoffs cannot be evaluated without a comprehensive set of WQS that address all important water quality parameters. This and other analyses have demonstrated that aluminum is among the important water quality parameters with respect to supporting aquatic life designated uses. Numeric aluminum criteria can help facilitate the consideration of tradeoffs between control costs and the value of market and non-market use, and non-use benefits.

IX. Statutory and Executive Order Reviews

A. Executive Order 12866 (Regulatory Planning and Review) and Executive Order 13563 (Improving Regulation and Regulatory Review)

As determined by the Office of Management and Budget (OMB), this action is a significant regulatory action and was submitted to OMB for review. Any changes made during OMB's review have been documented in the docket. The EPA evaluated the potential costs to NPDES dischargers associated with State implementation of the Agency's proposed criteria. This analysis, *Economic Analysis for the Proposed Rule: Aquatic Life Criteria for Aluminum in Oregon*, is summarized in section VIII of the preamble and is available in the docket.

B. Executive Order 13771 (Reducing Regulations and Controlling Regulatory Costs)

This action is expected to be an Executive Order 13771 regulatory action. Details on the estimated costs of this proposed rule can be found in the EPA's analysis of the potential costs and benefits associated with this action.

C. Paperwork Reduction Act

This action does not impose an information collection burden under the Paperwork Reduction Act. While actions to implement these WQS could entail additional paperwork burden, this action does not directly contain any information collection, reporting, or record-keeping requirements.

D. Regulatory Flexibility Act

I certify that this action will not have a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act. This action will not impose any requirements on small entities. The EPA-promulgated WQS are implemented through various water quality control programs including the NPDES program, which limits discharges to

navigable waters except in compliance with a NPDES permit. CWA section 301(b)(1)(C)[31] and the EPA's implementing regulations at 40 CFR 122.44(d)(1) and 122.44(d)(1)(A) provide that all NPDES permits shall include any limits on discharges that are necessary to meet applicable WQS. Thus, under the CWA, the EPA's promulgation of WQS establishes WQS that the State implements through the NPDES permit process. While the State has discretion in developing discharge limits, as needed to meet the WQS, those limits, per regulations at 40 CFR 122.44(d)(1)(i), "must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any [s]tate water quality standard, including [s]tate narrative criteria for water quality." As a result of this action, the State of Oregon will need to ensure that permits it issues include any limitations on discharges necessary to comply with the WQS established in the final rule. In doing so, the State will have a number of choices associated with permit writing. While Oregon's implementation of the rule may ultimately result in new or revised permit conditions for some dischargers, including small entities, the EPA's action, by itself, does not impose any of these requirements on small entities; that is, these requirements are not self-implementing.

E. Unfunded Mandates Reform Act

This action contains no federal mandates under the provisions of Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), 2 U.S.C. 1531-1538 for state, local, or tribal governments

[31]CWA section 301(b) TIMETABLE FOR ACHIEVEMENT OF OBJECTIVES In order to carry out the objective of this chapter there shall be achieved—(1)(C): not later than July 1, 1977, any more stringent limitation, including those necessary to meet water quality standards, treatment standards, or schedules of compliance, established pursuant to any State law or regulations (under authority preserved by section 1370 of this title) or any other Federal law or regulation, or required to implement any applicable water quality standard established pursuant to this chapter.

or the private sector. As these water quality criteria are not self-implementing, the EPA's action imposes no enforceable duty on any state, local or tribal governments or the private sector. Therefore, this action is not subject to the requirements of sections 202 or 205 of the UMRA. This action is also not subject to the requirements of section 203 of UMRA because it contains no regulatory requirements that could significantly or uniquely affect small governments.

F. Executive Order 13132 (Federalism)

Under the technical requirements of Executive Order 13132, the EPA has determined that this proposed rule may not have federalism implications but believes that the consultation requirements of the Executive Order have been satisfied in any event. On several occasions over the course of September 2017 through February 2019, the EPA discussed with the Oregon Department of Environmental Quality the Agency's development of the federal rulemaking and clarified early in the process that if and when the State decided to develop and establish its own aluminum standards, the EPA would instead assist the State in its process. During these discussions, the EPA explained the scientific basis for the proposed criteria; the external peer review process and the comments the Agency received on the revised CWA section 304(a) criteria recommendation on which the proposed criteria are based; the Agency's consideration of those comments and responses; possible alternatives for criteria, including default criteria and input values; and the overall timing of the federal rulemaking effort. The EPA took these discussions with the State into account during the drafting of this proposed rule. The EPA considered the State's initial feedback in making the Agency's decision to propose the criteria as drafted and solicit comment on the default criteria values and default DOC input values as

described in Section B. Proposed Acute and Chronic Aluminum Criteria for Oregon's fresh waters of this proposed rulemaking.

The EPA specifically solicits comments on this proposed action from State and local officials.

G. Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments)

This action does not have tribal implications as specified in Executive Order 13175. This proposed rule does not impose substantial direct compliance costs on federally recognized tribal governments, nor does it substantially affect the relationship between the federal government and tribes, or the distribution of power and responsibilities between the federal government and tribes. Thus, Executive Order 13175 does not apply to this action.

Many tribes in the Pacific Northwest hold reserved rights to take fish for subsistence, ceremonial, religious, and commercial purposes. The EPA developed the criteria in this proposed rule to protect aquatic life in Oregon from the effects of exposure to harmful levels of aluminum. Protecting the health of fish in Oregon will, therefore, support tribal reserved fishing rights, including treaty-reserved rights, where such rights apply in waters under State jurisdiction.

Consistent with the EPA Policy on Consultation and Coordination with Indian Tribes, the Agency consulted with tribal officials during the development of this action. The EPA has sent a letter to tribal leaders in Oregon offering to consult on the proposed aluminum criteria in this rule. The EPA will hold a conference call with tribal water quality technical contacts and tribal officials to explain the Agency's proposed action and timeline approximately two weeks after the proposal is published and the comment period is initiated. The EPA will continue to communicate with the tribes prior to its final action.

H. Executive Order 13045 (Protection of Children from Environmental Health and Safety Risks)

The EPA interprets Executive Order 13045 as applying only to those regulatory actions that concern environmental health or safety risks that the Agency has reason to believe may disproportionately affect children, per the definition of "covered regulatory action" in section 2-202 of the Executive Order. This action is not subject to Executive Order 13045 because it does not concern an environmental health risk or safety risk.

I. Executive Order 13211 (Actions that Significantly Affect Energy Supply, Distribution, or Use)

This action is not a "significant energy action" because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy.

J. National Technology Transfer and Advancement Act of 1995

This proposed rulemaking does not involve technical standards.

K. Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations)

The human health or environmental risk addressed by this action will not have potential disproportionately high and adverse human health or environmental effects on minority, low-income or indigenous populations. The criteria in this proposed rule, once finalized, will support the health and abundance of aquatic life in Oregon, and will therefore benefit all communities that rely on Oregon's ecosystems.

List of Subjects in 40 CFR Part 131

Environmental protection, Incorporation by reference, Indians-lands, Intergovernmental relations, Reporting and recordkeeping requirements, Water pollution control.

Dated: April 18, 2019.

Andrew R. Wheeler,

Administrator.

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

PART 131—WATER QUALITY STANDARDS

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

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

Subpart D—Federally Promulgated Water Quality Standards

2. Add §131.[XX] to read as follows:

§131.[XX] Aquatic life criteria for aluminum in Oregon.

(a) *Scope*. This section promulgates aquatic life criteria for aluminum in fresh waters in Oregon.

(b) *Criteria for aluminum in Oregon*. The aquatic life criteria in Table 1 apply to all fresh waters in Oregon to protect the fish and aquatic life designated uses.

Table 1- Proposed Aluminum Aquatic Life Criteria for Oregon Fresh Waters

Metal	CAS Number	Criterion Maximum Concentration (CMC)[2] (µg/L)	Criterion Continuous Concentration (CCC)[3] (µg/L)
Aluminum[1]	7429905	Acute (CMC) and chronic (CCC) freshwater aluminum criteria values for a site shall be calculated using the 2018 Aluminum Criteria Calculator (*Aluminum Criteria Calculator V.2.0.xlsx, or a calculator in R or other software package using the same 1985 Guidelines calculation approach and underlying model equations as in the Aluminum Criteria Calculator V.2.0.xlsx*) as established in the EPA's Final Aquatic Life Ambient Water Quality Criteria for Aluminum 2018 (EPA 822-R-18-001)[4]. Calculator outputs shall be used to calculate criteria values for a site that protect aquatic life throughout the site under the full range of ambient conditions, including when aluminum is most toxic given the spatial and temporal variability of the water chemistry at the site.	

[1] The criteria for aluminum are expressed as total recoverable metal concentrations.
[2] The CMC is the highest allowable one-hour average instream concentration of aluminum. The CMC is not to be exceeded more than once every three years. The CMC is rounded to two significant figures.

[3] The CCC is the highest allowable four-day average instream concentration of aluminum. The CCC is not to be exceeded more than once every three years. The CCC is rounded to two significant figures.

[4] EPA 822-R-18-001, Final Aquatic Life Ambient Water Quality Criteria for Aluminum 2018, is incorporated by reference into this section with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. All approved material is available from U.S. Environmental Protection Agency, Office of Water, Health and Ecological Criteria Division (4304T), 1200 Pennsylvania Avenue, N.W., Washington, DC 20460; telephone number: (202) 566-1143, https://www.epa.gov/wqc/aquatic-life-criteria-aluminum. It is also available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030 or go to www.archives.gov/federal-register/cfr/ibr-locations.html.

(c) *Applicability*. (1) The criteria in paragraph (b) of this section are the applicable acute and chronic aluminum aquatic life criteria in all fresh waters in Oregon to protect the fish and aquatic life designated uses.

(2) The criteria established in this section are subject to Oregon's general rules of applicability in the same way and to the same extent as are other federally promulgated and state-adopted numeric criteria when applied to fresh waters in Oregon to protect the fish and aquatic life designated uses.

(3) For all waters with mixing zone regulations or implementation procedures, the criteria apply at the appropriate locations within or at the boundary of the mixing zones and outside of the mixing zones; otherwise the criteria apply throughout the water body including at the end of any discharge pipe, conveyance or other discharge point within the water body.

[FR Doc. 2019-08464 Filed: 4/30/2019 8:45 am; Publication Date: 5/1/2019]