

**Department of Environmental Quality
Water Quality Standards, IDAPA 58.01.02
Docket No. 58-0102-1701**

**Negotiated Rulemaking Summary
Idaho Code § 67-5220(3)(f)**

This rulemaking has been initiated to update selenium criteria for aquatic life.

The Notice of Negotiated Rulemaking was published in the April 2017 issue of the Idaho Administrative Bulletin, and a preliminary draft rule was made available for public review. Meetings were held on April 27, June 13, and July 25, 2017. Key information was posted on the DEQ rulemaking web page and distributed to the public. Members of the public participated in the negotiated rulemaking process by attending the meetings and by submitting written comments.

All comments received during the negotiated rulemaking process were considered by DEQ when making decisions regarding development of the rule. For comments that were not incorporated into the draft rule, DEQ's response to those comments is attached. At the conclusion of the negotiated rulemaking process, DEQ formatted the final draft for publication as a proposed rule in the Idaho Administrative Bulletin. The negotiated rulemaking record, which includes the negotiated rule drafts, written public comments, documents distributed during the negotiated rulemaking process, and the negotiated rulemaking summary, is available at www.deq.idaho.gov/58-0102-1701.

DEQ's Response to Comments/Negotiated Rulemaking Summary
Docket No. 58-0102-1701

Commenter 1 – U.S. Environmental Protection Agency (EPA)	Commenter 2 – Wyoming Department of Environmental Quality (WDEQ)
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Rule Section/ Subject Matter	C o m m e n t e r	Comment	Response
210.01 287.01 287.02 287.03 287.04 287.05	1	EPA regulations at 40 CFR 131.1 O(b) provide that "[i]n designating uses of a waterbody and the appropriate criteria for those uses, the state shall take into consideration the water quality standards of downstream waters and ensure that its water quality standards provide for the attainment and maintenance of the water quality standards of downstream waters." Especially in cases where downstream waters are lentic waterbody types (e.g., lakes, reservoirs, impoundments, some slow-moving rivers), or harbor more sensitive species, a selenium criterion more stringent than that required to protect in-stream uses may be necessary to ensure that water quality standards provide for the attainment and maintenance of the water quality standards of downstream waters.	<p>DEQ recognizes that water quality criteria must be met where they are applied, thus the appropriate aquatic life Se criterion will need to be met in waters downstream of the statewide or any site-specific criterion. In the event a waterbody does not meet an aquatic life criterion, tools are employed to identify the source of the pollutant and restore water quality (e.g., total maximum daily loads, source identification, point-source permit limits) so that criteria will be met and aquatic life are protected within the waterbody and in downstream waters.</p> <p>Downstream waters protection is specifically addressed in IDAPA 58.01.02.070.08, which states that all waters must maintain a level of water quality at their pour point into downstream waters that provides for the attainment and maintenance of the water quality standards of those downstream waters, including waters of another state or tribe.</p> <p>Specific to 287.03 and 287.04, the SSC includes two values for the water column criterion element based on respective bioaccumulation rates in Sage Creek and Crow Creek. The revised site-specific water column criterion element of 4.1 µg/L for Crow Creek will meet the Wyoming water quality standard of 5 µg /L.</p> <p>Lastly, to protect White Sturgeon, the geographic scope of 287.05 includes 4th Field HUCs that drain directly into the historic range of White Sturgeon.</p>
210.01 287.01 287.02 287.03 287.04 287.05	1	When implementing the water quality criterion for selenium under the NPDES permits program, DEQ may need to establish additional procedures due to the unique components of the selenium criterion. If the state decides to use the selenium water column concentration criterion element only (as opposed to using both the water column and fish tissue elements) for conducting reasonable potential (RP) determinations and establishing water quality-based effluent limitations (WQBELS) per 40 CFR 122.44(d), existing implementation procedures used for other acute and chronic aquatic life protection criteria may be appropriate. However, if the state also decides to use the selenium fish tissue criterion element values for NPDES permitting purposes, additional state WQS implementation procedures will be needed for determination of RP and development of appropriate WQBELS. The EPA recommends the use of the water column element in developing WQBELS.	DEQ appreciates your recommendation and certainly acknowledge the challenges a fish tissue criterion presents in water quality based permitting. However, DEQ believes this is beyond the scope of this rulemaking, and that implementation of this rule is better addressed in a subsequent guidance document. This follows the practice EPA has established in its national criteria recommendations.

210.01	1	Develop additional guidance which provides a full discussion and establishes a detailed procedure for the applicant of selenium criteria in fishless waters and in areas with new selenium inputs.	DEQ will be developing additional guidance, based upon the language in rule. As EPA has done nationally, guidance development will follow the rule.
287.03 287.04	1	In order to determine a whole body criterion element, a conversion factor (CF) calculated from the brown trout data was used to convert the egg-ovary criterion element into a whole body criterion element. The EPA has some concerns about this method of calculating a whole body criterion element value. Conversion factors are based on physiological processes and tend to be driven more by the species than the site. Therefore, it is more appropriate to create a new SSD of whole body SMCVs. The whole body SMCVs could be calculated by converting each egg-ovary SMCV to a whole body SMCV using a species specific CF or a whole body SMCV that was directly measured could be used. This whole body SSD should be used to calculate the whole body criterion element using the 4 most sensitive species as described in the 1985 Guidelines (EPA PB85-227049).	<p>The method chosen in this site-specific proposal was used because it best represents the Site and species present. The approach used to derive the whole body 2016 National Criterion must consider a large scale where species present and their relative sensitivities are unknown or not fully characterized, and when egg/ovary data are not available. The 2016 National Criterion notes that “Adopting the fish whole-body or muscle tissue element into water quality standards ensures the protection of aquatic life when measurements from fish eggs or ovary are not available...” For this Site, comprehensive egg/ovary effects data are available and the egg/ovary element of the criterion has primacy over all other elements because “the concentration of selenium in eggs and ovaries is the most sensitive and consistent indicator of toxicity.” The data for brown trout show they are the most sensitive species and that the egg/ovary selenium concentration is the best to assess the risk of effects on this species. USEPA (2016) states that “Using the most sensitive assessment endpoint (based on the state of the science) reduces uncertainty in the ability of the criterion to protect aquatic life.” The egg/ovary metric for brown trout is the ultimate measure in the criterion. The other metrics to be included in the criterion should be selected from the best predictors of brown trout egg/ovary selenium concentration.</p> <p>Future monitoring to assess compliance with the whole body criterion will be conducted based on collection and chemical analysis of brown trout whole body tissues. Brown trout are one of only two recreationally important game species found at all locations within the Study area (except Deer Creek) where tissue monitoring will be conducted for compliance monitoring. It is numerically the predominant of the two trout species found and is also a non-native species. Thus to minimize potential impacts of harvesting the native Yellowstone cutthroat trout (YCT) as a monitoring species for tissue analyses, and because the predominant tissue data base for the study area is for brown trout, and because brown trout is the most sensitive fish species present - brown trout is the logical target species for monitoring compliance with a fish tissue criterion. As recommended by USEPA (2016), “Selection of the fish species in the aquatic system with the greatest selenium sensitivity and bioaccumulation potential is recommended.” For this SSSC proposal, derivation of the whole body tissue</p>

			<p>criterion based on the most sensitive species, from a sensitive effects threshold (egg/ovary) with effects data derived directly from the Site, and using that same species as the compliance monitoring target species is the most scientifically defensible and unbiased approach available.</p>
287.03 287.04	2	<p>WDEQ/WQD is also concerned with the validity of applying a CF value based solely on brown trout sensitivity to an egg-ovary concentration derived from the four most sensitive fish species. Though this may be a more conservative approach since brown trout are the most sensitive species in the study area, WDEQ/WQD questions whether it would be more appropriate to develop a CF value based on the four species that were used to derive the egg-ovary element.</p>	<p>Same as response to EPA's comment directly above.</p>
287.03 287.04	1	<p>The EPA has several concerns about the species sensitivity distribution (SSD) that was used to derive the egg-ovary selenium criterion element. First, the EPA has concerns over the use of species mean chronic values (SMCVs) in this SSD as opposed to using genus mean chronic values (GMCVs). When creating an SSD, EPA recommends using GMCVs rather than SMCVs as species within a genus tend to be more similar toxicologically than species in different genera. Using GMCVs rather than SMCVs prevents data sets from being biased by an overabundance of species in one or a few genera. The EPA also has concerns about some of the species that were included in the SSD. Simplot included some species in their SSD that EPA did not include in the criterion derivation due to the inability to effectively characterize an ECw value for the species. These include the Yellowstone cutthroat trout and white sucker. The EPA found that the Yellowstone cutthroat trout data were highly variable and therefore a clear effect value could not be calculated from these data. The EPA also decided not to include the white sucker data in the criterion derivation, as this study did not have a control and a clear effect level was not observed in this study. Lastly the EPA is concerned about the inclusion of the sculpin data, which is >22 mg/kg dw for a NOEL. This lower bound is lower than all the Oncorhynchus genera, so while we know that there is no effect below 22 mg/kg dw, we do not know when that effect begins. Given that this is unknown and that there is a small chance it may be lower than the trout (solely based on the fact that we don't have information showing otherwise), it may not be appropriate to include this information in the SSD. In addition, this study was not considered for the 2016 criterion and the quality of the data has not been evaluated by the EPA. As only a summary of the study was included in the proposal, the EPA requests that additional information about this study be presented so that the quality of these data can be verified.</p>	<p>Excerpt from Comments Letter received on August 1, 2017 from J.R. Simplot Company:</p> <p>This multipart comment addresses two primary issues: (1) use of species mean chronic values (SMCVs) versus genus mean chronic values (GMCVs) and, (2) inclusion of species in the derivation process that EPA has some concerns about, namely YCT, white sucker, and sculpin. Use of SMCVs vs GMCVs EPA states that using GMCVs rather than SMCVs prevents data sets from being biased by an overabundance of species in one or a few genera and that the GMCVs should be used for criteria derivation. Simplot disagrees and the use of SMCVs in place of GMCVs for a site-specific criterion are applicable for several reasons:</p> <p>(1) The current selenium dataset for maternal reproductive studies, particularly with fish is limited. Of the eight fish maternal reproductive studies utilized to derive the species sensitivity distribution in USEPA (2016), only two were GMCVs (Lepomis and Oncorhynchus), while the remaining six were SMCVs.</p> <p>(2) When small streams are being evaluated with limited species diversity, there simply are not enough species to use when EPA's recalculation procedure is the process being used to derive site-specific criteria. Of the 15 GMCVs utilized to compile the overall number of species in the 2016 National Criterion derivation, the SSSC proposal eliminated five genera as either not found within the Site or not being representative as a surrogate for another similar sensitive species. Simply recalculating the SSSC based on 10 GMCVs (all of which are SMCVs except for Oncorhynchus) severely limits the potential available data set and will result in an unrealistic criterion as described in further detail below.</p>

		<p>(3) The recalculation procedure is “conducted on a species level rather than a genus level, making it more acceptable to utilize the SMAVs for the FAV calculation” (GLEC 2005). This same logic for species mean acute values (SMAVs) and final acute values (FAVs) also applies to SMCVs and final chronic values (FCVs). As noted in the Draft Compilation of Existing Guidance for the Development of Site-Specific Water Quality Objectives in the State of California, “when the recalculation procedure is used with species deletion, there should be no species left in the dataset that is not either a resident species or a species that is the most appropriate surrogate for a resident species. For this reason, it should be acceptable to utilize SMAVs for the calculation of FAVs when an SSO is developed using the recalculation procedure with species deletion. Where there is only one species in each genus remaining in the dataset, this is the same as using GMAVs” (GLEC 2005). For this SSSC proposal, there is only one genus with more than one species left in the database for the criterion derivation.</p> <p>(4) Use of the GMCV may actually bias the dataset due to dilution of sensitive species effects information (Parametrix et al. 2006). The genus <i>Oncorhynchus</i> represents three of the four most sensitive species in the SSSC derivation process with brown trout, genus <i>Salmo</i>, representing the most sensitive species. Not using the SMCV in this case dilutes the most sensitive species information. Rainbow trout are included, because it has the potential to be present and represent a sensitive species. At least one hybrid rainbow x cutthroat trout has been captured within the Site over the year monitoring period. Westslope cutthroat trout are not present at this Site, but are included to represent another salmonid that is present for which there are no data, the Mountain whitefish. Yellowstone cutthroat trout is the second most abundant trout species present behind brown trout. For these three species in the genus <i>Oncorhynchus</i>, the EC10 for rainbow trout is 24.5 mg/kg dw, the EC10 for Westslope cutthroat trout is 26.2 mg/kg dw, and finally, the EC10 for YCT is 28.4 mg/kg dw. If these data were combined as a geometric mean to derive a GMCV, the value would be 26.32 mg/kg dw. There is a dilution of the most sensitive species information when these data are combined into a GMCV rather than using them independently as SMCVs. Parametrix et al. (2006) states that, “while within-genus toxicity values are relatively consistent (at least more so than higher taxonomic levels), toxicity of a contaminant to different species within the same genus is not always equivalent. Even though the difference in toxicity between species may be small (< a factor of 10; e.g., <i>Physa</i> sp. For zinc), using a GMAV dilutes the sensitivity of the more sensitive species”.</p> <p>(5) For this SSSC proposal, not only would use a GMCV for <i>Oncorhynchus</i> that would dilute the sensitive species information, it would reduce the number of chronic values available for use and the process loses representation of other potentially sensitive species for which there are no data. Loss of chronic values (e.g., SMCVs) for use in the overall number of chronic values represented</p>
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			<p>results in lowering the derived criterion. This is because the derivation procedure is designed to calculate a more conservative criterion when database size is small (Erickson and Stephan 1988).</p> <p>Inclusion of the Oncorhynchus data as individual SMCVs versus a single GMCV in this SSSC proposal provides for sensitive species representation without being under or over protective by resolving the effect of sample size for the chronic values. The resulting chronic criterion of 19.9 mg/kg dw for this SSSC proposal is less than the most sensitive species EC10 of 20.5 mg/kg dw due to how the criterion calculations are weighted towards protection of 95 percent of the species.</p>
287.05	1	<p>DEQ will need to ensure that this SSC provides protection for species within the family Salmonidae may occur in locations where sturgeon do not; thus, DEQ should consider appropriate toxicity data (e.g., whole body Oncorhynchus Genus Mean Chronic Value (an EC10) of 9.052 mg/kg dry weight) in light of any recalculation procedure, especially if toxicity values fall below the recalculated criterion.</p>	<p>This comment refers to the non-reproductive endpoint (EC10) for juvenile anadromous salmonids. This study was not a reproductive study; therefore, it was not used in the derivations of the 2016 EPA recommended selenium criterion.</p> <p>This SSC provides protection for juvenile anadromous salmonids by excluding their critical habitat from the geographic scope of this SSC. That being the case, critical salmonid habitat for anadromous salmonids is protected by the statewide selenium chronic criterion that includes the whole-body element of 8.5 mg/kg dry weight which is less than the EC10 for juvenile anadromous salmonids.</p>