Summary of call with North Dakota Department of Environmental Quality, EPA's Office of Water, and EPA Region 8 on October 26, 2020, regarding NDDEQ's proposed adoption of fish tissue criterion for selenium.

Attendees: **NDDEQ**: Karl Rockeman, Pete Wax; **EPA Office of Water**: Joe Beaman, Corey Buffo, Erica Fleisig, Karen Kesler, Mario Sengco, Lars Wilcut; **EPA Region 8**: Andrew Todd, Holly Wirick

Background: North Dakota Department of Environmental Quality (NDDEQ) submitted its draft WQS to EPA Region 8 (R8) for review in August. The standards included a proposal to adopt fish tissue criteria for selenium while retaining its current WQC for selenium. Based on a call held on January 8, 2020, with NDDEQ, EPA R8, and EPA Office of Water (OW), there was a misunderstanding; that the state's proposed adoption of fish tissue criteria without EPA's recommended water column values, would be acceptable.

After recent communications with OW, R8 conveyed to NDDEQ that the fish tissue and water criteria are linked; therefore, the fish tissue criterion should be not be adopted separately. The purpose of the call was to discuss technical issues and what type of assistance EPA can provide to the state as it works on its sampling protocol for additional data collection.

Karen opened the discussion explaining that EPA's previously recommended criterion for selenium (5 ug/L chronic and 20 ug/L acute) were derived based on water exposure, and that over the last 15-20 years or so EPA has learned more. She said EPA has learned that selenium exposure is coming from diet, not from water exposure, which is what spurred the development of EPA's 2016 recommended water column criterion for selenium. The criterion had fish tissue elements to reflect the fact that the primary exposure is through diet and the way that we can most accurately measure whether there's an impact on fish is by looking at those fish tissue concentrations.

Karen said to assist in implementation, EPA also derived water column values using a bioaccumulation model that were eventually back calculated from the fish tissue values to water column values. Those values are inherently linked to each other. EPA expressed the criterion in several different media: egg ovary tissue, whole body tissue, muscle tissue and water. It's all essentially the same number, it's just been translated into different forms of fish tissue and water.

Karen said has two water column values because of bioaccumulation. North Dakota's lentic and lotic waters, because of the different hydrodynamics, are driving different oxidation reduction processes that are happening in those locations. Unfortunately, EPA's struggle with adding just the fish tissue values on top of the previously adopted 5 ug/L (chronic) and 20 ug/L (acute) water column numbers, is that those values are being derived from two different mechanisms. She said they're at two different levels of protection so they are not linked to each other, and it makes it difficult to defend having the fish tissue values supersede those water column values. It also implies that those water column values are protective of those fish tissue values when

they weren't derived using the same process. That is what EPA is struggling with; justifying the approval of those fish tissue values with the previously adopted water column values.

Karen said EPA respects North Dakota's work and everything NDDEQ has put together. It seems like the state's waters are operating a little bit differently than what EPA sees in a broad pattern across the entire country. The water column values that are recommended as water column criterion elements were selected to be nationally-protective of 80% of the country's water bodies, so it is possible that the physical, chemical and biological characteristics of North Dakota's waters are operating differently than those of the entire nation. Potentially, we could find that there are different water column values that are more appropriate for North Dakota. Karen thinks there are a couple of ways that NDDEQ could go about that. She asked about age of the data and how usable it is for getting a ballpark of what values might be appropriate for the state's waters – and whether the state believes they need to invest in a new sampling effort.

Karl explained that as part of the state's triennial review, they looked very closely at EPA's recommended selenium criterion and had no issues with the fish tissue-based numbers that they are proposing to adopt. Karl said the problem comes in when the state looks at the water column numbers. He said there are three options. The first choice would be to adopt EPA's national number; however, Karl doesn't believe that North Dakota's data support EPA's water column criterion for selenium. He thinks based on NDDEQ's monitoring data, the state could be susceptible to a challenge that the criterion is not supported by the science as it relates to North Dakota's waters.

The second choice is to derive a number with NDDEQ's data, but Karl doesn't think they have a substantial enough body of data to do that. He said he feels stuck between those two options, neither one of which he believes allows NDDEQ to promulgate a criterion that meets the state's objectives that would stand up to the scrutiny that he would expect a criterion to do.

The third choice is the "do nothing" option which is to maintain North Dakota's existing water column values. Karl acknowledged that they are dated and that there probably are more accurate or more applicable numbers that could be used in place of them, but the challenge is that NDDEQ does not have the data at this point. He believes moving forward with adopting EPA's recommended fish tissue criterion increases protection of aquatic life while NDDEQ continues to collect additional data.

Regarding the data the state has, Karl said they have 529 unique samples, all lentic data collected 15 to 20 years ago over a five-year time frame. He said the state's selenium is non-anthropogenic - other than what would be atmospheric - and recognizes that newer data would certainly be helpful.

Erica, referring to NDDEQ's comment about increasing protection by adding fish tissue values, said what EPA is struggling with is that if NDDEQ submits the WQS as proposed (with the state's existing selenium water column values and the new fish tissue values), with the linkage created

between the two, EPA would have an obligation to look at the whole construct and look again at whether those water column values are actually protective. As proposed, it seems to be linking them together, so EPA's not just looking in isolation at the new tissue values, we're looking at it as is a full piece; protective like our national recommendation is: one criterion with multiple elements.

Erica said that NDDEQ is correct in that the data they have, and the analysis they've done, seems to indicate that EPA's national water column numbers aren't right for North Dakota, as Karen said. We can see that and agree that it's likely to be a complex exercise to figure out what the right water column numbers are for North Dakota. EPA doesn't have anything to support an analysis that shows that the state's 5 ug/L [selenium chronic criterion] is still protective, which is why EPA does not want NDDEQ to add just the fish tissue values [to its WQS] and link them to North Dakota's existing water column values. We would prefer that NDDEQ wait until the state has the information about what the right water column values are for North Dakota.

Pete explained that the reason NDDEQ wants to adopt EPA's recommended fish tissue criterion is because they want to protect the state's aquatic resources. The selenium numbers in the flesh, particularly the ovum numbers, are supportive, and if selenium reaches that level, North Dakota's aquatic resources are impacted. NDDEQ's issue is the link between the fish tissue and the water column values. Pete thought NDDEQ was being conservative by proposing to adopt the fish tissue criterion before they modify the state's selenium water column numbers. He said NDDEQ is planning to purchase equipment to move forward with their sampling plan, which will include mercury, but he'd like to keep the fish tissue criterion in the state's WQS.

Erica asked whether NDDEQ has ever considered having the water column values and the fish tissue criterion independently applicable, or is it wedded to the idea of linking the language? She asked if NDDEQ would be open to saying that the fish tissue criterion would supersede the water values. Karl and Pete said they would be open to that and asked what language EPA would suggest.

Lars said he thinks we might be getting to the point where we could remove a significant stumbling block. The linkage that Karen described is really one criterion, and there is this "hierarchical structure." He said if NDDEQ is willing to look at these [components] independently then he believes that removes some of the issues.

Erica said EPA would be happy to work with NDDEQ and believes North Dakota is interested in trying to figure out the "right" water column numbers because the state is not going to be in this situation indefinitely. The state could have a waterbody exceed the water quality criterion and not exceed the fish tissue criterion, but because they're independently applicable, you would still have to list the waterbody. However, in the next couple of years if NDDEQ can collect the data, EPA could help develop that sampling plan and help analyze those data, then come up with the right water column number that is linked to the fish tissue criterion. At that

point, NDDEQ could create the hierarchical structure that EPA has in the national recommendation and link it all together.

Karl said that is certainly something NDDEQ is agreeable with and it's in their plans to move forward and gather new data on selenium. Pete asked whether EPA has an idea of the language that would be appropriate to be placed in the state's standards, as NDDEQ is moving ahead fairly rapidly to finalize its WQS.

Lars said EPA can help NDDEQ come up with language. Karen concurred and told Pete to work through Holly who would let Karen know when North Dakota is ready to develop its sampling plan. Karen will work with her technical counterpart to provide advice in terms of what species NDDEQ is targeting, where they're planning to sample, what time of year, etc. to make sure the state collects good data moving forward. Pete said he intends to work on the sampling plan this winter.

Karl said in the state's response to comments on the WQS, they'll have an opportunity to add information to make their analysis even more robust based on today's conversation. Pete asked whether it would be helpful in the response to comments if NDDEQ includes the state's direction based on our conversation today. EPA agreed it would.

Lars asked what the state's timeline is on the language from EPA. Karl said within the next 30 to 60 days NDDEQ will want to have their WQS package ready for final internal review, which includes the Advisory Board and the Attorney General's office, so within 30 days would be great.

ND WQS Summary of discussion re NDDEQ Selenium Criteria discussion with OW&R8 Oct 26 2020