



PUBLIC WORKS

EVERETT

March 28, 2018

Susan Braley, Watershed Management Section
Water Quality Program
Department of Ecology
PO Box 47600
Olympia, WA 98504-7600

RE: Washington State Department of Ecology's Proposed Revisions to the WQ Policy 1-11

Dear Susan:

The City of Everett welcomes the opportunity for review and comment on the draft Water Quality Program Policy 1-11. We have several significant concerns. One concern is that the policy for listing for dissolved oxygen does not adequately accommodate the part of the dissolved oxygen standards that allows a 0.2 mg/L decrease from human causes when the natural condition is lower than the numeric standards. Another is that the section on Toxics-Human Health Criteria should not use detections of concentrations in fish/shellfish tissue as a basis for determinations for domestic water supply.

More detailed comments on these issues, and other issues, are attached.

Sincerely,

A handwritten signature in blue ink that reads "Heather Griffin".

Heather Griffin, P.E.
Surface Water Manager / Principal Engineer

Enclosure

cc: Jim Miller, City of Everett Engineering Superintendent
Lincoln Loehr

Page 18, 1F Category Descriptions, Category 2. Water of Concern

Concern: There may be questions whether or not human causes result in exceedances of the allowable changes for dissolved oxygen or temperature. Absent a reasonable judgment call that human causes do result in exceedances beyond the natural level, Ecology should be willing to list waters as category 2.

Recommendation: Add a bullet number 3 on page 18 as follows:

“Data show some exceedances of numeric criteria, but natural conditions allowed in the water quality criteria may account for it, and the agency is unsure whether human causes are exceeding the changes allowed in the standards beyond the natural conditions. (pertains to dissolved oxygen and temperature listings)”

Page 24, Delisting from Category 5.

Concern: Getting delisted for most parameters happens only if a TMDL or other plan exists (so go from a Category 5 to a 4A or 4B) or there is a sufficient demonstration that the water meets the criteria and goes to a Category 1. The hoops to go through for delisting are spelled out for individual parameters. Except for total dissolved gas and human health criteria based listings, there is no way that a water body can go from a Category 5 (impaired) to a Category 2 (water of concern) for most parameters.

Recommendation: This section should acknowledge that a new evaluation can determine that an earlier Category 5 determination may not have been appropriate (for any parameter) and allow a change to Category 2 based either on new data or based on reconsideration of the prior listing.

Page 25, 1G Other Assessment Considerations, Natural Conditions.

Concern: This section discusses natural conditions. It is existing policy wording. Much of it is good, but it does not refer to criteria that have specific human allowances when natural conditions do not meet criteria, such as dissolved oxygen and temperature. Furthermore, the sections describing temperature and dissolved oxygen are inadequate in explaining how the natural condition and human caused allowances in the criteria are applied, and also do not refer back to the section describing natural conditions.

Recommendation: An additional subsection following Natural Conditions should be added to 1G as follows:

Allowances for Human Caused Changes.

The standards specifically allow for a decrease of 0.2 mg/L for dissolved oxygen when the natural conditions are lower than the numeric criteria. The standards also specifically allow for an increase of 0.3 degrees C for temperature when the natural conditions are higher than the numeric criteria. If it is not possible to make a quantitative evaluation, then Ecology will make a qualitative evaluation regarding these provisions, where a reasonable confidence that these provisions

are exceeded results in a Category 5, and where a reasonable uncertainty results in a Category 2.¹

Pages 40-44, 2C Dissolved Oxygen

Concern #1: The dissolved oxygen criteria need to be fully presented, or at least better described. Specifically, the standards include provisions that when the natural conditions are lower than the criteria, then the natural conditions are the criteria and human causes cannot result in more than a 0.2 mg/L decrease from the natural condition. This important aspect of the dissolved oxygen criteria is not mentioned, yet it should be the most relevant aspect to the listing determinations.

Recommendation: Fully describe the components of the dissolved oxygen standards and recognize that the >0.2 mg/L decrease from natural condition is the main basis for listing as impaired (category 5) or if reasonably unsure, water of concern (category 2).

See also City of Everett's comments re Section 1G above.

Concern #2: The evaluation is focused on numeric data only. There is one sentence that alludes to the natural conditions and human caused allowance, but provides no information on how to do such evaluation.² It does not even refer to the earlier section on natural conditions.

Recommendation: add the following into Section 2C.

The standards specifically allow for a decrease of 0.2 mg/L for dissolved oxygen when the natural conditions are lower than the numeric criteria. If it is not possible to make a quantitative evaluation, then Ecology will make a qualitative evaluation regarding these provisions. Category 5 (impaired) will be assigned where there is a reasonable confidence that the human caused decrease is more than a 0.2 mg/L decrease from the natural condition. Category 2 (water of concern) will be assigned where there is a reasonable uncertainty that the allowable decrease from human causes is exceeded.

Concern #3: Ecology focuses on comparing the dissolved oxygen data with the numeric criteria. Ecology includes some appropriate concepts, such as 1) not listing unless more than 5% of the days do not meet the criteria, 2) averaging data values within different stratified layers, 3) not listing unless more than 10% of the water column is below the numeric criteria, and 4) having a single observed value below 4 mg/L for marine water would result in a listing. While these concepts are appropriate types of considerations that should be made, our dissolved oxygen criteria make no allowance for such an

¹ In earlier 303(d) listing decisions for temperature in freshwater for essentially all streams and rivers in the state with elevated temperatures, Ecology was "unsure" about the 0.3 degrees C human caused increase above natural conditions, and simply defaulted to Category 5.

² At the bottom of page 40 it says, "Naturally occurring conditions, such as natural eutrophication in pristine lakes or incoming ocean water, will be considered when determining whether the water body DO condition is due to human sources."

approach. The City had petitioned Ecology to go through rulemaking to revise dissolved oxygen criteria, and these types of considerations should be evaluated and incorporated into future criteria if Ecology ever undertakes such revisions. (The City notes that Ecology denied the petition for rulemaking.)

The 5% of days, and 10% of the water column are simply arbitrary choices made by Ecology. The 4.0 mg/L trigger, based on the “Fair” water quality standard is also arbitrary as a trigger for a single exceedance. Would our marine waters be expected to pass such tests?

The Strait of Juan de Fuca would not pass these tests. Water at depth, over much more than 10% of the water column will be lower than the numeric criteria (7 mg/L) and even the trigger (4 mg/L) for much more than 5% of the days. This is illustrated by the figure from the *Atlas of Physical and Chemical Properties of Puget Sound and Its Approaches* (Collias, McGary and Barnes, 1974) attached to these comments. The figure shows three longitudinal profiles of the dissolved oxygen distribution with the Strait of Juan de Fuca on the left, Admiralty Inlet in the middle, and the Puget Sound Main and Southern Basins to the right. The profiles are from July, August and September of 1953, and they are not unusual. The units are milligram-atoms per liter. To convert to mg/L, multiply by 16. The applicable 7 mg/L criterion is equal to 0.44 mg.at./L. The 4 mg/L single exceedance trigger is equal to 0.25 mg.at./L. In the August profile, more than half the water column in the Strait of Juan de Fuca was less than 4 mg/L single exceedances trigger. In the July and September profiles, none of the water in the Strait of Juan de Fuca met the 7 mg/L criterion. The deeper water in the Strait of Juan de Fuca represents the incoming water from the Pacific. The Pacific would not pass these tests. In various ways, the marine source waters also play a role in dissolved oxygen levels in other parts of Puget Sound.

Recommendation: The current dissolved oxygen criteria should recognize a duration of exposure consideration, and recognize that criteria need not apply at all depths. The criteria should be changed to recognize these considerations, and commence a rulemaking that also incorporates relevant duration of exposure considerations, allows for water column differences, and allows for averaging over appropriate time frames. The approach for listing decisions proposed in this policy should focus on the natural conditions and allowances for human caused decreases.

Concern #4. There is no path to change from a Category 5 (impaired) to a Category 2 (water of concern) for dissolved oxygen. Category 2 (water of concern) is a reasonable place for some of these waters when we may not understand enough about the human caused allowance component.

Recommendation: Create a decision pathway to change from a Category 5 to a Category 2. Also see the City’s comment on “Page 24, Delisting from Category 5” section regarding delisting.

Pages 51-55, 2F Temperature.

The temperature evaluation approach has many of the same problems as the dissolved oxygen. The policy needs to state the natural condition and human allowance components of the temperature criteria.

Recommendation: The policy needs to provide direction for how to evaluate those components. Fortunately, Ecology has a history for the marine waters side of recognizing that the temperatures are natural and to not list them for temperature, and the City expects that will continue. The freshwater side, has listed waters as Category 5 based just on the numeric criteria and Ecology needs to make more of an effort to judge the human allowance, and to use Category 2 more often than it has in the past.

Pages 63-75, 2I Toxics-Human Health Criteria.

Human health criteria are intended to protect people drinking the water and eating organisms that live in the water. The criteria protect against carcinogen effects, and non-carcinogen effects. In the past, Ecology translated the numeric criteria to a “tissue equivalent concentration” and listed waters as impaired based on tissue data. Ecology is changing how this is done. Specifically they are evaluating four ways: tissue exposure concentration thresholds for carcinogens (TECc) and non-carcinogens (TECn), and drinking water exposure concentrations thresholds for carcinogens (DWECC) and non-carcinogens (DWECCn). The numbers for these will be included in the final policy. The policy describes the category determinations for fish and shellfish harvest use, and the category determinations for domestic water supply use.

Pages 67-69, Category Determinations for Fish and Shellfish Harvest Use.

The assessment that tissue levels support a category 5 (impaired) listing for carcinogens is based on three or more species tested having median concentrations greater than 10 times the TECc, or two species tested have a median concentration greater than 100 times the TECc. For non-carcinogens, a category 5 listing is based on three or more species tested having median concentrations greater than the TECn by factors of 1 to 10, or two species tested having a median concentration greater than 10 times the TECn.

Recommendation: The City supports the listing process described in the policy for determinations for fish and shellfish harvest use.

Pages 70-72, Domestic Water Supply Use Assessment.

Concern: A minimum of two exceedances of a DWECC or a DWECCn, which also must occur in two or more water years is required for a category 5 listing. That part seems sensible. However, the policy does something very strange here in that it can also list as category 5 for domestic water supply simply if the parameter has been detected in fish/shellfish tissue during the last 10 years.

This creates the oddity that to be listed as impaired for fish or shellfish harvest the tissue data needs to exceed the TECc by a factor of 10 or more, as a median of composite

samples, for several species, yet the same tissue data that may pass the category 5 listing criteria for fish or shellfish harvest use can be used to list as impaired for domestic water supply use, based simply on any detection in fish or shellfish, at any levels, even below the TECc or TECn.

Recommendation: Delete the use of tissue data in the domestic water supply use assessment.

Pages 73-74, Arsenic.

The policy notes that because EPA is reevaluating the existing federal arsenic human health criteria, there is no basis by which to evaluate arsenic impairment based on carcinogenic effects. They will evaluate freshwater by comparing it to the drinking water MCL of 10 ppb. This is a smart approach by Ecology.

Ecology also acknowledges that “When credible studies that address natural background levels of arsenic are available, Ecology will consider this information in making impairment listing decisions.”

The City notes that NOAA’s mussel watch provides an extensive data set covering more than two decades for more than 20 stations throughout the state. Ecology already uses the NOAA mussel watch data in 303(d) listing decisions, so Ecology is aware of the quality of that data set. The NOAA mussel watch arsenic data are interesting. Cape Flattery, at the entrance to the Strait of Juan de Fuca, has the highest arsenic concentrations in the NOAA data set. Arsenic is naturally present in marine water at about 1.5 ug/L, and the Cape Flattery site receives the purest marine water exposure of all the stations. All the other stations are measurably diluted with freshwater, and have lower arsenic tissue levels.

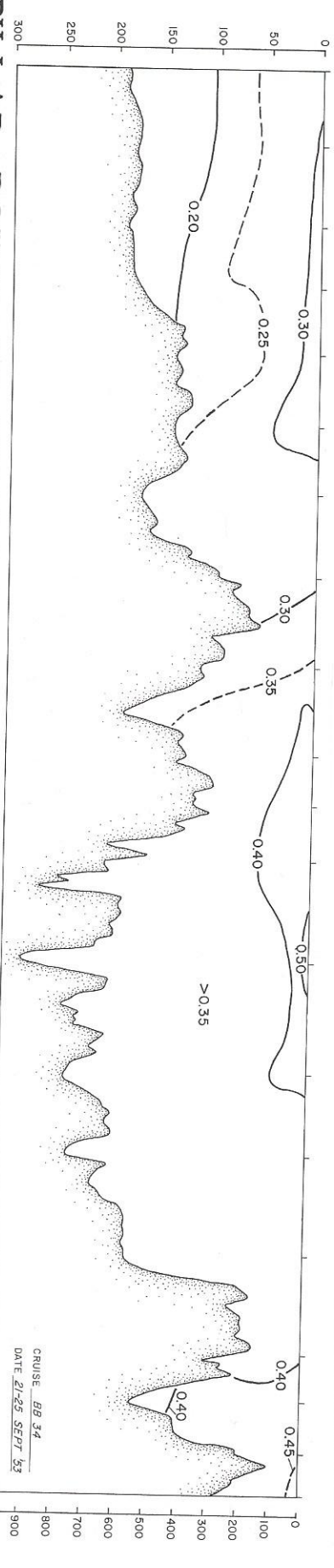
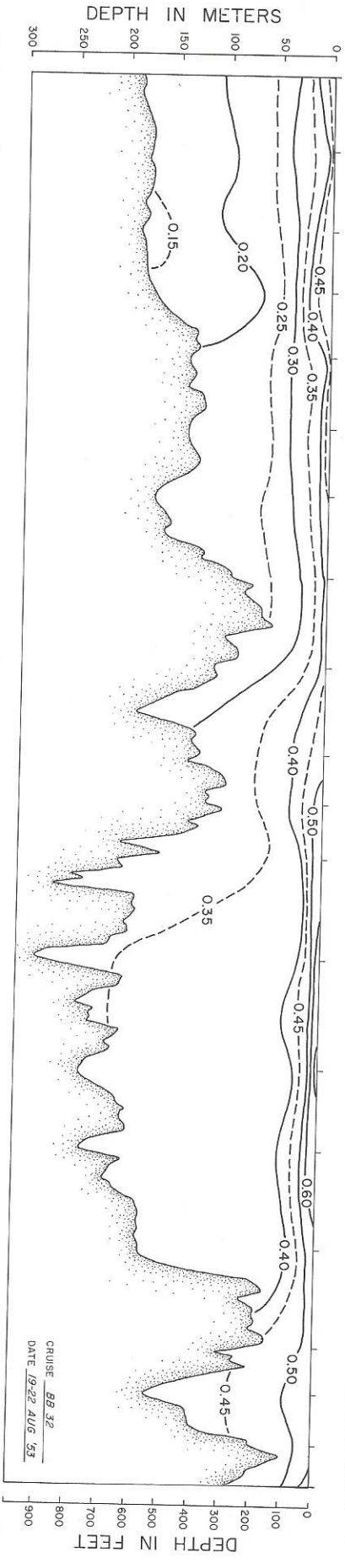
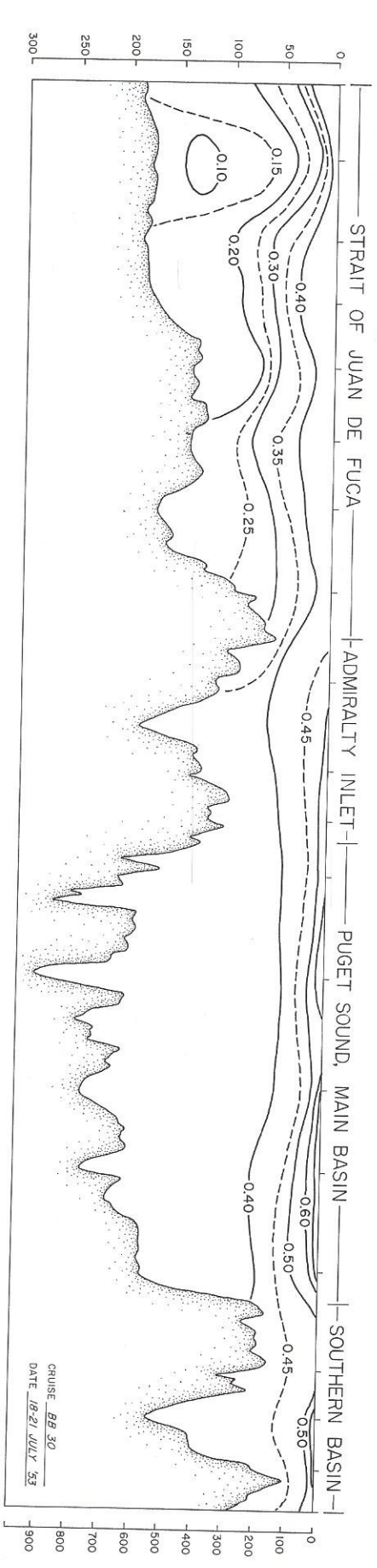
Recommendation: Lincoln Loehr will provide Ecology with a spreadsheet presenting all the NOAA mussel watch arsenic tissue data for Washington which can inform Ecology of actual tissue concentrations.

Pages 78-81, Part 3: Specific Assessment Considerations for Sediment Quality Criteria.

Concern: Category 5 Administrative Override on page 81 is suspect. There are sediment stations that have been listed as Category 5 by Ecology in the past for zinc (and probably some other metals as well), and the listings have been highly misleading. The actual data showed that the zinc sediment quality standards were met, but since it was a cleanup site, it was listed anyway as impaired for zinc. This in turn has been used to describe how many stations in Puget Sound exceed the sediment quality standards for zinc.

Recommendation: Although a particular sediment segment is a cleanup site, it should not be listed as Category 5 for any parameters that do not exceed criteria. There should be some parameters in the segment that exceed criteria and Category 5 listings should be based only on those parameters.

OXYGEN (mg. at./l)



PILLAR POINT TO DEVILS HEAD

