Working with more than 95 community wastewater treatment and stormwater management agencies to protect Oregon's water
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March 30, 2017

Jill Fullagar
U. S. Environmental Protection Agency
Region X

Submitted via email to fullagar.jill@epa.gov

Re: OR 2012 Comment Period

Dear Ms. Fullagar,

The Oregon Association of Clean Water Agencies (ACWA) appreciates the opportunity to provide comments on EPA's proposed action on Oregon's 2012 Integrated Water Quality Assessment Report. ACWA is a private, not-for-profit organization of Oregon's wastewater treatment and stormwater management utilities, along with associated professionals. Our 135 statewide members are dedicated to protecting and enhancing Oregon's water quality. Our members provide wastewater and stormwater services to 2.4 million Oregonians, serving 64% of Oregon's homes and businesses.

We continue to be concerned about this action on Oregon's 2012 Integrated Water Quality Assessment Report. In our February 24, 2014 comments to the Oregon Department of Environmental Quality (DEQ), we identified significant concerns regarding the methodology and scientific basis of DEQ's action. Based on this proposed action, it appears that EPA did not critically review the listings proposed by DEQ but simply added to DEQ's listings using a similar listing methodology. Thus, the comments that ACWA provided to DEQ are still relevant to EPA's proposed action and we are hereby attaching them to this letter for your consideration.

In ACWA's previous comments to DEQ, we noted that the Integrated Water Quality Assessment Report significantly impacts the Total Maximum Daily Load (TMDL) program and National Pollutant Discharge Elimination System (NPDES) permit program and therefore, must be accurate. Of particular concern are the numerous "Category 5 – water quality limited and TMDL required" listings – many of which are not warranted. All necessary steps must be undertaken to

ensure the validity of "Category 5 – water quality limited and TMDL required" listings. The data used as the basis for "Category 5" listings must be scientifically and statistically sound. We are also concerned that EPA and DEQ did not use the other listing categories (potential concern, insufficient data, etc.) when current data is not scientifically and/or statistically sound and does not support a "Category 5" listing. The other listing categories can be used to guide the implementation of the ambient monitoring program to provide additional information.

The listings should reflect the temporal and spatial limitations of the supporting data; for example, where targeted monitoring is conducted based on a specific issue or concern, the data may not be representative of water quality in a broader segment of a waterbody. In these situations, the listed segment must reflect the spatial and temporal limitations associated with the data. Furthermore, the policy implications should be considered when a stream segment is considered for inclusion as a "Category 5" listing; for example, the policy implications of the proposed listings for biocriteria and aquatic weeds should be considered and an appropriate approach to address such impairments should be defined.

ACWA's specific comments on EPA's proposed action are discussed in the comments below. A bulleted summary of our concerns are presented here:

- Streams must not be listed when there are no corresponding State of Oregon water quality criteria.
- Streams must not be listed for impairments for which TMDLs cannot be developed.
- "Category 5" listings must be based on good science, be representative of water quality in the listed segment, and meet data quality standards.
- "Category 5" listings must be based on current criteria and use all available data (e.g. actual sample hardness data for metals) meeting data quality standards.
- EPA and DEQ must use other listing categories when available data does not support a "Category 5" listing.
- When evaluating data based on targeted monitoring conducted to address a specific concern, the listing, if warranted, must reflect the spatial and temporal limitations of the supporting data.

ACWA's specific comments on the listings proposed by EPA to the 2012 Integrated Water Quality Assessment Report are provided below.

EPA's Listing Methodology

Enclosure 6 of the supporting documents for this proposed action includes a statement that EPA's methodology was based on the one used by DEQ, but does not explicitly describe where EPA made changes and what exact methodology was used by EPA. EPA should clearly specify its methodology and define where changes were made to the methodology used by DEQ and the reasons for the change.

Biocriteria & Aquatic Weeds

EPA is proposing to add 24 stream segments to the 2012 Integrated Water Quality Assessment Report for biocriteria. EPA is also proposing to add 12 stream segments to the 2012 Integrated Water Quality Assessment Report for aquatic weeds. It is not clear what action is to be taken to

address these listings. DEQ has no specific criteria for biocriteria or aquatic weeds. Therefore, a TMDL cannot be developed for biocriteria or aquatic weeds and a "Category 5" listing is not an appropriate action. A more appropriate action would be a "Category 3B – Potential Concern" listing, which would enable DEQ to collect additional data and conduct additional analyses to determine the underlying pollutants that are resulting in the impairment.

Phosphorus & Chlorophyll a

EPA is proposing to add 35 stream segments to the 2012 Integrated Water Quality Assessment Report for phosphorus. EPA is also proposing to add 4 stream segments to the 2012 Integrated Water Quality Assessment Report for chlorophyll *a*. Oregon has no water quality criteria for phosphorus or chlorophyll *a*. We recognize that DEQ has a standard for nuisance phytoplankton growth that uses chlorophyll *a* as an indicator for DEQ to conduct additional studies to understand the root cause of high concentrations. As a result, DEQ potentially would regulate those root causes. However, a "Category 5" listing for phosphorus and chlorophyll *a* at this time is inappropriate. Furthermore, EPA notes in its Assessment Report that the assessment method used for phosphorus was "intended only to be a rough screen" and encouraged DEQ to develop their own methodology for assessing phosphorus. Thus, a "Category 5" listing for phosphorus based on a "rough screen" is not an appropriate action.

The impacts of phosphorus and chlorophyll *a* on beneficial uses must be conducted on a site-specific basis. The State of Oregon's approach is to use chlorophyll *a* as an indicator of whether water bodies are being impaired, and, therefore, whether further study is needed. Oregon Administrative Rules require DEQ to conduct studies to describe current water quality, determine the impact on beneficial uses, determine the probable cause of the exceedance and beneficial use impact, and develop a proposed control strategy for attaining compliance where technically and economically practicable (Oregon Administrative Rules Chapter 340-041-0019). Rather than the "Category 5" listing for phosphorus and chlorophyll *a*, a more appropriate action for these waterbodies would be a "Category 3B – potential concern" listing, which would enable DEQ to collect additional data and take action consistent with the language in the Oregon Administrative Rules.

Dissolved Oxygen

EPA is proposing to add 53 stream segments to the 2012 Integrated Water Quality Assessment Report for dissolved oxygen. It appears that many of these segments are listed based on the application of the spawning criteria for resident trout. Since Oregon does not specifically designate waterbodies for resident trout spawning, it appears that EPA applied the salmon spawning criteria to all waterbodies. There is significant overlap in the anadromous fish spawning areas and resident trout spawning areas. Rather than listing these streams in the "Category 5 – water quality limited, TMDL required" listing category, a more appropriate designation would be to identify these waterbodies as "Category 3 – insufficient information" and allow DEQ to work with the Oregon Department of Fish and Wildlife (ODF&W) to define spawning areas for resident trout in Oregon.

Additionally, EPA is proposing to disapprove DEQ's proposed delistings of stream segments that were previously listed for dissolved oxygen based on the application of the spawning criteria for resident trout. In its 2012 Integrated Water Quality Assessment Report, DEQ proposed the

delisting of 8 stream segments based on information obtained from ODF&W which noted that resident trout spawning does not occur in those 8 stream segments. In its review of the 2012 Integrated Water Quality Assessment Report, EPA disapproved DEQ's proposed action with a note stating "insufficient documentation to support use change." By enlisting the expertise of ODF&W, DEQ took the necessary steps to document that resident trout spawning does not occur in the 8 stream segments proposed for delisting. EPA should accept ODF&W's expertise in this matter and approve DEQ's proposed deletion of these stream segments. If there are additional administrative actions that need to be taken to implement ODF&W's findings regarding resident trout spawning in the 8 stream segments, EPA should specify the necessary actions.

Metals and Other Priority Pollutants

Methodology

EPA used DEQ's methodology of listing streams for metals and other priority pollutants when two or more samples exceed the criteria. This approach is appropriate only where there is a limited data set. This approach is not appropriate when dealing with large data sets. Listing based on two exceedances and without consideration for the number of samples penalizes municipalities that have implemented a robust ambient monitoring program and serves as a disincentive for conducting ambient monitoring. The listing procedure for metals and other priority pollutants should be modified to account for larger data sets. A simple modification to the listing criteria to account for larger data sets is provided below:

> *Two (2) or more valid results not meeting the most stringent applicable criterion for concentrations of a specific toxic substance in the water column* ***when these samples represent 5% or more of the total valid samples****;*

This modification would enable DEQ and EPA to continue to list waterbodies based on the two exceedance criteria when there is a limited data set and would also allow for the consideration of larger data sets.

Metals

EPA is proposing to add 7 stream segments to the 2012 Integrated Water Quality Assessment Report for lead. These listings are based on the application of the previous "total recoverable" criterion for lead rather than the current "dissolved" lead criterion. EPA is also proposing to list one stream segment for zinc based on the application of the previous "total recoverable" criterion rather than the current "dissolved" criterion. Additionally, the listings for both lead and zinc are based on a hardness of 25 mg/L, which is a very conservative assumption. This approach results in a number of listings that are not justified under the current "dissolved" criterion and with the use of actual hardness data. EPA should use dissolved concentration data for lead and zinc when available; and furthermore, the actual hardness concentration values associated with the sample should be used in the assessment. This approach will demonstrate that most of the proposed listings for lead and zinc are not valid.

DEQ had previously listed a number of stream segments in the 2012 Integrated Water Quality Assessment Report based on the previous "total recoverable" criteria for lead and zinc. Our analysis shows that these listings are also not valid. Therefore, ACWA requests that EPA remove the listings for lead and zinc or at least place the stream segments in an more appropriate

listing category (i.e., “Category 3 - insufficient data” or “Category 3B - potential concern”) until an analysis is conducted based on the current criteria.

EPA is proposing to add 11 stream segments to the 2012 Integrated Water Quality Assessment Report for copper. As with the proposed listings for lead and zinc, the listings for copper are also based on a very conservative hardness of 25 mg/L. The actual hardness values associated with the copper samples should be used in in the assessment. Using this approach will provide a more accurate indication of whether the observed values are of concern.

Delisting Procedures

DEQ previously and now EPA, are listing numerous streams for metals based on outdated criteria and overly conservative assumptions. EPA and DEQ should ensure that an updated analysis is conducted based on currently applicable criteria and actual hardness data. If EPA does not correct these mistakes at this time, the 2012 Integrated Water Quality Report will contain listings for a number of pollutants that will later require delisting. A pathway for delisting streams must be clearly defined.

Conclusions

As currently proposed, ACWA asserts that the 2012 Integrated Water Quality Assessment Report is not scientifically and statistically sound. As proposed, the 2012 Integrated Water Quality Report would significantly impact TMDL and NPDES permit programs in Oregon. Given the significant regulatory importance of these listings, we urge EPA and DEQ to work together to address the concerns noted herein and produce an Integrated Water Quality Assessment Report that is scientifically and statistically sound.

Sincerely,

Susan L. Smith
Executive Director

Attachment: February 24, 2014 Comment Letter to DEQ

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24 February 2014

DEQ
Water Quality Division
811 SW Sixth Avenue
Portland, OR 97204

Comments provided by email to: IntegratedReport2012@deq.state.or.us

re: Proposed 303(d) listings

The Oregon Association of Clean Water (ACWA) is a private, not-for-profit organization of Oregon's wastewater treatment and stormwater management agencies, along with associated professionals. Our 137 statewide members are dedicated to protecting and enhancing Oregon's water quality.

As the foundation for many water quality decisions, the 303(d) list should be as complete and accurate as possible. The policy implications of a listing should be carefully considered prior to a stream segment being included as a Category 5 listing. The data used as the basis for the listings should be scientifically and statistically accurate and robust. The listings should be as narrow as possible, both temporal and spatial.

In situations where a waterbody is on the 303(d) list, but for which a TMDL has not been developed, the listings have a significant impact on the NDPES permit program. DEQ's *Reasonable Potential Analysis* (RPA) Internal Management Directive (IMD) requires NPDES permit holders to characterize their effluent and the receiving stream for 303(d) listed pollutants. Furthermore, the RPA IMD states that "the use of mixing zones and dilution values are generally not permitted for the listed pollutant parameters." This would mean that NPDES permit holders would have to meet water quality criteria at the end of pipe (i.e. no mixing zone) for 303(d) listed pollutants. Municipal and industrial stormwater permits are also affected by the 303(d) listings. Municipal stormwater permits require the development and implementation of specific best management practices to reduce 303(d) listed pollutants. Additionally, the general industrial stormwater permit (1200-Z) essentially prohibits the issuance of new stormwater permits to 303(d) listed streams unless the facility demonstrates that the 303(d) pollutant is not present at the site or demonstrates that the discharge meets criteria at the end of pipe, which is very difficult to do for common metals such as lead and

Stephanie Eisner - Chair Jennifer Belknap Williamson - Vice Chair
Michelle Cahill - Secretary/Treasurer

zinc. Thus, the Integrated Water Quality Assessment Report has a significant impact on Oregon's water quality program.

Our review of the draft 303(d) list raises several concerns. A summary of our concerns include:

- Policy implications of listings
- Need to use the current Oregon water quality standards
- Toxic listings based on only two exceedances
- Lack of adequate minimum data standards
- Not addressing the seasonality or segmentation of listings
- Mercury listings
- Inconsistencies in DO listings
- Listings for total iron
- Ammonia listings
- Biocriteria listings
- Listings based on incorrect criterion

Overall, a more transparent process for the listing methodology must be developed and deployed by DEQ.

Policy Implications of Listings

The larger policy issues of including listings based on marginal information and the other listing categories, should be fully explored prior to using a '*Category 5'* listing, requiring development of a TMDL.

The overall implications of each '*Category 5'* listing should be evaluated for their impact on the other DEQ programs, including TMDL development and NPDES permitting implications.

The 2012 draft methodology fails to use '*Category 3'* as appropriate when the data is insufficient or not statistically significant. For those water bodies and pollutants where sufficient high quality data is not yet available or where the exceedances are not statistically significant, the '*Category 3'* listing is available and should be used.

Where additional data is needed to confirm a water quality issue, that data should be secured prior to listing. All necessary steps should be undertaken to ensure the validity of the listing by examining the data more closely and using the other categories more fully.

As an example, the Department is proposing to list Gales Creek in the Tualatin River watershed for chromium. This listing is generated by comparing total chromium to hexavalent chrome criteria. Hexavalent chrome is an industrial byproduct of the plating process and not present in the natural environment without an industrial discharge. If DEQ believes there is a chromium issue in the Tualatin River, DEQ should be focused on gathering additional information to resolve the issue. This should not be classified as *'Category 5 - needing a TMDL'*. A '*Category 5'* listing is not the appropriate regulatory tool to determine whether the listing for chrome is appropriate. DEQ should use other categories such as insufficient data or potential concern ('*Category 3'*) and then implement a sampling program to gather the necessary data to address the listing.

Use of Current Oregon Water Quality Criteria
The proposed 303(d) list does not use the current water quality standards for metals. At its December, 2013, meeting the Environmental Quality Commission adopted dissolved standards for a variety of metals, including zinc and lead. The Department should be using the current Oregon water quality standards in developing the 303(d) list.

The use of older water quality standards that are no longer in place in Oregon dramatically increases the number of listed stream segments, especially for zinc and lead. Listing based on water quality standards that are no longer in force has significant ramifications and unnecessarily burdens DEQ's water quality program and municipal permit holders.

Toxic Water Quality Standards
The DEQ methodology[1] indicates that stream stretches should be listed when there are two or more samples exceeding the standard. This criteria is only reasonable for very limited data sets. The Department and other natural resource agencies are focused on ambient toxic water quality monitoring, greatly increasing the amount of available data.

The Department's 2010 methodology document detailed this approach to listing toxics:

> *"Two (2) or more valid results not meeting the most stringent applicable criterion…**when these samples represent 5% or more of the total valid samples**;"*[2] *(emphasis added)*

The 5% or more valid samples is missing from the 2012 methodology and should be reinstated.

Setting two samples as the criteria for listing provides a disincentive for ambient toxic monitoring, not likely the Department's desired outcome.

Minimum Data Quality Standards Needed
Additional data quality standards should be in place for any stream stretch listed as a '*Category 5 – needing a TMDL'* due to the serious policy and resource implications of requiring TMDL development. Data used to list a stream stretch as '*Category 5'* should meet quality assurance/quality control standards, pass an elementary statistical analysis, and meet a satisfactory confidence level prior to listing.

Seasonality and Segmentation of Listings
Listings appear to be on a year round basis for many pollutants, especially toxics. An examination of the data shows that these issues are seasonal and associated with high flows.

Additionally, seasonal listings appear to include data outside the seasonal dates specified, as is observed with dissolved oxygen at Station 10359 on the Upper Willamette River during the

[1] See Methodology for Oregon's 2012 Integrated Report and List of Water Quality Limited Waters., accessed at http://www.oregon.gov/deq/WQ/Pages/Assessment/2012report.aspx on 1/17/14
[2] See http://www.deq.state.or.us/wq/assessment/docs/2010AssessmentMethodology.pdf, page 51

spawning period from October 15 to May 15. Note, too, that dissolved oxygen data is sufficient on the Upper Willamette River for segmentation into discrete reaches.

All data for stations, from RM 118.4 to 184.7, meet the cool water dissolved oxygen criterion during non-spawning periods yet the entire waterbody from RM 50.6 to 186.5, is listed as '*Category 5'*. The listings should be accurate and as narrow as possible, both temporal and spatial.

Mercury

The interim TMDL for mercury in the Willamette Basin has been completed. The fish tissue listing for additional mercury TMDL work should be re-categorized as "*category 4A – TMDL completed"*.

For mercury listings based on fish consumption advisories for methyl mercury, all associated listings should be recategorized as '*Category 3 – Additional data needed'*. The process of methylation in Oregon rivers and streams is not well understood. Also, the sources of mercury must be better identified prior to reaching a conclusion that a TMDL would be an effective tool to reducing mercury concentrations. For instance, if the mercury sources are atmospheric deposition from other counties, an Oregon –based TMDL would not be an effective pollution control strategy.

Inconsistencies in DO Listings

After carefully reviewing the numerous Dissolved Oxygen listings in river segments within and surrounding Eugene, we noted multiple inconsistencies in how the DO criterion was applied. The Eco-Region map referenced in the June 8, 2010 DEQ memorandum (see ftp://ftp.epa.gov/wed/ecoregions/or/or_eco.html) is important in identifying boundaries applicable to the DO water quality standard as applied to salmon and trout rearing and migration, and redband/lahontan cutthroat trout beneficial uses. Overlaying this GIS layer on our water bodies database layer, we noted numerous inconsistencies between the 303(d) list criterion and those applicable as defined in the memorandum.

Incorrect DO standards may have been used routinely, and the additional DO listings should be verified by the DEQ staff to ensure they are correct. Also, there were multiple incorrect designated beneficial uses, especially anadromous fish passage/spawning, inconsistent with the Fish Use Designation Maps (see http://www.deq.state.or.us/wq/rules/div041tblsfigs.htm#f1).

Total Iron

DEQ has earlier indicated that it will apply iron in the dissolved criteria (see Attachment A).

The DEQ's policy regarding total iron listings is summarized below:

> *DEQ recommends withdrawing Oregon's human health criterion for iron for the following reasons:*

- *The current criterion of 300 µg/L is not based on human health effects.*
- *Iron criteria for the protection of human health are not necessary. The tolerable intake levels are higher than those found in Oregon surface waters and much higher than the aquatic life criterion of 1000 µg/L.*
- *DEQ does not expect that discharges of iron in Oregon will impact beneficial uses, including the ability to drink water or consume fish.*
- *Oregon has a narrative criterion that allows us to protect against objectionable taste and odor if there is a need to do so.*

DEQ does not propose to change the current freshwater aquatic life criterion for iron, which is 1000 µg/L. We will clarify that this criterion is for dissolved iron, as we did in 2004 and consistent with EPA's recommended criteria. Aquatic life is a designated beneficial use in all freshwater surface waters of Oregon and therefore the aquatic life criterion for iron applies to all of these waters.

The total iron listings should all be revised and DEQ should identify a mechanism to address the issue without listing based on total iron. One idea would be to reclassify all total iron listings as 'other' and outline how the total iron listings will be resolved, per the Department's policy.

Underlying Listing Criteria
When listing criteria are revised, the entire 303(d) list should be examined and any listings related to a revised listing reexamined. For instance, the South Yamhill River is listed for iron and the underlying listing was related to the secondary drinking water standard. DEQ has since revised the listing criteria and removed the iron secondary drinking water standard as a criteria. The listings associated with this removed criteria should now be removed.

Listings based on Incorrect Criterion
Multiple waterbodies are listed based on an incorrect criterion/beneficial use; the spawning dissolved oxygen criterion of not less than 11 mg/L or 95% of saturation is applied to multiple streams that are not designated for spawning use as defined in the fish use designation tables and figures. For example, the Long Tom River is listed as Category 5 water quality limited during the spawning period from January 1 to May 15 at RM 31.8 to 57.3. This reach of the Long Tom River is within the Willamette Valley Prairie Terraces ecoregion where the cool water aquatic life dissolved oxygen criterion is applicable, that is, 6.5 mg/L. The Department must revisit designations to ensure they are accurate.

Ammonia
EPA has adopted an updated water quality guidance document for ammonia. We believe that the Department will be moving forward to incorporate that revised standard as the Oregon water quality standard in the next year.

All ammonia listings should be reclassified as '*Category 3*' until the Oregon standard is conformed to the federal standard. This pollutant should be reexamined in the next 303(d) listing process.

Biocriteria
ACWA does not support the listing of streams for biocriteria impairment. Biocriteria impairment should be dealt with through listings for the underlying pollutants – namely, temperature, dissolved oxygen, and nutrients. An assessment of stressors for macro invertebrate studies has shown that temperature and dissolved oxygen are the primary stressors (ABR, 2011)[3]. Thus, biocriteria should be dealt with through listings for the underlying pollutants as noted in Oregon's Integrated Water Quality Assessment Report. This is consistent with the approach noted in the PREDATOR model report which states:

> *"…knowing a site is in poor biological condition is useful, but unless we are able to identify the cause(s) of impairment, we are at a loss for how to most effectively go about improving the stream."*

No TMDL can be developed for impaired biocriteria.

We believe that the proposed biocriteria listings of valley bottom streams in the Willamette River and other basins are inappropriate because the determination is based on an erroneous comparison with reference sites that have fundamentally different characteristics. The PREDATOR model report notes that *"…the types of streams used to build the models were wadeable (typically first- through fourth-order) streams that contained fast water habitats (riffles)."* The valley bottom streams in the Willamette River basin are dominated by glide and pool habitats, and typically lack riffle habitat. Identifying appropriate reference locations is fundamental to understanding and utilizing macro invertebrate data. The PREDATOR model report notes that *"a potential problem in the use of empirical models is to apply models to inappropriate situations. With respect to RIVPACS models, this problem can arise if we wish to assess the condition of a site that is physically or geographically dissimilar to the reference sites that were used for model construction."* Appropriate reference locations were not identified for the valley bottom streams in the Willamette River basin. Thus, the comparison of these sites with the model reference sites is fundamentally flawed.

We support the use of the existing salmon habitat maps as the basis for the delisting of the biocriteria listings.

We appreciate the Department's efforts to delist parameters added by the EPA process. In the 2012 evaluation, it appears that DEQ used the fish spawning maps in the administrative rules as a basis for delisting several streams that were previously listed by EPA for dissolved oxygen. ACWA supports DEQ's efforts to delist these streams

Summary
The importance of an accurate and thoughtful 303(d) list as the foundation for Clean Water Act programs in Oregon cannot be overstated. We would be glad to meet with the Department to explain our concerns and issues in greater detail, if that would be useful.

[3] ABR, 2010–2011 Assessment of Fish and Macroinvertebrate Communities of the Tualatin River Basin, Oregon, 2011.

The list is a useful tool for focusing public and private resources on Oregon's highest priority water quality needs, when properly prepared.

Very truly yours,

Janet A. Gillaspie
Executive Director

Appendix A – DEQ Document - *Overview of Draft Proposed Revisions to the Arsenic, Iron and Manganese - Water Quality Criteria for Human Health*

cc: Dick Pedersen, DEQ Director
Jennifer Wigal, Water Quality Division
ACWA Board of Directors

Appendix A –

Overview of Draft Proposed Revisions to the Arsenic, Iron and Manganese Water Quality Criteria for Human Health

Review of Oregon's Human Health Criteria for Manganese

As part of the Oregon Toxic Standards Review Project, the Oregon Department of Environmental Quality is reviewing its human health criteria for manganese. DEQ agreed to review the criteria because manganese is a naturally occurring earth metal in Oregon and because the "water + organism" criterion is not based on levels needed to protect human health.

The Rulemaking Workgroup supported the recommendations below at their meeting on July 13, 2009.

1) DEQ recommends that the criterion for water + fish ingestion be withdrawn.

- This criterion is not based on human health effects. Oregon does not need a numeric manganese criterion to protect water supply based on aesthetic and organoleptic effects. The Safe Drinking Water Information System database shows only 1 surface water supplier with detectable levels manganese in their finish water, and the concentration was 0.8 µg/l, far below the levels where aesthetic or taste effects are objectionable (30 – 150 µg/l). In addition, DEQ has a narrative criterion for the protection of taste, odor and aesthetic affects should limits be required to protect a surface water domestic water supply source from particularly high levels of manganese from anthropogenic sources. Finally, EPA has a secondary MCL of 50µg/l in place under the Safe Drinking Water Act to provide guidance to water suppliers for these non-health effects.

- This criterion was not based on health effects and EPA has not recommended a water + organism criterion for the protection of human health, nor have they recommended an MCL to protect against human health effects of manganese in drinking water. Manganese levels in Oregon surface waters are far below average daily human intake levels. There is no reason to believe that discharges of manganese will impact beneficial uses of Oregon's fresh waters.

2) DEQ recommends that the 100 µg/l "fish consumption only" criterion be retained for marine waters only. The 100µg/l criterion was recommended by EPA in 1976, prior to and, therefore, not based on the fish ingestion/BCF criteria derivation method published in 1980. However, it was recommended due to concerns about high bioconcentration rates among marine mollusks. A fish consumption criterion for freshwaters is not needed because BCFs for manganese in freshwater species are low (i.e., manganese does not accumulate in freshwater aquatic species in appreciable amounts).

Oregon's Current "Human Health" Criterion for Iron

Oregon's current water quality criteria for iron are 300 µg/L (0.3 mg/L) for "human health" and 1000 µg/L (1.0 mg/L) for freshwater aquatic life (chronic criterion). These were EPA's national recommended criteria at the time they were adopted, but iron is considered a non-priority pollutant by EPA. The "human health" criterion was actually based on taste and laundry staining considerations, not on human health effects. DEQ has interpreted and specified in our 2004 criteria, that the iron and manganese criteria are for dissolved metals rather than total recoverable.

DEQ agreed to review this criterion because iron is a naturally occurring earth metal that sometimes exceeds the criterion and because the criterion is not based on levels needed to protect human health.

DEQ recommends withdrawing Oregon's human health criterion for iron for the following reasons:

- The current criterion of 300 µg/L is not based on human health effects.
- Iron criteria for the protection of human health are not necessary. The tolerable intake levels are higher than those found in Oregon surface waters and much higher than the aquatic life criterion of 1000 µg/L.
- DEQ does not expect that discharges of iron in Oregon will impact beneficial uses, including the ability to drink water or consume fish.
- Oregon has a narrative criterion that allows us to protect against objectionable taste and odor if there is a need to do so.

DEQ does not propose to change the current freshwater aquatic life criterion for iron, which is 1000 µg/L. We will clarify that this criterion is for dissolved iron, as we did in 2004 and consistent with EPA's recommended criteria. Aquatic life is a designated beneficial use in all freshwater surface waters of Oregon and therefore the aquatic life criterion for iron applies to all of these waters.

<u>Arsenic Criteria for Human Health</u>

DEQ considered several options for deriving arsenic criteria as an alternative to EPA's current recommended criteria and discussed these options with the WQ Standards Rulemaking Workgroup. Three primary alternative approaches considered were:

1. Re-calculation of the federal criteria,
2. Use of the MCL value for drinking water in some manner, and a
3. Statewide default natural background based approach.

The table below shows possible criteria values derived under these three approach options.

Arsenic Criteria Options (µg/L inorganic arsenic)

Approach	Estimated Water + Organism	Estimated Organism Only
recalculation: BCF=1, FCR=175, % inorganic=10, CSF=1.5, risk=1x10^{-4}	2.3	2.7
e Org only value for both criteria	2.7	2.7
CL hybrid (10 x 0.25)	2.5	2.5
atewide default natural background	1-3	1-3
rrent Oregon criteria able 20, total arsenic)	0.0022	0.0175
rrent EPA recommended criteria	0.018	0.14

Notes: 1) MCL = 10 µg/L total arsenic. 2) HHC will be for inorganic arsenic.

At this time, DEQ's preferred option for the human health arsenic numeric criteria are:

1) 2.7 µg/L for the organism only criterion to protect fishing/fish consumption uses at a high fish consumption rate (175 g/d) – this is based on a calculation method using current EPA toxicity information.
2) 2.3 µg/L for the water + organism criterion to protect domestic water supply and fishing/fish consumption. This value protects human health from fish consumption based on a calculation method at the same risk level being used for all the human health criteria. This criterion represents a higher risk level, however, of 10^{-4} for the water + organism criterion. It is still significantly lower than the MCL established to protect drinking water under the SDWA.

These criteria represent an appropriate balance of human health protection and recognition that many Oregon waters contain arsenic from natural geologic sources at levels of 1-3 µg/L or higher. These natural levels do not represent new or added health risk to the environment. Setting criteria that would trigger 303d listings, TMDLs and other CWA implementation activities would require the use of valuable public resources for administrative activities that would in most cases not result in a real reduction of arsenic levels in the water or in fish.

These proposed criteria are consistent with EPA guidance, which says that it may be appropriate use a higher risk level (up to 10^{-4}) when basing criteria on higher fish consumption rates. Because DEQ is proposing to base our criteria on a fish consumption

rate of 175 grams/day and again, because of natural background levels, we conclude that 2.3 is a reasonable and protective criterion for human health in Oregon.

DEQ has agreed to supplement our numeric arsenic criteria with an arsenic reduction policy to be included in our water quality regulations. This rule will require dischargers known or likely to discharge significant amounts of anthropogenic arsenic to develop plans to reduce their arsenic load if they discharge to a stream with ambient arsenic levels below the numeric criteria d within a drinking water protection area delineated by DEQ. DEQ and the rulemaking workgroup are currently working on draft language for this policy.