



Response to Comments on Oregon's Draft 2010 Integrated Report

Submitted to: U.S. EPA Region 10

By: DEQ Water Quality Division

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Introduction

The federal Clean Water Act (CWA) requires that the Oregon Department of Environmental Quality (DEQ) periodically assess Oregon's water quality and report to the Environmental Protection Agency (EPA). CWA Section 305(b) requires DEQ to report on the overall status of waters in the state. CWA Section 303(d) requires DEQ to prepare a list of water bodies that do not meet water quality standards and where Total Maximum Daily Loads (TMDLs) will be developed. EPA recommends combining these reports into an Integrated Report that assigns each water body to an assessment category based on the evaluation of available data.

DEQ began the data assessment process by preparing a Draft **Methodology for Oregon's 2010 Water Quality Report and List of Water Quality Limited Waters** and issuing a public call for data. The Assessment Methodology contains the "decision rules" that DEQ used to assess water quality. The call for data included the minimum quality assurance and quality control (QA/QC) requirements for data submittal. Data submittals to DEQ were accepted from May 11 through June 11, 2009. DEQ evaluated the available water quality data for Oregon's waters using the decision rules and assigned an appropriate status from these EPA recommended categories:

- Category 1:** All designated uses are supported. (Oregon does not use this category.)
- Category 2:** Available data and information indicate that some designated uses are supported and the water quality standard is attained.
- Category 3:** Insufficient data to determine whether a designated use is supported. Oregon further sub-classifies waters if warranted as:
 - 3B:** Insufficient data to determine use support but some data indicate non-attainment of a criterion and a **potential concern**.
 - 3C:** Impairing pollutant unknown.
- Category 4:** Data indicate that at least one designated use is not supported but a TMDL is not needed. This includes:
 - 4A:** TMDLs that will result in attainment of water quality standards have been approved.
 - 4B:** Other pollution control requirements are expected to address pollutants and will result in attainment of water quality standards.
 - 4C:** Impairment is not caused by a pollutant (e.g., flow or lack of flow is not considered a pollutant).
- Category 5:** Data indicate a designated use is not supported or other water quality standard is not attained and a TMDL is needed. This category constitutes the Section 303(d) list.

The combination of water bodies in Categories 4 and 5 constitute the water quality limited waters under OAR 340-041-0046. DEQ provided the information from the draft assessment as the Draft 2010 Integrated Report database for public review. The public review and comment period on the water quality limited list occurred from November 15, 2010 through 5:00 PM PST December 15, 2010.

After the public comment period closed, DEQ reviewed comments, made changes to the list of water quality limited waters, and prepared a final 2010 Integrated Report. This

document contains a summary of public comments and DEQ's response to those comments. DEQ will submit the final Section 303(d) list of Category 5: Water quality limited waters needing a TMDL to EPA for approval. Along with the Section 303(d) list, DEQ will also submit to EPA the complete 2010 Integrated Report database report, DEQ's response to public comments, the Methodology for Oregon's 2010 Water Quality Report and List of Water Quality Limited Waters, and a prioritization list and schedule for TMDL development. The 2010 Integrated Report and supporting documents will be available at DEQ's website at: <http://www.deq.state.or.us/wq/assessment/assessment.htm>

The response to comments is organized on the following pages to address:

- A. Comments, corrections, and additions on new or updated records in the Draft 2010 Integrated Report
- B. Schedule and scope
- C. Comments on Oregon's Assessment Methodology – 2010 updates
- D. Comments on Oregon's Assessment Methodology – Other pollutants and older records
- E. Comments and corrections for records not updated in the Draft 2010 Integrated Report

DEQ made the Draft **Methodology for Oregon's 2010 Water Quality Report and List of Water Quality Limited Waters** (Assessment Methodology) available during the public call for data in May and June 2009, and available for information during the public comment period on the draft list of water quality limited waters (Appendix A, Categories 4 and 5) in November and December 2010. DEQ provided the methodology document as information to inform the public on how DEQ reviewed information and what decision rules were used to identify water bodies as water quality limited or impaired. DEQ did not solicit comments on the methodology during the 2010 public comment period. Many comments received during the 2010 public comment period pertain to the Assessment Methodology. Within this response to comment document, DEQ presents a brief summary of these comments, and provides clarifying responses where necessary to explain the decision rules for the assignment of water quality status in the 2010 Integrated Report. DEQ clarified or corrected the Assessment Methodology as needed to document the protocols used for the finalized 2010 list of water quality limited waters.

A: Comments, corrections, and additions on new or updated records in the Draft 2010 Integrated Report

1. Assessing Aquatic Weeds and Algae

- 1.1. *Commenter (1) supported the assessment and application of the narrative standard and proposed Category 5 status for Marion Lake (Record ID 23221) and Detroit Reservoir (Record ID 6243), and confirmed the impaired conditions based on observations at a City of Salem water treatment facility. Commenter also suggested that public domestic water supply be added to the list of beneficial uses associated with the records, and that additional narrative criteria (OAR 340-041-0007(11)) be cited with the record.*

The 2010 assessments for impairments due to aquatic weeds and algae based on public health advisories for Harmful Algae Blooms will cite the following affected beneficial uses: aesthetics, drinking water, fishing, livestock watering, water contact recreation, and water supply. While several narrative criteria could be invoked as establishing the general conditions to be maintained in Oregon's waters, it is sufficient for assessment purposes to cite one narrative criteria. Oregon's database is designed to associate one narrative and/or one numeric criterion with an assessment record. DEQ cites the narrative criterion that is most relevant to the condition and beneficial use being assessed.

- 1.2. *Commenter (1) suggested that TMDL planning to address aquatic weed impairments consider other water quality parameters such as pH, and indicated that the City of Salem is currently collecting monitoring data for other pollutants such as chlorophyll a that could be useful in the future.*

The development of the 303(d) list does not provide direction on how TMDLs are developed, but does identify the pollutants that need TMDLs in each water body. DEQ agrees that a robust approach to addressing aquatic weed impairments will require understanding the interactions of water chemistry indicators such as pH, chlorophyll a, dissolved oxygen, phosphates, and nitrates for the listed water.

- 1.3. *Additional listings based on review of information submitted on invasive weeds in Boone Slough (LLID 1239617445829) and Nute Slough (LLID 1239558445866).*

Two new Category 5 303(d) listings for Aquatic Weeds or Algae have been added to the 2010 Integrated Report for Boone Slough (Record ID 23228) and Nute Slough (Record ID 23229).

Reports were submitted to DEQ in the 2009 call for data about excessive growths of nonnative aquatic plants in Boone and Nute Sloughs in Lincoln County. DEQ has investigated the reports that *Myriophyllum aquaticum*, commonly called parrotfeather or parrotsfeather, has been observed in these water bodies, and that this species is on the Oregon Department of Agriculture's "B" list of Noxious Weeds. DEQ finds the information sufficiently documents impairment to fish and aquatic life and other beneficial uses of these water bodies.

2. De-listing corrections

2.1. *Commenter (5) noted that EPA deferred approval of the TMDL for temperature for the Long Tom River (Record ID 5918) and commented it should not be de-listed in 2010.*

DEQ confirmed that EPA did not approve the TMDL for temperature for the Long Tom River and will defer de-listing this water body until we have received EPA's approval specifically for the Long Tom River TMDL.

The Willamette Basin TMDL, approved by EPA in 2006, developed a TMDL for temperature in the Long Tom River based on Oregon's cool water temperature criterion. DEQ understands that EPA has not yet provided approval for Oregon's cool water temperature criterion, and presumes the TMDL approval was deferred until EPA approves the criterion. DEQ will review de-listing this waterbody at the next opportunity after EPA takes action on the previously developed TMDL.

2.2. *Commenter (5) noted that the Willamette Basin TMDL did not contain TMDLs for mercury in Amazon Creek (Records IDs 21152 and 21153) and commented these records should not be de-listed.*

Based on EPA's statement that the Willamette Basin TMDL did not address mercury in Amazon Creek, these records will not be de-listed.

2.3. *Commenter (12) provided comments after the deadline, and suggested that Fairview Creek (Record ID 7258) for temperature should be assigned a status of Category 4A: Water quality limited, TMDL approved based on the Willamette basin TMDL.*

The commenter is correct that the status for Fairview Creek (Record 7258) should be Category 4A. The finalized 2010 Integrated Report will reflect this change.

Temperature conditions in Fairview Creek were assessed in 1998, but data were insufficient to determine if the water was water quality limited or attaining and the status in the database is "Insufficient Data". DEQ did, however, collect data during the development of the Willamette TMDL that showed that Fairview Creek exceeds the summer rearing temperature criterion of 18 degrees C. The watershed wide temperature targets were applied to the Fairview Creek watershed as discussed in the Willamette TMDL document (Chapter 5, pages 43-44).

2.4. *Commenter (15) pointed out additional segments that should be de-listed on the basis of the approved Rogue River Basin TMDL.*

Additional records that will be de-listed in the finalized 2010 Integrated Report based on the approved Rogue River Basin TMDL:

- South Fork Little Butte Creek (Record ID 3987) - Temperature
- West Fork Illinois River (Record ID 13197) - Temperature
- Soldier Creek (Record ID 4492) - Temperature.

3. Turbidity

3.1. *Commenters (6) and (9) questioned how the water quality standards for turbidity, which are under review, were applied and the type and quality of data used to assess streams for impairments to drinking water beneficial uses due to high levels of turbidity.*

The 2010 assessment applied Oregon's narrative criterion OAR 340-041-0007(11) that establishes the statewide goal of protecting the potability of drinking water. Oregon's numeric criteria for turbidity OAR 340-041-0036 are currently under review. It is anticipated that rule making will revise the numeric standard for turbidity in Oregon's

waters. If these criteria are adopted in Oregon and approved by EPA, they will become the applicable standards that will be used for subsequent 305(b)/303(d) assessments. The current applicable narrative standard does not specify measurements or limits for protecting potable drinking water. DEQ has in the past used the existing numeric turbidity criteria as a quantitative target in conjunction with other information documenting impacts from turbidity on specific fish, shellfish, and drinking water uses as the methodology to protect all beneficial uses in water throughout the state.

For the 2010 assessment, DEQ reviewed information provided by Public Water System (PWS) operators for various drinking water systems in Oregon. Available data included the number of shutdowns occurring in a PWS and source water turbidity levels at the time of the shutdown. DEQ reviewed the information to determine the number of shutdowns correlated to turbidity levels that exceeded the system's operating capacity and treatment operations that prevented the PWS from providing drinking water from the surface water source. Data showing the measured turbidity levels and/or the number of days the source was unusable due to high turbidity were used to list the source water as Category 5. Anecdotal reports or un-validated shutdowns reported in the Safe Drinking Water Information System (SDWIS) were not sufficient for DEQ to determine that the levels exceeded natural conditions, and these systems were assessed as Category 3. Five water sources had sufficient data of high quality to determine that PWS shutdowns due to high turbidity were occurring over a number of years. Links to the data summary report and analysis are provided in the supporting information for those records. Further discussion about the benchmark used to assess the PWS data is provided in section C in this document.

3.2. Commenter (9) questioned the data that DEQ reviewed to determine that turbidity levels in the Siletz River (Record 23134) were limiting the City of Siletz use of the PWS water source for public drinking water.

DEQ reviewed data from the City of Siletz water source on the Siletz River (Record 23134) and found 6 out of 9 reporting years with high turbidity. The City of Siletz PWS has had numerous shutdowns and must frequently add raw water storage to handle recent, repeated high turbidity events. The report, Turbidity Analysis for Oregon Public Water Systems, Water Quality in Coast Range Drinking Water Source Areas (June 2010), documents the data and analyses used for the assessment.

B: Schedule and Scope

4. Schedule and scope

4.1. *Commenter (2) suggested Oregon list coastal waters impaired because of ocean acidification.*

Oregon is in the process of preparing supplements to the 2010 Integrated Report and will continue assessing data from coastal waters within the state's jurisdiction using applicable Oregon water quality standards. The initial 2010 assessment included assessing coastal recreation waters using a federal water quality standard for *Enterococci*. Supplemental assessments will evaluate available monitoring data for waters extending three miles seaward from Oregon's coastline. Oregon currently has a water quality standard for pH in marine waters (OAR 340-041-0021). The protocols that will be followed to apply this criterion are described in the Methodology for Oregon's 2010 Water Quality Report and List of Water Quality Limited Waters. Oregon's assessment will apply Oregon's standards that are effective and approved by EPA.

4.2. *Commenters (2), (4), and (8) noted Oregon did not update the 303(d) list in 2008. Commenter (14) asked if the 2010 database includes previous records. Commenters (2), (4), (8) and (13) asked about the timeline for supplementing the Draft 2010 Integrated Report with additional listings and de-listing.*

EPA approved Oregon's current and effective 303(d) list in February 2007. Since that time, DEQ has been working with limited resources to update the 303(d) list by: prioritizing pollutants, beneficial uses, and program needs for assessment; updating the assessment methodology to reflect new standards and policies; reviewing standards and benchmarks to evaluate site data; developing benchmarks to apply where none are specified in the standards; planning and developing new and updated data systems to evaluate site chemistry and analytical data; planning and updating data systems to assess water conditions throughout the state; updating data systems to retrieve data from DEQ's analytical data repository; evaluating site data; and gathering and reviewing information relevant to assessing beneficial use impacts.

The draft 2010 303(d) list contains updates based on review of data for a set of pollutants and beneficial use impairments that were complete and ready for public review and comment on November 15, 2010. The draft list carries forward any listings that have been previously issued unless TMDLs have been developed for those 303(d) listings or newer data indicate the water body now meets water quality standards. Water segments on the 2004/2006 303(d) list for pH or other standard exceedences will remain on Oregon's 303(d) list until new data evaluations or TMDLs are completed.

DEQ is continuing to assess data to supplement the 2010 303(d) list with assessments for other pollutants. DEQ has targeted March 2011 as the next date to publish supplements to the 2010 303(d) list for public review and comment and May 2011 to submit the supplement to EPA. See response to comment 4.5 below for more detail on the scope and priorities for the supplements to the 2010 Integrated Report.

4.3. *Commenter (5) was supportive of DEQ's approach for the 2010 Integrated Report to not evaluate temperature data since all basins in the state already include 303(d) listings for temperature, and all streams in a subbasin will be addressed when a TMDL is developed for those listings. Commenter (8) asked what the rationale was for not evaluating temperature data for the 2010 Integrated Report.*

DEQ's rationale for not evaluating temperature data is that there are already 303(d) listings for temperature in all basins in the state, and temperature conditions in all streams in each subbasin will be addressed when TMDLs are developed for the current listings. DEQ continues to develop TMDLs, and will include a prioritized list of TMDLs with the 2010 303(d) list submitted to EPA. This prioritized list will identify where additional TMDLs for temperature will be developed.

4.4. *Commenters (5), (4), and (8) were concerned about DEQ's approach in the 2010 Integrated Report to not evaluate dissolved oxygen data since waters impaired for dissolved oxygen may not be addressed through the comprehensive watershed approach for TMDL development. Commenter (5) cited specific concerns with TMDLs being developed in the John Day and Deschutes Basin where all waters with dissolved oxygen impairments, including some identified through data collected since the last 303(d) review, are not being addressed.*

DEQ is not expecting to evaluate dissolved oxygen data for the 2010 assessment due to staff resource limitations and a significant amount of technical work that must be completed prior to evaluating data. As a result, other pollutants and impairments are higher program priorities and will be assessed. DEQ continues to address waters with dissolved oxygen impairments when TMDLs are developed for waters and watersheds where dissolved oxygen impairments were identified in earlier assessment cycles.

Oregon's standards for dissolved oxygen and implementation of those standards require complex analysis to determine the numeric criterion that is applicable on any specific water for any specific day in the year. DEQ has not yet developed tools that will carry out this analysis for the significant amount of data for all streams throughout Oregon. The Assessment Methodology (Figure 9) diagrams the general steps used to determine the criterion. For the 2010 statewide assessment, staff resources and time were limited. DEQ prioritized the pollutants that would be addressed given the technical limitations, resource limitations, and the significance of types of pollutants relative to other program activities, efforts, and needs.

DEQ continues to develop TMDLs, and will include a prioritized list for TMDLs with the 2010 303(d) list submittal to EPA. This prioritized list will identify where further TMDLs will be developed, and the pollutants and/or impairments that will be addressed. There are currently 105 segments listed for dissolved oxygen impairments in almost 40 subbasins (4th field HUCs) throughout the state. TMDL development in these subbasins takes a comprehensive approach to evaluate existing data for dissolved oxygen and other related impairments such as pH to determine data needs for modeling in order to complete TMDLs. During TMDL development, if data are collected that identify a new impairment for a water body that has not been listed, DEQ will address that water if possible in the comprehensive TMDL. Any subbasin that has a current segment listing for dissolved oxygen will be addressed in future TMDL development.

The John Day TMDL which the commenter noted addressed a listing on the main stem John Day River. DEQ did not address other listings or previously un-identified impairments in the basin due to insufficient information to develop the TMDL or because analysis indicated the assessment status should be Category 2 or 3. Regarding data suggesting impairment in the John Day River main stem for dissolved oxygen during spawning time periods, this conclusion has been deferred until further study can be done. DEQ conducted preliminary data analysis, but the determination of spawning impairments was inconclusive. For a more definitive causal analysis about conditions in the spawning season, more data are needed for both dissolved oxygen and dissolved oxygen-related parameters such as pH.

The Deschutes Basin TMDL is currently being developed. DEQ's approach is to attempt to address unidentified impairments in the Lower Crooked, Upper Crooked, Beaver-South Fork, Little Deschutes and Upper Deschutes subbasins based on the results of the more intensely monitored and analyzed reaches of the Deschutes River, Little Deschutes River and Crooked River where there are currently enough pH and dissolved oxygen data to develop nutrient models.

4.5. *Commenter (5) suggested that Oregon's draft 2010 303(d) list did not evaluate all readily available data and information. Commenters (2), (5), and (13) asked about DEQ's rationale and timeline for addressing other pollutants in supplements to the Draft 2010 Integrated Report and 303(d) list that DEQ plans to submit to EPA. Commenter (2) was specifically interested in DEQ's plans for evaluating pH data particularly in marine waters. Commenter (13) was interested in DEQ's plans for evaluating toxic pollutant data.*

DEQ has limited resources for Oregon's assessment program to complete 305(b)/303(d) reporting. In order to prepare Oregon's 2010 Integrated Report, work to process and evaluate all the data available was prioritized as outlined in the call for data in May 2009 and the information accompanying the November 2010 public comment period on the Draft 2010 Integrated Report and 303(d) list.

DEQ's Assessment Methodology specified the approach to evaluate monitoring data for the 10 year time period from June 1, 1999 through May 31, 2009. This data set contains over 5,751,300 results for over 18,600 monitoring stations throughout the state. The draft Integrated Report provided assessment results for data and information on:

- Sampling data results for *Enterococci* bacteria for Coastal Recreation Waters; reports of beach advisories;
- Health advisories warning that potentially harmful levels of toxins produced by blue-green algae (cyanobacteria) are present in a water body indicating a beneficial use impairment that does not meet Oregon's statewide narrative criterion;
- Other advisories warning against consuming fish;
- Instances of Public Drinking Water System closures due to turbidity;
- Waters where Total Maximum Daily Loads (TMDLs) have been completed which will be de-listed on the basis of the TMDL approved by EPA;

These results are included in the final 2010 Integrated Report.

Supplemental assessments of data sets currently underway include, in order of priority:

- Biological assemblages of freshwater macroinvertebrates.
- Sampling data results for *E. coli* bacteria and fecal coliform bacteria.
- Sampling data results for pH.
- Sampling data results for toxic substances.
- Additional de-listings for TMDLs that have been approved since September 2010.
- Sampling data results for Chlorophyll a.
- Shellfish harvesting closures due to sewage releases (fecal coliform as pollutant).

DEQ's timeline will include an opportunity for public review of the supplemental updates to the Integrated Report, including any proposed additions to Oregon's 303(d) list, and any de-listings from the 303(d) list. DEQ has targeted March 2011 as the next date to publish supplements to the 2010 303(d) list for public review and comment, and May 2011 to submit the supplement to EPA.

4.6. Commenter (4) suggested DEQ's call for data in 2009 was not adequate. Commenter (8) requested that DEQ re-open the call for data to add to the data that will be evaluated to produce supplements to the Draft 2010 Integrated Report.

As part of the assessment process, DEQ conducted a public call for data to solicit information for the 2010 Integrated Report assessment. DEQ evaluated monitoring data received during the call for data as well as data that were available in DEQ's LASAR database for the time period June 1, 1999 through May 31, 2009. DEQ began the Integrated Report data evaluation by downloading on November 20, 2009 all the "grab" data in LASAR for this time period. This data set contains over 5,751,300 results for over 18,600 monitoring stations throughout the state. Analytical data that met the assessment protocols for QA/QC, metadata, and pollutant specific requirements have been processed and evaluated according to the assessment protocols. Data that were not available when DEQ began the 2010 evaluation process will not be included in this cycle of the Integrated Reporting. Data collected outside of the time period for the 2010 Integrated Report or input into LASAR after the data download will be incorporated and assessed in the next cycle of the Integrated Reporting. The next cycle will include a call for data and will update any data requirements necessary to prepare a new data set for assessment.

4.7. Commenter (5) noted that there were issues remaining from Oregon's 2004/2006 303(d) list including using narrative criteria to develop the 303(d) list, using biological information to list waters even when a pollutant is not identified, using data from different monitoring stations when listing waters impaired by toxic pollutants, additional numbers for de-listing waters to submit with the 303(d) list, and a prioritized list of waters for TMDL development.

DEQ has applied narrative criteria in developing new additions to the draft 2010 303(d) list including:

- Applying Statewide Narrative Criteria 340-041-007(10) to evaluate information related to harmful levels of toxins produced by blue-green algae;
- Applying Statewide Narrative Criteria 340-041-007(10) to evaluate information related to excessive growths of invasive, non-native aquatic plants;

- Applying Narrative Criteria 340-041-0033(1) to evaluate information related to toxic substance levels in fish tissue with potential harmful effects on human health;
- Applying Statewide Narrative Criteria 340-041-0007(11) to evaluate information related to high turbidity levels causing impairments to beneficial use of water as drinking water supply.

Furthermore, DEQ has developed a methodology to apply the narrative Biocriteria 340-041-0011 to evaluate information for macroinvertebrate biological communities. This analysis is a priority for a supplement to the draft 2010 303(d).

DEQ will address issues regarding the analysis of monitoring data for toxic pollutants when new evaluations for toxic substance data are assessed.

DEQ will submit a list of TMDLs prioritized for the next 2 years when the 2010 303(d) list is submitted to EPA for review and approval.

4.8. Commenter (8) asked if the DEQ LASAR database includes data from various USGS databases.

DEQ's LASAR database contains data generated by the DEQ laboratory, results from sampling and monitoring studies that DEQ conducts or is a partner in, and data collected by partner groups such as Watershed Councils. If DEQ and USGS have collaborated in projects or studies, data may be in LASAR. USGS independently maintains its own data systems for national studies such as National Water Quality Assessment Program.

4.9. Commenter (4) was not able to determine what data DEQ had reviewed to prepare updates for the 2010 303(d) list, and was not able to obtain listing information from DEQ's website.

DEQ's provides information with each assessment record about the supporting data that was used for each assessment. The supporting data summarizes data from site monitoring stations that were used for the assessment and other information that was reviewed and considered for each assessment record. Summaries of other information such as public health advisories or other reporting are also provided to document the supporting data used for each assessment. Information from previous assessment cycles is also summarized to provide information for records that are not being updated, or to provide previous listing information for records being de-listed.

DEQ's searchable website has predefined search options that allow users to search by geographic area, waterbody name, pollutant, water quality status (including the 303(d) listed waters), and a list of waters that are being de-listed in the 2010 assessment cycle. Users can also download all or part of the assessment records by downloading search results in .csv (Comma Separated Value) that can be analyzed using the user's spreadsheet or database applications.

C: Comments on Oregon's Assessment Methodology – 2010 updates

5. Aquatic Weeds or Algae

5.1. *Commenter (8) questioned DEQ's approach to assigning Category 4: Water Quality Limited, TMDL Not Needed on the basis of an aquatic vegetation management plan to control weed growth.*

DEQ finds that documented and implemented aquatic vegetation management plans are appropriate means to restore beneficial uses impaired by aquatic weed growth, especially where nutrients are not the limiting factor and the plans are aimed at controlling or removing an invasive species. TMDLs are appropriate when specific pollutants can be identified as causing the impairment to the beneficial use. Aquatic weeds and algae occur naturally, and weed management plans can directly restore beneficial uses by removing the invasive species.

This approach has been used in previous assessments and approved by EPA, specifically in de-listing Lake Lytle (Record 3066) in the 2002. The supporting data for the 2002 de-listing action was:

“A study has been done that indicates that nutrients are not the limiting factor for controlling weed growth in Lake Lytle and that an aquatic weed management plan is needed to control Eurasian milfoil, a non native species. An aquatic vegetation management plan has been developed by Portland State University for the City of Rockaway Beach and is being implemented.”

The Oregon State Legislature established the Center for Lakes and Reservoirs (CLR) at Portland State University (<http://www.clr.pdx.edu/>) to address lake management and invasive aquatic species issues in Oregon. CLR developed the "Guide for Developing Integrated Aquatic Vegetation Management Plans in Oregon" (<http://www.clr.pdx.edu/docs/iavmp.pdf>). CLR developed the plan for Lake Lytle using this guide. DEQ finds plans developed in this manner are appropriate restoration plans.

The 2010 assessment identified one water body (Laurelhurst Pond Record 23220) where harmful algae bloom advisories have been issued, and where the impairment is being addressed by a City of Portland restoration plan. DEQ finds this plan is appropriate and adequate to control and prevent impairments to recreational use of this small pond in an urban park setting, and warrants the status of Category 4B since the plan will result in attaining the narrative standard.

5.2. *Commenter (4) suggested data for other aquatic weeds such as reed canary grass and animal invasive species be considered in applying narrative criteria.*

DEQ reviewed available data and information showing documented reports of excessive weed growth having a harmful effect on beneficial uses. Two additional listings for excessive parrotsfeather have been added to the 303(d) list. (See response to comment 1.3.) DEQ does not have a methodology to determine when and if other animal species result in impairments based on using the same narrative criteria.

6. Assessing Bacteria - *Enterococci*

6.1. *Commenter (4) questioned DEQ's approach to applying of EPA's section 304(a) ambient water quality criteria for bacteria.*

DEQ applied these federal criteria consistent with EPA's explanation of the use of the geometric mean criterion rather than any of the single sample maximum criteria provided in the Federal Register, November 16, 2004 promulgation of the final rule (page 67224):

3. Use of the Single Sample Maximum

.... EPA expects that the single sample maximum values would be used for making beach notification and closure decisions...

Other than in the beach notification and closure decision context, the geometric mean is the more relevant value for ensuring that appropriate actions are taken to protect and improve water quality because it is a more reliable measure, being less subject to random variation...

And additional EPA guidance (US EPA Office of Water, EPA-823-F-06-013) (page 5):
CWA 303(d) listing

In making CWA 303(d) listing decisions, the geometric mean is generally more relevant than the SSM because it is usually a more reliable measure of long term water quality, as discussed above.

DEQ's methodology specifies the minimum sample size that provides a representative sampling size over a season, and applies the geometric mean criterion to evaluate the result to determine if the water should be listed as water quality limited.

6.2. *Commenters (4) and (8) questioned DEQ's approach using a 10 year data set from 1999 to 2009 for the 2010 assessment.*

DEQ has used a 10 year period of time to bracket data that are evaluated for Integrated Reporting since the 1990s. Ten years span a reasonable period of time so that seasonal and annual cycles are characterized. For waters that are regularly monitored, a robust set of data may be available that is regularly distributed over the 10 year period. For streams that are infrequently monitored, 10 years allows DEQ to look back in time to consider any stream data that may have collected during any one study but that have not been monitored in follow-up studies.

Since DEQ has used 10 years of data for many assessment cycles, the current assessment report contains conclusions about the status of a stream that may have been monitored in the 1980 and listed in the 1990s. These assessments are only updated if sufficient data are available in the most recent 10 year time period to meet the data requirements specified in the assessment protocols. DEQ retains impairment listings unless data in the 2010 assessment are sufficient to supersede previous impairment listings.

For *Enterococci*, DEQ has only been collecting and analyzing waters for this specific bacteria indicator since 2002.

7. Segmentation

7.1. *Commenter (7) questioned why the segmentation protocols in Appendix 1 were so complex.*

DEQ's methodology to determine appropriate assessment units (segments) and assign the appropriate status to each is designed to reflect a complex set of water quality standards

for multiple pollutants and assessment cycles. The protocols are designed to incorporate previous cycles of assessments and the segments that were used for prior 303(d) lists. The segmentation protocols are designed to assess a variety of cases from water bodies having only one monitoring station that may be small or not frequently monitored to those large rivers that have many monitoring stations spatially distributed along the water body with repeated or regular monitoring events. The segmentation and status assignment protocols are DEQ's best efforts to make reasonable and justifiable assessments of water quality throughout the state.

8. Turbidity

8.1. Commenters (6) and (9) questioned the methodology DEQ used to review data and list impairments to drinking water beneficial uses from high turbidity levels and suggested that natural variations in weather and rainfall conditions could be causing high turbidity. Commenter (4) suggested DEQ's methodology was too restrictive in requiring operational difficulties and impairment for more than 30 days out of the year.

For the 2010 Integrated Report, DEQ developed a methodology to review available quantitative data documenting incidents where public drinking water systems (PWS) were adversely impacted by turbidity levels in their surface water source areas and prevented from providing drinking water to the public. DEQ's methodology evaluated the number of days in a year when source water turbidity levels exceeded 5 NTUs, which is a level that causes problems for typical drinking water treatment systems. PWS operators may have means to manage water supplies and continue to provide water for approximately 30 high turbidity days per year before their reserves are depleted or treatment capacity overwhelmed. In the draft assessment of data, DEQ used 30 days in a majority of years of the data record as the benchmark to determine when water sources should be considered impaired and listed as Category 5. DEQ's draft list proposed adding five waters to Category 5 based on this evaluation protocol.

DEQ recognizes that turbidity in surface water is variable and responds to weather and rainfall conditions as well as human disturbance activities that increase erosion of fine and coarse sediments from land into surface waters within watersheds. However, data collected by PWS focuses on the in-stream quality of water in their water sources and does not include comprehensive studies to monitor and analyze all variables and trends that might be related to source water turbidity measurements. In order to allow some buffer for potential, but unquantified, system variability, DEQ revised the assessment protocol to use a higher value of 45 high turbidity days in any year of record to indicate impairment to the drinking water beneficial use. DEQ re-analyzed the available PWS data using this revised protocol. The analysis found the same five water sources exceeded this revised benchmark. One additional PWS exceeded the benchmark in the last year of six years of data (Record 23129, Bear Ck Reservoir). However, data were insufficient to determine if this was related to unusual or infrequent weather events in that year leading to a major disturbance in the watershed, and the water was assigned an Insufficient Data status of Category 3B: Potential concern.

The process to revise the numeric turbidity standard is weighing similar considerations in order to choose measurements and values that protect beneficial uses including drinking water while recognizing complex natural systems. If numeric criteria are developed for Oregon and approved by EPA, the assessment methodology for future Integrated Reports will be reviewed and revised to be consistent with the approved water quality standards.

8.2. *Commenter (8) suggested adding data requirements and specific age of data for turbidity.*

DEQ assessed impairment to drinking water beneficial uses using a benchmark developed to apply the narrative criteria. Upon revision of the turbidity standard to include numeric criteria, an assessment protocol will be developed that specifies data requirements and time periods consistent with the standard.

9. General

9.1. *Commenters (4) and (8) noted the Assessment Methodology is not up to date on the process, timelines, and phased approach DEQ used to develop the 2010 Integrated Report and list of impaired waters.*

The Assessment Methodology has been updated to reflect the process at the time of submission of a final 2010 Integrated Report.

9.2. *Commenter (8) noted the draft Assessment Methodology did not cite EPA's guidance for 2010 Integrated Reporting.*

EPA's guidance was issued in May 2009. DEQ's 2010 Integrated Reporting process was underway with a call for data and issuance of a draft Assessment Methodology in May 2010. DEQ did review a draft version of the 2010 guidance prior to issuing the Draft Assessment methodology. DEQ reviewed the final 2010 guidance and found that there are no changes warranted to DEQ's assessment approach or protocols based on the points covered in EPA's 2010 guidance. DEQ's Assessment Methodology discusses its approach to incorporate statewide probabilistic assessments. The Assessment Methodology also provides detailed information on how DEQ will assign Category 3 for each type of pollutant data and each standard that it evaluates. DEQ may in future assessments incorporate EPA's guidance for rotating basin approaches. It is Oregon's hope that EPA will be able to take action to approve Oregon's 2010 303(d) list of waters needing TMDLs after it is submitted.

9.3. *Commenter (8) suggested revising the draft Assessment Methodology to include discussion about metadata requirements and steps take to obtain necessary meta data*

DEQ provided information in the draft Assessment Methodology about meta data requirements. Additional templates and formats used by DEQ to obtain necessary metadata and procedures used DEQ's lab to review and grade data quality were provide in the call for data.

9.4. *Commenter (4) questioned how the water quality limited status was used and if it was consistent with Oregon's water quality standards.*

The Assessment Methodology describes the meaning of the various water quality assessment categories, including the water quality limited categories. These categories reflect EPA guidance on how to categorize water quality status. In sections specific to each water quality standard, the Assessment Methodology describes the application of the categories to each standard in detail.

9.5. *Commenter (8) objected to DEQ including Category 4b: Water Quality Limited Other Control Measures in Place as one of several water quality status assignments.*

DEQ's approach to using Category 4b is consistent with EPA guidance. EPA has discussed the use of Category 4b in several version of guidance for Integrated Reporting, including 2008, 2006, 2004, and 2002.

9.6. *Commenter (4) objected to DEQ including Category 4c: Water Quality Limited Impairment is not caused by a pollutant.*

DEQ's approach to using Category 4c is consistent with EPA guidance. EPA has described the meaning and use of Category 4c in several version of guidance for Integrated Reporting, including 2006, 2004, and 2002.

D: Comments on Oregon's Assessment Methodology – Other pollutants and older records

10. Assessing Bacteria (*E. coli*) and pH

10.1. *Commenter (8) questioned DEQ's approach of using a 10 year data set from 1999 to 2009 for the 2010 assessment, the minimum data requirements of 5 representative data points, and assessing seasons of interest for summer and fall/winter/spring.*

The Assessment Methodology lists the specific data requirements for each standard applied for the Integrated Reporting assessment, and the requirements for assigning a conclusion about the conditions. For most pollutants, DEQ generally uses available data for a 10 year period of time to bracket data and applies a 10% rule with a minimum data set of five samples per site for most parameters unless the water quality standard specifically requires something different. For waters that are regularly monitored, a robust set of data regularly distributed over 10 years may be available. For streams that are infrequently monitored, 10 years allows DEQ to look back for limited data that may have been collected during any one study but not monitored in follow-up studies.

Evaluating pollutants for a summer and a fall/winter/spring season attempts to account for variations that may occur seasonally or over multiple year cycles. A stream may be more impaired by pollutants during a summer season when low flow and less dilution occur in the water body. An assessment of data in the summer time period, which is defined in water quality standards, might indicate impaired conditions, where assessing data annually might not adequately represent the impaired summer conditions. Alternatively, some pollutants might be introduced into water bodies in periods of high precipitation and flow, causing impairments in fall/ winter/spring season but not in summer.

A site is considered water quality limited if greater than 10% of the samples exceed the appropriate criterion. These requirements were developed based on EPA guidance recommending a simple "rule of thumb" for evaluating data sets of limited size and is intended to account for data sets that may not be fully representative of water conditions.¹ This approach is consistent with that used for Oregon's 1998, 2002, and 2004/2006 review of data for the 303(d) lists in those years.^{2,3}

10.2. *Commenter (4) suggested the single sample criterion be applied to list waters with one exceedence in a complete data set.*

DEQ generally uses a minimum of two samples to demonstrate exceedence to demonstrate the reproducibility of sample results.

¹ Consolidated Assessment and Listing Methodology (CALM), EPA, DRAFT April 20, 2001.

² Consolidated Assessment and Listing Methodology for Oregon's 2002 303(d) List of Water Quality Limited Water bodies and Integrated 305(b) Report, (January 2003) <http://www.deq.state.or.us/wq/303dlist/Final2002AssessmentAndListingMethodolgy.pdf>

³ Oregon Department of Environmental Quality's Listing Criteria for the 1998 303(d) list.

11. Assessment of Biocriteria

11.1. Commenters (5) and (8) objected to DEQ not assigning Category 5: Water Quality Limited, TMDL Needed (303(d)) to waters with impaired biological communities even if pollutants causing impairment are not known. Commenter (4) noted inconsistent status assignments.

DEQ has not yet assessed macroinvertebrate data. This assessment is a priority for the supplement that will be developed for public review in March 2011.

12. Assessment of ocean acidification measured by pH

12.1. Commenter (2) requested Oregon add ocean waters to the 303(d) list based on information submitted in the call for data.

DEQ is in the process of preparing supplements to the 2010 Integrated Report and will continue assessing data from coastal waters in a prioritized order. Assessments will apply Oregon's pollutant criteria according to the protocols set out in the Assessment Methodology.

DEQ conducted a public call for data in 2009 to be evaluated using the protocols outlined in the Assessment Methodology. The information submitted by the Commenter 2 included copies of 72 journal articles and reports on ocean conditions throughout the world, effects of atmospheric CO₂ levels on marine environments, coral reef die offs in tropical oceans, the interaction between ocean chemical conditions and carbonate organisms, and other topics related to the environmental effects of atmospheric CO₂ on ocean conditions. The submitted information did not contain any monitoring or sampling data from ocean waters within Oregon's jurisdiction. None of the submitted information was the type of data described in the Assessment Methodology as relevant for comparison to Oregon's pH standard. Commenter (2) did not submit any analytical data in the templates and formats that were provided and specified for use for submission of data in the public call for data.

During public review, Commenter (2) noted that reports are available on recent sampling off the coast of California and in Puget Sound in Washington where pH data have been collected. These waters, however, are not within Oregon's jurisdiction and are not appropriate to include in Oregon's 305(b)/303(d) assessment. Commenter (2) also noted recent reports of low productivity in Oregon shellfish hatcheries, but did not provide any specific information that DEQ could review to determine if this warranted consideration in addition to pH data that were previously solicited and are available in DEQ's data repository.

13. Assessment of Sedimentation

13.1. Commenter (8) noted Oregon has not adopted numeric criteria for sedimentation, and does not have a clear methodology for applying the narrative criteria (prohibition of bottom deposits deleterious to fish or aquatic life). Commenter (4) suggested that DEQ should continue to use un-quantified judgments of impairment and sediment as cause of impairment in lieu of having benchmarks developed.

DEQ has pursued efforts to develop a quantitative benchmark that could be applied for assessment purposes. A preliminary approach was developed and reviewed by a scientific panel, Oregon's Independent Multidisciplinary Science Team (IMST). This effort has not been completed due to the complexity of characterizing natural systems, and lack of resources to devote to research and analysis of unresolved scientific and technical questions related to potential sediment measurements and benchmarks. At this time, DEQ

does not have a quantitative benchmark to use to analyze stream physical habitat data that are indicative of excess sediment, or know when those conditions are impairing fish and aquatic life. Sufficient information is not available to document and support listings at this time.

14. Assessment of Total Dissolved Gas

14.1. Commenter (7) suggested DEQ should include more detail in the Assessment Methodology for this standard.

The protocols for Total Dissolved Gas are sufficient for assessment purposes.

15. Assessment of Toxic Substances

15.1. Commenter (7) suggested DEQ consider a natural condition provision for listing and de-listing naturally occurring earth metals found in Oregon's water, as discussed in EPA guidance for 2008 Integrated Reporting.

DEQ applies Statewide Narrative Criteria 340-041-0007(2) that allow for less stringent natural conditions to supersede numeric criteria. EPA Region 10 and DEQ agreements with EPA provide guidance on how these demonstrations for natural conditions should be made. See:

EPA Region 10, April, 2005, Principles to Consider When Reviewing and Using Natural Condition Provisions

<http://yosemite.epa.gov/r10/water.NSF/840a5de5d0a8d1418825650f00715a27/35a31c9aefba540188256fd60076c840?OpenDocument#The%20Document>

DEQ, February 4, 2004, Clarification Letter from DEQ to EPA,

<http://www.deq.state.or.us/wq/standards/docs/temperature/clarificationltr.pdf>

A note will be added to the Assessment Methodology discussion about narrative criteria citing these guidance documents.

15.2. Commenter (7) questioned the significance of the red highlighted section in the Assessment Methodology for Toxic Substances. Commenter (4) suggested that pre-2004 criteria are not the correct criteria to apply.

The applicable criteria for Clean Water Act purposes, such as 303(d) listing, are EPA-approved state water quality standards. Oregon's standards for toxic substances were revised and adopted by the Environmental Quality Commission in 2004. But EPA disapproved the majority of toxic substance criteria for protecting human health and has not yet acted on the criteria protecting aquatic life. The note in the draft methodology was a reminder to verify the correct citation of the toxic substance standards given the flux in their status. Table 20 as adopted and approved by EPA in the 1980s contains the effective numeric criteria that are used to evaluate site data for toxic substances for the Integrated Report.

15.3. Commenter (7) provided comments on assessment for PCBs.

DEQ has not updated the water quality assessment data and information for PCBs. Toxic substances will be updated in supplements to the 2010 Integrated Report. The comments appear to be directed at listings that were finalized and approved in previous assessment cycles.

15.4. *Commenter (8) asked if supplements to Oregon's 2010 Integrated Report will evaluate data from toxic sampling in the Columbia River Estuary collected from a collaborative study in 2007.*

DEQ has evaluated the available data set from DEQ's LASAR database. If those data are in DEQ's LASAR database for the 2010 assessment data set, they will be assessed in the supplement to the 2010 Integrated Report. No data were received by DEQ during the call for data specifically for this study. DEQ's laboratory did log uploading 2,620 data results from Columbia Riverkeeper sampling for conventional pollutants into LASAR in September 2009. Willamette Riverkeepers submitted 100 toxic sampling results during the public call for data which DEQ logged in as uploaded into LASAR in September 2009. The assessment for these data will be included in a supplement to the 2010 Integrated Report.

15.5. *Commenters (4) and (8) expressed concern that, since many toxic criteria are well below minimum reporting limits (MRL), no water will be listed as Category 5.*

DEQ will evaluate any data that is quantified at or above the minimum reporting limits. DEQ's methodology does not use monitoring data below minimum reporting limits, since it cannot draw any conclusions about impairment status where data are below the minimum reporting limits, and consequently, the pollutant concentrations are unknown.

16. Assessment methodology to de-list waters

16.1. *Commenter (7) objected to the protocol using equivalent years of data to de-list a water body as used to initially list a water body.*

DEQ reviews available data and may de-list waters if new or recent data show water quality standards are being met. DEQ reviews a 10 year set of available set to determine where sites are meeting standards. If previous assessments have already resulted in listings of a water body segment, DEQ will review the data to determine if they are equivalent in quality and spatial and temporal representativeness to the data used to initially list a water body, and meet the specific pollutant protocols to assign a Category 2: Attaining status for the water body. An example is that if the listing was based on two successive years of a standard not being met, DEQ would look for at least two successive years of data indicating that the standard is being met. If standards have changed, data are evaluated with the currently applicable standard and the current protocols and data requirements for that pollutant.

E. Comments and corrections for records not updated in the Draft 2010 Integrated Report

17. Assessment of Clackamas River pH

- 17.1. *Commenter (3) indicated USGS has data for pH in the Clackamas River and North Umpqua River showing exceedences of Oregon's pH criteria for freshwater that could be submitted to include in the 2010 Integrated Report analysis.*

Data that were submitted in the public call for data in 2009 were uploaded into DEQ's Laboratory Analytical and Storage Retrieval (LASAR) database. DEQ retrieved data for the time period June 1, 1999 through May 31, 2009 and these data are available for DEQ's current assessment. Data in addition to this available data set or data recently collected and added to the LASAR database will be incorporated into future assessments, or may be used by program specific applications such as TMDL development or watershed studies.

18. Assessment of other pollutants and old records

- 18.1. *Commenter (10) provided detailed comments on old assessment records for metals, dieldrin, flow and habitat modification, phosphate phosphorous, and alkalinity.*

In this Integrated Report, DEQ delisted streams where TMDLs have been completed to support de-listing these waters. The records in question may be updated in supplements to the 2010 report if data from DEQ's dataset as described in the preceding response are available to evaluate for the relevant time period. Commenter is encouraged to review those supplements and provide comments at the time of the updates.

- 18.2. *Commenter (12) noted City of Gresham provided data that should be included in the assessment for pesticides and other toxic substances.*

DEQ received data results from the City of Gresham in the call for data. Data for 7,615 sample results were uploaded in LASAR. The data are in the data set that will be assessed by DEQ in a supplement to the Integrated Report as described in response to comment 4.5.

List of Commenters

Commenter Number	Name/Title	Representing	Address/Phone
1	Sophia Hobet Water Services Manager	City of Salem	1410 20 th Street SE Bldg #2 Salem, OR 97302 503-588-6480
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3	Kurt D. Carpenter Hydrologist	U.S. Geological Survey	2130 SW 5th Avenue Portland, OR 97201 503-251-3215
4	Nina Bell Executive Director	Northwest Environmental Advocates	P.O. Box 12187 Portland, OR 97212-0187 503-295-0490
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9	Jeff Light	Plum Creek Timber Company	P.O. Box 216 Toledo, OR 97391
10	Rajeev Kapur Water Resource Analyst	Clean Water Services	2550 SW Hillsboro Highway Hillsboro, OR 97123 503-681-3600
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14	Barbara Rich		Bend, OR 97701
15	Laurie Lindell		Bureau of Land Management

Received After Deadline

11	Karl G. Anuta	Northwest Environmental Defense Center
12	Torrey Lindbo Water Quality Specialist	City of Gresham