United States
Environmental Protection
Agency

Response to Comments
on
The EPA's Additions to Oregon's 2010 Clean Water Act 303d List
December 2012

Background

Every two years the State of Oregon is required to submit a list of impaired waters to the EPA. This list, called the 303(d) list, identifies water quality limited segments and associated pollutants which require the development of a Total Maximum Daily Load (TMDL). Oregon Department of Environmental Quality (ODEQ) submitted the Oregon 2010 303(d) list to the EPA dated on January 31, 2011 and a supplement to the list dated on May 23, 2011. On March 15, 2012, the EPA partially approved and partially disapproved Oregon's 2010 303(d) list submittal consistent with the requirements of Clean Water Act (CWA) Section 303(d), 33 U.S.C. §1313(d), and 40 CFR 130.7. Specifically, the EPA approved Oregon's proposal to list 970 water quality limited segments and to remove 927 water quality limited segments.

The EPA determined that ODEQ failed to consider all existing and readily available water quality-related data and information for water bodies of the state when developing Oregon's 2010 Section 303(d) list. Specifically, ODEQ failed to list waters for the following pollutants: bacteria, chlorophyll a, dissolved oxygen, pH, sedimentation, temperature, total dissolved gas and toxics. In addition, ODEQ failed to include on the 2010 Section 303(d) list water quality limited segments that the ODEQ identified as having an impaired biological use.

The EPA developed a listing methodology to use in its assessment of impaired waters to add to Oregon's 2010 303(d) list. This listing methodology was the same as Oregon's 2010 methodology for the parameters the EPA assessed with one exception. For sediment, Oregon did not have a formally established assessment methodology for 303(d) listing so the EPA developed a sedimentation listing methodology. The EPA's sedimentation listing methodology is based on Oregon's peer reviewed state-wide data analysis method for clean sediment which is consistent with the EPA's "Framework for Developing Suspended and Bedded Sediments Water Quality Criteria" (EPA-822-R-06-001 Office of Water, Office of Research and Development, 2006) and on scientific literature and methodologies used by other states. The EPA used Oregon's 2010 assessment of biocriteria impairments, but listed such impaired waters in Category 5. The EPA guidance recommends listing waters with aquatic use impairments as Category 5 even if the pollutant is not known. *See* EPA, 2005. (*Also see* "Methodology for Oregon's 2010 Water Quality Report and List of Water Quality Limited Waters," ODEQ, May 12, 2011; "EPA 303(d) Listing Methodology," US EPA, March 15, 2012; and "Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303d, 305b and 314 of the Clean Water Act,"

US EPA, July 29, 2005). The EPA provided the public with its assessment methodology during the public comment period.

Based on the analyses discussed above, the EPA proposed to add 1,004 waters to Oregon's 2010 303(d) list. On March 15, 2012, the EPA published notice in the Federal Register of its proposed decision and announced a 30-day public comment period. *See* 51 Fed. Reg. 15368 (March 15, 2012). In response to a request, the EPA extended the public comment period through April 30, 2012. The EPA received public comments from 22 individuals or organizations on its proposed decision to add these water quality limited segments to Oregon's 2010 303(d) list. The EPA considered the public comments received in making its final decision on the waters and pollutants for addition to Oregon's 2010 303(d) list.

As a result of the comments, the EPA is adding 870 water quality limited segments to Oregon's 2010 303(d) list. The final list can be found in Attachment 2 to "EPA's Action to Add Waters to Oregon's 2010 303(d) List, December 2012." This document provides a summary of the comments received and the EPA's responses.

List of Commenters

Commenter Number	Name/Title	Representing	Address/Phone
1	Miyoko Sakashita Senior Attorney & Oceans Program Director	Center for Biological Diversity	351 California Street Suite 600 San Francisco, CA 94104 415-436-9682
2	Stan Easley, Native American Representative	Chetco River Watershed Council	P.O. Box 882 Brookings, OR 97415
3	Daniel Henninger, Regulatory Program Manager Water Environment Services	Clackamas County	150 Beavercreek Road Oregon City, OR. 97045 Office (503)742-4555
4	Rajeev Kapur Water Resource Analyst Regulatory Affairs Department	Clean Water Services	2550 SW Hillsboro Highway Hillsboro, OR 97123 503-681-3600
5	David Ford, Manager	Eagle Point Irrigation District	
6	Lynne Kennedy, Water Resources Program Manager, Department of Environmental Services	City of Gresham	1333 NW Eastman Parkway Gresham, OR 97030-3813 (503) 618-2525
7	Nina Bell Executive Director	Northwest Environmental Advocates	P.O. Box 12187 Portland, OR 97212-0187 503-295-0490
8	Kathryn VanNatta, Director of	Northwest Pulp and Paper Association	212 Union Ave SE Suite 103

	Governmental and Regulatory Affairs		Olympia, WA 98501-1302 (360) 529-8638
9	Janet Gillaspie, Executive Director	Oregon Association of Clean Water Agencies	107 SE Washington, Suite 242, Portland, Oregon 97214 (503) 236-6722
10	Jennifer Wigal, Manager, Standards and Assessment Section	Oregon Department of Environmental Quality	811 SW Sixth Ave Portland, OR 97204-1390 503-229-6099
11	Gail Greenman National Affairs and Grassroots Specialist	Oregon Farm Bureau	3415 Commercial Street Salem, Oregon 97302 (503) 399-1701
12	April Snell Executive Director	Oregon Water Resources Congress	1201 Court St. NE, Suite 303 Salem, OR 97301 (503) 363-0121
13	Tim Hemstreet, Project Manager	PacifiCorp Energy - Hydro Resources	825 NE Multnomah, Suite 1500 Portland, OR 97232 (503) 813-6170
14	Jeff Light, Forest Hydrologist	Plum Creek Timberlands, L.P. Company	P.O. Box 216 Toledo, OR 97391 (541) 336-6227
15	Kim E. Cox, Environmental Policy Division Manager Bureau of Environmental Services	City of Portland	1120 SE Fifth Avenue, Room 1000 Portland, OR 97204 503-823-4913
16	Steve Witbeck, Manager	Roseburg Wastewater Treatment Plant	1281 SE Magnolia Roseburg, OR or CH2M Hill -RUSA 3485 W. Goedeck St. Roseburg Oregon 97471 541 -673-6570
17	Justin Boyington Stormwater Flow Monitoring Analyst, Public Works Department	City of Salem	1410 20th Street SE Bldg #2 Salem, OR 97302 503-588-6063 Ext 7730
18	Bob Boring		620 Best View Dr. Klamath Falls, OR 97601 541-882-2016
19	Grinnell and Dianna Jones		39889 Highway 228 Sweet Home Oregon 97386
20	Yvonne Maitland		15676 Oceanview Drive Harbor, OR 97415 (541) 412-1200

21	Sharon Waterman, rancher		
22	Paul Robertson, Lake Manager (via telephone)	Devils Lake Water Improvement District	820 SE Hwy 101, Suite D. P.O. Box 974. Lincoln City, OR 97367 (541) 994-5330

Removals from the EPA's Proposed Waters to Add to Oregon's 2010 303(d) List

Commenters (3), (4), (5), (10), (12), (13), (15), and (22) noted what appeared to be errors in specific proposed listings and requested these listings be removed. These errors included duplicate listings, coding errors in Oregon Department of Environmental Quality's data base which formed the basis of the EPA's listings, errors in calculating ammonia criteria, incorrect extraction from a database prior to submittal into STORET, incorrect use of PREDATOR model, listed impairments already addressed by the EPA approved TMDLs, errors in applying appropriate criteria (such as marine instead of estuarine/freshwater), problems with monitoring locations, error in waterbody type, lack of sufficient data to show impairment of a designated use, incorrect labeling of environmental data in LASAR and incorrect data evaluation.

The EPA has removed the proposed listings that the EPA agrees were incorrect. The proposed listings which have been removed, along with the specific reason for removal, are described in Attachment 1 to this document.

Clarifications on the EPA's Proposed Waters to Add to Oregon's 2010 303(d) list

Commenters (10), (15), (17), and (3) pointed out what appeared to be errors in segment mile identification, LLID identification, waterbody name, spawning time period, and HUC identification.

The specific listings which are being clarified in agreement with the commenters, along with the rationales, are described in Attachment 2 to this document.

Disagreement on the EPA's Proposed Waters to Add to Oregon's 2010 303(d) List

Some commenters requested the EPA to remove specific waters from the EPA's proposed waters to add to Oregon's 2010 303(d) List. The EPA did not remove these waters from the EPA's waters to add to Oregon's 2010 303(d) List for the reasons described below.

Arsenic

Commenters (3), (4), (9) and (13) disagreed with the listings of Klamath River, Beaverton Creek and Fanno Creek for the following reason: The proposed listing is based on exceedences of Oregon's human health criterion of 2.1 ug/l. The criterion is expressly for "total inorganic arsenic" not total arsenic. All the data on which the listing is based are for total arsenic. There is no information on the portion of the total that is in inorganic form. In the absence of data on inorganic arsenic concentrations there is no basis for listing.

Evaluating total recoverable arsenic for inorganic arsenic in the water column is an acceptable practice (*See* "A Review of the Source, Behaviour and Distribution of Arsenic in Natural Waters," Applied Geochemistry, 17, 517-568. Smedley, P. L. and Kinniburgh, D. G. 2002.) The EPA evaluated the total recoverable arsenic water column data to compare it to Oregon's criteria. There are two primary reasons for this evaluation method. First, organic forms of arsenic are usually minor in surface waters. Second, virtually none of the data collected in Oregon was analyzed only for inorganic arsenic in the water column. There is a basis for listing as the data show clear impairments: Fanno Creek had three values over the criteria (one value double the criteria), Beaverton Creek had five values over the criteria and Klamath River had nine values over the criteria (one value triple the criteria).

Biological

Commenter (6) disagreed with listing Beaver Creek, Columbia Slough, Osburn Creek in the Lower Willamette for the following reason: The proposed listings appear to be based on one data point. The ODEQ listing methodology requires at least two excursions of the standard to result in a 303(d) listing.

Biological assessments provide direct measures of the cumulative response of the biological community to all sources of stress and measure the condition of the aquatic resource to be protected. Benthic macroinvertebrate data are typically collected once per year, but the organisms have been living in the stream for a longer period of time and therefore a single macroinvertebrate sample represents long-term stream conditions. Therefore, one sample is sufficient to evaluate biological impairments. The EPA accepted Oregon's assessment for biocriteria but determined it was appropriate and necessary to move water segments that showed detrimental changes to biological communities and impacts on aquatic life use support from Category 3c to Category 5/303d list. ODEQ developed and used PREDictive Assessment Tool for Oregon (PREDATOR) model for assessing the macroinvertebrate communities in Oregon's perennial, wadeable streams and determining detrimental changes to biological communities and impacts in aquatic life use support. The EPA supports and adopted the model results indicating impacts to aquatic life use support. Assessing macroinvertebrate communities and impacts in aquatic life use support addresses Oregon's narrative standard "waters of the state must be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities" (*See* "Oregon's Water Quality Standards," OAR 340-041-0011). The benchmarks for the PREDATOR model were developed to be applied to a single sample. (*See* "PREDATOR: Development and use of RIVPACS-type macroinvertebrate models to assess the biotic condition of wadeable Oregon streams, November 2005 models," 08-LAB-0048-TR Version 1.1. Hubler, S. 2008 and ODEQ, July 2008.) Oregon's 2010 listing methodology states "one sample result is sufficient to evaluate for the assessment using the benchmarks developed from the PREDATOR model." (*See* "Methodology for Oregon's 2010 Water Quality Report and List of Water Quality Limited Waters Pursuant to Clean Water Act Sections 303(d) and 305(b)" ODEQ, May 12, 2011.)

Commenter (4) requested clarification on why the EPA and ODEQ placed biocriteria listings in different categories (ODEQ Category 3c vs the EPA Category 5) of the Integrated Report and Commenters (9), (14), and (15) believed that ODEQ is better qualified to determine which category to place waters with biological impairments and requests that the EPA remove the waters proposed to be added to Oregon's 303d List on the basis of biocriteria until the ODEQ feels the listings are warranted. Commenters (4), (9), (15) and (17) requested an explanation on why the EPA moved Claggett Creek, Clark Creek, Croisan Creek, Pringle Creek and Glenn Creek in the Middle Willamette HUC from Category 3C to the Category 5/303d List given that the pollutant is unknown. Commenter (15) concluded that if the PREDATOR model does not take impairing pollutant into account, then results from the PREDATOR model cannot be used to imply a pollutant is known which is required for a Category 5, 303d listing.

Biological assessments provide direct measures of the cumulative response of the biological community to all sources of stress and measure the condition of the aquatic resource to be protected. ODEQ developed the PREDATOR model to analyze biological data to determine detrimental changes to biological communities and impacts on aquatic life use support. Using the PREDATOR, Oregon identified 321 water segments that showed detrimental changes to biological communities and impacts on aquatic life use support and put these waters into Category 3c rather than Category 5 because ODEQ did not know the causes for the biological impairments in these waters. The EPA supports the use of the PREDATOR model, and accepted Oregon's model results that indicated impacts to aquatic life use support. However, the EPA placed these waters on Oregon's 2010 303d List (Category 5) in accordance with the EPA's guidance which states that waters should be placed on the 303(d) list (Category 5) for unknown cause if biological assessments used to evaluate aquatic life uses show impairment even if the specific pollutant is not known. (*See* "Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303d, 305b and 314 of the Clean Water Act," US EPA, July 29, 2005), These waters should be listed unless the State can demonstrate that non-pollutant stressors cause the impairment, or that no pollutant(s) causes or contribute to the impairment. ODEQ failed to provide data or information which showed either of these exemptions.

In developing TMDLs for such waters, the pollutant causing the impairment to the aquatic life uses would need to be identified. The EPA has developed guidance to assist States in identifying the causes of a biological impairment. (*See* "Stressor Identification Guidance" EPA 822-B-00-025, US EPA, December 2000.) Also prior to TMDL development, the State usually reviews the original data upon which the listing was based and any new data and information in order to determine whether the water is indeed impaired.

> *Commenter (4) disagreed on listing the Tualatin River Subbasin streams for biological impairment. The commenter has conducted extensive macroinvertebrate monitoring in the Tualatin River watershed published in 2010–2011 Assessment of Fish and Macroinvertebrate Communities of the Tualatin River Basin, Oregon" prepared for Clean Water Services by Michael B. Cole and Jena L. Lemke ABR, Inc.— Environmental Research and Services, November 2011), and determined that temperature and dissolved oxygen are the primary stressors for macroinvertebrates in the watershed. These impairments are already addressed in the 2001 Tualatin TMDL.*

Although temperature and dissolved oxygen may have been identified as the primary stressors in the areas of the subbasin sampled in the cited study only two streams that are proposed for listing were included in the sampling for that study; e.g., Scoggins Creek and Willow Creek. Table 11 in the study shows fine sediment is a likely stressor in Willow Creek, and sediment was not addressed in the existing TMDL. Table 14 in the study states that temperature and dissolved oxygen are not likely stressors in Scoggins Creek so the 2001 Tualatin TMDL does not address the impairment in this stream. Without more site specific information, it is not possible to determine whether temperature and dissolved oxygen are causing the impairment to biota in the other streams proposed for listing. Other pollutants such as fine sediment or toxics may be the source of stress, and these are not addressed by the existing TMDL.

> *Commenter (15) believes that several listings were incorrect based on the location descriptions of where the samples were located. These include: 1) Listing for Miller Creek in the Lower Willamette River (LLID 1228072456175) may be incorrect as the sample location (Boulder Creek) appears to be a stream in the South Umpqua watershed. This is further corroborated by the PREDATOR criterion (WC+CP) used which does not apply to the Willamette Valley. 2) Listing for Multnomah Channel Tributary (LLID 1228681456930) may be incorrect based on the location description where the sample was collected. The samples location description (Elk EF at*

RM 1.7) appears to be a stream in the South Umpqua watershed. This is further corroborated by the PREDATOR criterion (WC+CP) used which does not apply to the Willamette Valley. 3) Listing for the unnamed stream in the Lower Willamette River (LLID 1226667454690) matches the LLID for Stephens Creek, a tributary to the Lower Willamette River. The sample's location description (Donegan Creek at RM 3.3), however, appears to be a stream in Southern Oregon in the Umpqua National Forest. This is further corroborated by the PREDATOR criterion (WC+CP) used which does not apply to the Willamette Valley.

1) The Miller Creek listing was based on data from a site described as "Miller Creek" (SVN number 06023CSR and LASAR station number 33518, Latitude: 45.6076, Longitude: -122.81681). Therefore this site is located in Miller Creek. 2) The Multnomah Channel Tributary listing was based on data from a site described as "Multnomah Channel Tributary" (SVN number 03011CSR and LASAR station number 30328, Latitude: 45.6950, Longitude: -122.866). This site is located on the waterbody. 3) The listing for unnamed stream in the Lower Willamette River (LLID 1226667454690) was based on data from a site described as "Willamette River tributary 0.3 RM" (SVN number 06033CSR and LASAR station number 33477, Latitude: 45.46866, Longitude: -122.6796). This site is located on the waterbody.

Commenter (4) noticed that the EPA proposed to list the entire length of the Tualatin River based on a single sample of RM 1.3. The land uses and characteristics of the river change dramatically from its headwaters to its mouth and can be broken down into four geomorphic reaches: mountain, meander, reservoir-like and riffle (description of each in letter). The sample taken at RM 1.3 was representative of the riffle reach which extends from RM 0 to 3.4 and was not representative of the rest of the river. Therefore, it was inappropriate to list the entire river based on a single sample at RM 1.3

At this time, ODEQ has defined the entire length of Tualatin River as a single water quality limited segment. The EPA is not proposing to make changes to Oregon's segmenting system and listed this segment based on Oregon's existing segmentation. See response to commenter 6 above (page 5) on why the EPA believes it is acceptable to list based on a single biological sample.

Commenter (4) believed that the proposed biocriteria listings were inappropriate because the determination was based on an erroneous comparison of a few sites to reference sites that have fundamentally different characteristics. The PREDATOR model report noted: "the types of streams used to build the models were wadeable (typically first through fourth order) streams that contained fast water habitats (riffles)." The Tualatin Watershed sites are "typically dominated by glide and pool habitats and lack riffle habitat necessary for sampling using standard targeted riffle sampling techniques" (ABR, 2011). Identifying appropriate reference locations is fundamental to understanding and utilizing macro invertebrate data. As noted in the PREDATOR model report, "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 the model construction. ...". Appropriate reference locations were not identified for the valley bottom streams of the Tualatin River watershed. Thus, the comparison of Tualatin sites with the model reference sites is fundamentally flawed and so is the conclusion that these sites should be listed for biological impairment.

The EPA used data collected by ODEQ using standard sampling methods. The sites that we evaluated for biological data were all identified by ODEQ as wadeable. These same sampling methods were used in the development of the PREDATOR model. Fast water sites (riffle and glides) are targeted for sampling; however, the results represent the condition of the stream.

In the EPA's evaluation, we used the PREDATOR model outputs as described in Hubler (*See* "PREDATOR: Development and use of RIVPACS-type macroinvertebrate models to assess the biotic condition of wadeable Oregon streams, November 2005 models," 08-LAB-0048-TR Version 1.1. Hubler, S. 2008 and ODEQ. July 2008.) The PREDATOR model is actually multiple models for different geographic regions of the State. It applies to wadeable streams in all level III ecoregions in Oregon, except for the Snake River Plains in the far eastern part of the State, including the Tualatin Basin, which is covered by the Marine Western Coastal Forest (MWCF) model. The reference sites used to develop the models were all selected to represent minimal human disturbance, and all sites were screened based on the degree of human activities in their drainage areas for road density, urban and agricultural use, and active or recent logging (See "Selecting Reference Condition Sites: An Approach for Biological Criteria and Watershed Assessment, Technical Report," WAS04-002, Doug Drake. ODEQ, April 2004). Reference sites were then grouped according to the similarities of their sampled invertebrate assemblages. For a detailed discussion, see Hubler's document cited above. Thirty-eight reference sites were used in the development of the MWCF model and the precision of the MWCF model was similar to a model for Western Oregon and Washington by Utah State University (*See* "Effects of sampling error on bioassessments of stream ecosystems: application to *RIVPACS*-type models." Ostermiller, J.D. and C.P. Hawkins. Journal of the North American Benthological Society. 23 (2): 363-382. 2004.) The EPA believes that the PREDATOR model is a scientifically sound tool to assess macroinvertebrate data.

Chlorophyll a

Commenter (10) noted that the EPA approved the Snake River-Hells Canyon Reach TMDL on 9/9/2004; therefore the Snake River (280.5 to 404 for Fall, Spring & Winter) should be in Category 4a: Water Quality Limited, TMDL approved as the TMDL addresses year-round nuisance algae concerns through a 14 ug/L mean growing season limit for chlorophyll a (nuisance threshold of 30 ug/L with exceedence threshold of no greater than 25%) and a target of less than or equal to 0.07 mg/L total phosphorus. TMDL reach (RM 409 to 188), May through September.

The commenter is correct that the EPA approved the Snake River Hells Canyon TMDL which addressed nuisance algae and phytoplankton in this waterbody. However, the TMDL only covered the summer season by setting allocations from May – September. (*See* "Snake River-Hells Canyon TMDL," pages 446 – 447, Idaho Department of Environmental Quality and ODEQ, Revised June 2004). The EPA's listing is for fall, winter and spring.

Dissolved Oxygen

Commenter (10) believes that there is a listing segment error, as it is not supported by data and that the listing should be from river mile 83.6 to 124.4 (Crooked River above Prineville Reservoir). There are numerous monitoring sites between RM 0 and 70 (bottom of the reservoir). If these lower sites meet the criteria, the lower river and Prineville Reservoir should not be included in the listed segment.

ODEQ's segmentation methodology for dissolved oxygen (DO) states that if the data indicates impairment, then the entire reach covered by that specific dissolved oxygen criteria should be listed. The same dissolved oxygen criteria applies over the entire length of the Crooked River, so the data indicating impairment in the river below the reservoir results in the entire stream being listed under the segmentation methodology. The EPA is not proposing to make changes to Oregon's segmenting system and listed this segment based on Oregon's existing segmentation. The limits of impairment will be specifically assessed and addressed during the TMDL process.

Commenter (10) believes that the following water bodies impaired for dissolved oxygen should be placed in Category 4a Water Quality Limited, TMDL approved because the EPA approved the

Bear Creek TMDL on 12/12/92: Ashland Creek, Bear Creek, Griffin Creek, Jackson Creek, Wagner Creek, West Fork Jackson Creek, Lone Pine Creek, Larson Creek.

The Bear Creek TMDL addressed non-attainment of dissolved oxygen (DO) standards in Bear Creek. To bring the watershed back to a healthy status and meet this standard, the TMDL established water concentration targets for biochemical oxygen demand. The allocations set in the TMDL were designed to address DO impairment in Bear Creek, not in the tributary streams. Although allocations were set for areas outside of Bear Creek, including these streams, these allocations were calculated to address concerns in Bear Creek. DO impairment in the tributaries proposed for listing was not evaluated or directly addressed. *See* "Appendix C: Bear Creek Watershed 1992 TMDLs," ODEQ, September 24, 1990.

Commenter (17) questions whether the dissolved oxygen (DO) listing for Glenn Creek (RM 4.1 to 7) under the cold water criteria is in error because the EPA has already approved a listing for dissolved oxygen (DO) in RM 0 to 7 for the cool water DO criteria.

The upper reaches of Glenn Creek from RM 4.1 to the headwaters are located in the "Willamette Valley generally typical" ecoregion type as described in "Ecoregions of the Pacific Northwest" (EPA/600/3-86/033, US EPA, July 1986). The Oregon dissolved oxygen criteria for all waters in this ecoregion are cold water dissolved oxygen criteria. This listing corrects and updates the 2004 ODEQ listing for Glenn Creek to reflect this segmentation and difference of criteria in the upper portions of Glenn Creek.

Commenter (16) questioned adding South Umpqua (RM0-28) for spawning as there is only spawning season data from one sample site (which is upstream of the Roseburg WWTP). One sample point should not be sufficient to list this reach of stream. Table 21 in OAR 340 division 41 is not a minimum listing of 11 mg/l. It is a 7 day mean, minimum of DO of 11 mg/l, with a minimum of 9.0 mg/l or 95% saturation. A total of 55 samples were taken at the Stewart Park Bridge during the spawning season over a 12 year period (1999 to 2011). All 55 samples exceeded 9.0 mg/l. Seven of the 55 samples had a DO less than 11 mg/l and a percent saturation of less than 95%. Of those seven, two samples have 94% saturation, which is well within the margin of error for a field sample given that the accuracy of the test is 0.3 mg/l. Six of the seven samples that did not meet the criteria were taken between October 28 and November 18, and though the spawning season is listed as October 15 to May 15, actual spawning only begins when the rains begin and this can be anytime from October 15 to December 1, when flows are at least 200 cfs. The only samples that did not meet criteria and was not taken in late October or early November was 10.4 mg/l and 94% saturation, which means the results were within the margin of error for the test. All of the samples that did not meet the criteria were taken between 1998 and 2004. All the samples taken since 2005 meet the criteria. There may have been a problem five years ago but there is no evidence of a problem now. There may be a problem with DO in the October 15 through November 15 period but there is not enough data to support a listing in that timeframe of the entire spawning season. Also there is a TMDL in place for the South Umpqua for the May 1 through October 31 period and this should resolve any issues in the river.

The EPA's listing methodology for dissolved oxygen is the same as the one described in ODEQ's "Methodology for Oregon's 2010 Water Quality Report and List of Water Quality Limited Waters." Only one site is required to list the reach of a stream governed by the same criteria under the Oregon listing methodology. Similarly the Oregon listing methodology requires only a minimum of five discrete samples rather than averaged weekly samples for listing. The season in which the spawning criteria applies for this stream is October 15 through May 15 and that is the period for which the data must be evaluated. The data demonstrate clear impairment for the spawning season when evaluated using the ODEQ's "Methodology for Oregon's 2010 Water Quality Report and List of Water Quality Limited Waters." The period for evaluation in the typical Oregon listing methodology is 10 years. The TMDL that

is in place for the Umpqua River only sets allocations for the period from May 1 through October 31 and may not be sufficient to address impairment in the October 15 through May 15 spawning season.

> *Commenter (4) believes that the fish use spawning maps do not apply to Beaverton Creek, Tualatin River, Summer Creek, Nyberg Creek, Fanno Creek Tributary, Dawson Creek, Dairy Creek, Chicken Creek, Cedar Mill Creek, Bronson Creek and that these streams should not be listed for spawning season dissolved oxygen impairment. Commenters (4)(6) noted that the entire lengths of Johnson and Rock Creeks are listed as not meeting the spawning criteria. The fish use maps show that only the upper reaches of this stream are designated as spawning habitat. Commenter (4) states that there is no data available in the segment of McKay Creek that is designated for spawning in the fish use maps. The commenters requested that these listings should be removed or modified accordingly.*

The EPA's listing methodology for dissolved oxygen is the same as the one described in ODEQ's "Methodology for Oregon's 2010 Water Quality Report and List of Water Quality Limited Waters." Although there is no designated spawning habitat for anadromous salmonids in these streams or in the lower reaches of Johnson Creek, as shown in the fish use maps, resident trout spawning is still a designated use in all these waters. These listings are based on resident trout spawning criteria for DO not being met. The seasons for resident trout spawning are described on pages 36 through 38 of the "Methodology for Oregon's 2010 Water Quality Report and List of Water Quality Limited Waters."

> *Commenter (15) believes that dissolved oxygen was addressed in the 2001 Tualatin Basin TMDL which uses total volatile solids as a surrogate for DO and also addresses the ammonia and phosphorus concerns. Listing Fanno Creek for DO is counterproductive and is not in accordance with the EPA approved 2001 Tualatin TMDL.*

The 2001 Tualatin Basin TMDL addressed dissolved oxygen in Fanno Creek only for the non-spawning criteria. The spawning criteria are more stringent than the criteria addressed in the 2001 TMDL and it is unlikely that the allocations would attain the spawning season criteria. *See* "Tualatin Subbasin Total Maximum Daily Load," ODEQ, August 2001.

> *Commenter (4) notes that dissolved oxygen data in the lower mainstem Tualatin River includes depth specific readings during the dry season. Due to the stratified nature of the river, there are low dissolved oxygen readings near the sediment - water interface. These reading should be averaged or the reading taken at three feet below the water surface should be used as the appropriate indicator of dissolved oxygen levels. The EPA did not consider depth in their data evaluation. This reflects an error in the EPA's methodology.*

The EPA's assessment methodology for dissolved oxygen was consistent with Oregon's water quality criteria for dissolved oxygen, which does not differentiate where in the water column the numeric criteria apply. Therefore averaging would not be consistent with the dissolved oxygen criteria, which applies uniformly to the water column.

> *Commenter (4) noted that the dissolved oxygen criteria have temporal and spatial components. The fish use maps in OAR 340-041 define these components. It appears that the EPA considered only the temporal components, but not the spatial features of the spawning criteria. ODEQ has not developed maps designating resident trout spawning areas. Since resident trout tend to use similar habitat as the anadromous species, the spawning areas designated for the anadromous species can serve as a good substitute until specific maps are developed for resident trout spawning. The comments below utilize this approach. Many streams including the Tualatin River are listed for not meeting the dissolved oxygen spawning criteria.*

The EPA's listing methodology for dissolved oxygen is the same as the one described in ODEQ's "Methodology for Oregon's 2010 Water Quality Report and List of Water Quality Limited Waters." In addition to the fish use maps, the dissolved oxygen criteria that is used in a waterbody is determined by the ecoregion in which it is located, as described in the "Methodology for Oregon's 2010 Water Quality Report and List of Water Quality Limited Waters." In addition, this document also discusses where resident trout spawning applies as a beneficial use under the dissolved oxygen criteria, and it included most Oregon streams, even those where there is no anadromous salmonid spawning.

E. Coli

Commenter (10) noted that Alkali Creek has a recent and extensive wetlands construction project. The wetlands attract large flocks of geese. Listing at this time is counter-productive to WQ improvements.

The data supporting this listing was collected between 2003 and 2008, prior to construction of the wetland project. It shows a high level of impairment: 23% of all Fall/Winter/Spring samples and 61% of all summer samples exceeding the 406 E.coli organisms per 100 milliliters, maximum criteria. The EPA hopes to see reductions of bacteria and other pollutants from the wetlands project, but based on the existing data, Alkali Creek is impaired and should be listed.

Guthion, Chlorpyrifos & Hexachlorobenzene

Commenter (10) is concerned about the West Branch West Crockett Branch listing for guthion and chlorpyrifos impairments and asserts that station location is questionable, data do not support listing and station or raw data do not match listing segment. If this listing is based on data for ODEQ LASAR Station 34820, the correct stream is West Little Walla Walla River LLID 1184802460383 station at RM 7.88. ODEQ data show 0 out of 3 Guthion results over Table 20 criteria, which would be Category 3b (insufficient data status). ODEQ data show 1 out of 3 chlorpyrifos results over Table 20 criteria, which would be Category 3b (insufficient data status).

This listing is based on data from LASAR station 33084. It plots out on this feature on the Oregon fish use maps.

Commenter (10) is concerned about the Willamette River listing for Hexachlorobenzene impairments and asserts that the listing is not supported by the data. Data in Portland Harbor report are qualified as "U" meaning undetected at the detection limit concentration. Data appears to have been incorrectly extracted from a database without the data qualifiers and incorrectly evaluated as a detectable concentration of "1".

The EPA used Portland Harbor set before it was submitted to STORET. However, data from Portland Harbor that are now in STORET shows impairment at this site. Three samples from the Portland Harbor site exceed the criteria for hexachlorobenzene. The EPA did not use any "U" (undetected at the detection limit concentration) or "J" (qualified) data in our assessment.

pH

Commenter (6) notes that there appears to be 157 data points for pH at Station 10616 on the Columbia River (RM 98 to 142). The upper limit for the range of pH allowed by the water quality standard is 8.5. Five pH data points exceeded that level; all other points fall within the acceptable range. According to ODEQ's 2010 listing methodology, which the EPA stated was

followed, a ten percent threshold is used to identify water bodies that merit TMDLs. Five exceedances out of 157 samples is 3.2%, which does not meet the 10% threshold.

The commenter is correct about the EPA following Oregon's listing methodology for pH. There are only 80 samples that are from the time period around 1/1/2000 to 12/31/2010. As part of ODEQ's "Methodology for Oregon's 2010 Water Quality Report and List of Water Quality Limited Waters" for pH, only one sample per day was evaluated leaving 65 samples. Six of these exceed the water quality criteria, which results in 10.8%.

Commenter (10) could not confirm the listing for Johnson Creek (Lower Williamette) with a pH impairment using the EPA's information and was unable to verify data. Commenter (14) noted that this same listing is based on samples collected at Cottrell Road (SE 347th Ave) which is within a few hundred yards of the source of Johnson Creek. pH at this point could be influenced by various agricultural activities and is not a reflection on the entire stream as other sampling locations where no pH values outside the criterion range were observed.

The EPA's listing methodology for pH is the same as the one described in ODEQ's "Methodology for Oregon's 2010 Water Quality Report and List of Water Quality Limited Waters" which states that "the assessment status for the segment is determined based on evaluating data at each monitoring site in a segment. When any station in a segment does not meet water quality standards, the segment is assigned Category 5 status." Of nine sample values at LASAR station 34411 between 5/31/2007 to 5/28/2008, two were below 6.5 and one was above 8.5.

Commenter (10) believes that the listing for West Fork Hood River (RM 0 to 14.4) has a segment miles error and should be RM 0 to 3.5. Following ODEQ protocols, listing segment should be 0 to 3.5 miles based on Station 10681 (RM 0, 4 out of 13 or 30% outside pH range). Segment should be from mouth to next upstream station with attaining status Station 34787 (RM 3.5, 0 out of 5 or 0% outside pH range).

The EPA chose to use existing segmentation in Oregon's 2010 Integrated Report rather than splitting streams into smaller segments for impairments other than dissolved oxygen and temperature which have a specific segmentation methodology. All prior listing cycles for this stream used this segmentation (0 to 14.4).

Commenter (10) believes that the listings for Bear Creek, Griffin Creek, Lazy Creek and Lone Pine Creek (Middle Rogue) for fall/winter/spring is a season error. Bear Ck pH TMDL (which the EPA approved in 12/12/92) has allocations which apply from May 1-Oct 31. Commenter requests that the EPA change the season for new listing to Nov 1-April 30.

The season for the listings is defined in Oregon's assessment methodology ("Methodology for Oregon's 2010 Water Quality report and List of Water Quality Limited Waters," ODEQ, May 12, 2011). Although there is some overlap with the applicable season for the TMDL allocations that currently apply, the listings will remain for fall/winter/spring to be consistent with the Oregon water quality standards.

Sedimentation

Commenter (15) noted that in the EPA's proposal to add 31 new water bodies on the basis of sediment, the EPA introduces the Relative Bed Stability (RBS) method (Kauffman 1999). The EPA applies this calculated metric, along with percentage of substrate less than 2 mm diameter, to data gathered via the EMAP project. We do not believe that use of RBS using data gathered at EMAP's spatial and temporal resolution is technically justified for the purpose of describing reach-level impairment. The EMAP sampling process is designed to characterize conditions at

large (regional) spatial scales. The validity of using the data gathered for this purpose to assigning impairment to a particular stream reach is untested and highly suspect. Further, the 'reference site' data used by ODEQ do not, so far as we know, include any temporal variability estimates. Therefore it is problematic to compare data taken in 'assessment reaches' in one year with data from 'reference reaches' from different year(s). The relevance of RBS in describing impacts to beneficial uses will require much more work before the technique can be reliably applied as proposed. Fortunately, data from Oregon State University's Watersheds Research Cooperative are uniquely suited for just such a test of the RBS method. We recommend the EPA work with OSU to pursue this work. For now, we request that the EPA remove any proposed water body listings that are based on the RBS methodology.

The EPA used both % sand and fines and Relative Bed Stability (RBS) to assess impairments due to sediment. Using both parameters is an appropriate approach as it provided two lines of evidence. The Environmental Monitoring and Assessment Program (EMAP)/ODEQ field sampling methods and reference condition determination process are adequate for site-scale assessment purposes. RBS is based on EMAP-style data collection methods and has been used in many assessments in which the condition of individual stream reaches is evaluated for inclusion in an assessment of the overall condition of streams at larger geographic scales (basin, state or nations). The following are a list of studies that support the EPA's use of RBS:

- Kaufmann, P. R., P. Levine, et al. "Quantifying physical habitat in wadeable streams." EPA/620/R-99/003. U.S. Environmental Protection Agency. Washington, D.C. 1999;
- Kaufmann, P.R., D.P. Larsen, and J.M. Faustini, "Bed Stability and Sedimentation Associated With Human Disturbances in Pacific Northwest Streams." J. Am. Water Resources Assoc. 45(2):434-459. 2009; and
- Kaufmann, P.R., J.M. Faustini, D.P. Larsen, and M.A. Shirazi. "A Roughness-Corrected Index of Relative Bed Stability for Regional Stream Surveys." Geomorphology 99:150-170. 2008.

RBS and EMAP concepts and methodology are published and have been broadly applied for about 20 years; therefore we do not consider them preliminary or experimental. The use of appropriately classified reference sites to compare and assess the conditions at specific sites is also a well-established approach and the regional reference approach is probably the best (and in many cases the only) way to evaluate whether site-specific conditions are "typical" or "natural." Temporal variability estimates for the sediment indicators within and across years can be found in the three Kaufman studies above and:

- Stoddard, J. L., D. V. Peck, A. R. Olsen, D. P. Larsen, J. Van Sickle, C. P. Hawkins, R. M. Hughes, T. R. Whittier, G. Lomnicky, A. T. Herlihy, P. R. Kaufmann, S. A. Peterson, P. L. Ringold, S. G. Paulsen, and R. Blair. Environmental Monitoring and Assessment Program (EMAP): Western Streams and Rivers Statistical Summary. EPA 620/R-05/006, U.S. Environmental Protection Agency, Washington, DC. 2005.

The comment did not give a reference/citation for the OSU Watersheds Research Cooperative data, so it is difficult to evaluate whether and how it might be applied to test RBS.

Temperature

Commenter (21) disagreed about one of the proposed listings for the 303(d) list. This listing is on the commenter's property and it is not navigable, originates in the timber portion of the property and is fenced from livestock. During the summer the stream flow is low and in some areas there is no flow. The air temperature plus the stream flow are the reasons for this stream being listed and these are natural. The commenter believes that Oregon's temperature standard is totally out of line during the months when there is very little rain and the air temperatures are high.

In making listing decisions the EPA did not make jurisdictional determinations but decided that the water is impaired to the extent it is a water of the United States. If a stream exceeds the biologically based numeric criteria for temperature in the Oregon water quality standards, it must be listed as impaired for temperature.

Concerns with the EPA's Listing Process

Evaluation of Readily Available Information and Data

Commenter (7) expressed concerns about the EPA's reliance on Oregon's LASAR database for assessing: escherichia coli, fecal coliform, chlorophyll a, dissolved oxygen, pH, sedimentation, temperature and toxics. The EPA failed to evaluate whether Oregon's LASAR database was a sufficient source of all readily available information and data.

The EPA began its list development process by retrieving data from Oregon's Laboratory Analytical and Storage Retrieval (LASAR) database. LASAR is ODEQ's repository for data and information that ODEQ gathers or has gathered for it, as well as data and information submitted by partner agencies and watershed groups, and received in response to the "call for data" during the development of Oregon's 2010 303(d) list and during previous lists. LASAR provided the vast majority of relevant data for the parameters the EPA assessed; however, the EPA did not rely solely on Oregon's LASAR database for assessing its additional listings on Oregon's 303(d) list. The EPA also gathered data from the United States' Geological Survey's (USGS) National Water Information System (NWIS) and from the EPA's STORET (STOorage and RETrieval) data warehouse. The STORET Data Warehouse is a repository for water quality, biological, and physical data and is used by state environmental agencies, the EPA and other federal agencies, universities, private citizens, and many others. NWIS is repository of water-resources data (such as water quality and streamflow) collected by USGS at major rivers, lakes, and reservoirs. Examples of water-quality data collected are temperature, specific conductance, pH, nutrients, pesticides, and volatile organic compounds. For a more detailed description of sources of data and information used by the EPA, see "EPA's Review of Oregon's 2010 Integrated Report" (March 15, 2012), "EPA listing methodology" (March 15, 2012), and "The EPA's Action to Add Waters to Oregon's 2010 List" including "Attachment 4: Parameters and Beneficial Uses Evaluated and Associated Databases Used by the EPA" (December 2012).

The EPA's Sediment Listing Methodology

Commenter (7) described concerns with the sediment listing methodology developed by the EPA for use in developing its list of additional waters. Specifically, Commenter (7) considers the EPA's basis for rejecting the National Marine Fisheries Service (NMFS) benchmark percent fines values applied just to higher gradient streams and the EPA's preference for "benchmarks that could be applied across the entire state" as arbitrary.

For sediment, Oregon has not established an assessment methodology for 303(d) listing. However, Oregon does have a peer reviewed state wide data analysis method for clean sediment which the EPA used in our analysis. Oregon's data analysis method is consistent with the EPA's "Framework for Developing Suspended and Bedded Sediments Water Quality Criteria" (EPA-822-R-06-001 Office of Water, Office of Research and Development, 2006) and is based on scientific literature and methodologies used by other states. The specific guidance and scientific references are listed in the Administrative Record Index which is available upon request. The NMFS benchmarks are not Oregon-adopted and the EPA-approved water quality standards. They are "guidelines designed to facilitate and standardize determinations of effect for Endangered Species Act (ESA) conferencing, consultations and permits focusing on anadromous salmonids." NMFS developed these benchmarks for assessing the effect

for individual or grouped actions at the watershed scale and these benchmarks were intended to be used in concert with other indicators for Salmon recovery planning purposes. They are not designed to be used alone to indicate impairment at the reach scale. For purposes of determining impairment of a beneficial use or exceedance of a water quality standard in a given stream segment under the CWA, the EPA used two benchmark values based on the reference condition approach: 1) the EPA defined fine sediments as the percentage of substrate composed of particles smaller than 2 mm in diameter, and 2) the EPA assessed relative bed stability. *See* "EPA 303(d) Listing Methodology" (March 15, 2012) for more information on how the EPA selected the numeric values to use in evaluating potential sediment impairments.

Listing Methodology for Determining Dissolved Oxygen Impairments

Commenter (7) noted that the EPA's Listing Methodology states that "[c]ool water criteria for dissolved oxygen are also applied in non-spawning time periods in areas designated as salmon and trout migration corridors (no rearing) on tables and figures referenced in OAR 340-041-0101 through OAR 340-041-0340" and "[i]n non-spawning time periods where the designated fish use is 'salmon and trout rearing and migration' or "redband and Lahontan cutthroat trout', the cold or cool water criteria apply based on the ecoregion where the sampling site is located." While there may be interpretations made by the EPA concerning the meaning of the dissolved oxygen standards, interpretations that allow the use of the cool water criterion where cold-water species are designated are not consistent with the plain meaning of the standards. Instead, the standards state that specific numeric criteria apply to "water bodies identified by the Department as providing cold-water aquatic life" and "water bodies identified by the Department as providing cool-water aquatic life." There is no ambiguity that allows the EPA to redefine the places and/or times in which the lawfully-adopted numeric criteria apply. The EPA is not free to apply the cool water criteria to salmon and trout migration corridors because salmon and trout are not cool weather species, defined in Oregon regulations as "aquatic organisms that are physiologically restricted to cool waters, including but not limited to native sturgeon, Pacific lamprey, suckers, chub, sculpins, and certain species of cyprinids (minnows)"whereas cold water aquatic life is defined as "aquatic organisms that are physiologically restricted to cold water, including but not limited to native salmon, steelhead, mountain whitefish, char (including bull trout), and trout." The EPA cannot redefine the places and/or times in which the lawfully-adopted numeric criteria apply such as applying cool water criteria to salmon and trout migration corridors because salmon and trout are not cool weather species as defined in Oregon regulations.

The EPA used the same methodology for assessment of dissolved oxygen described in the ODEQ's "Methodology for Oregon's 2010 Water Quality Report and List of Water Quality Limited Waters" and made determinations based on Oregon water quality standards. As noted in the comment, Oregon's dissolved oxygen criteria states that the resident trout spawning seasons and the locations where the cold water, cool water and warm water dissolved oxygen criteria apply are "identified by the Department". ODEQ has identified where these criteria apply in a series of memoranda, which are included in ODEQ's "Methodology for Oregon's 2010 Water Quality Report and List of Water Quality Limited Waters" as Appendix 2 (Letter from Oregon Department of Environmental Quality to the US EPA Region 10, Policy clarifications for Oregon's water quality standards interpretation, June 22, 1998) and Appendix 3 (Letter from ODEQ to the EPA Region 10, Oregon responses to the EPA questions re: the State's water quality temperature standards, February 4, 2004).

Relisting Waters with TMDLs Based on Older WQS

Commenter (7) requested that all waters which have been removed from the 303d list as a result of TMDL development be put back on the 303(d) list 1) if the TMDL no longer meets the newly adopted and approved human health criteria for toxic contaminants which is more stringent than the previous criteria (ex. Willamette Basin mercury TMDL) and 2) if the TMDL used a fish

consumption level in interpreting the narrative criteria to derive the TMDL target. The commenter also said that the EPA should re-list all waters removed from the 2010 list, as well as previous 303(d) lists, based on the existence of completed temperature TMDLs that relied upon the judicially invalidated NCC or similar provision.

Regarding waters removed from the 303(d) list based on the development of TMDLs for toxic pollutants, the EPA is not adding such waters to the list at this time. Instead, the EPA believes that Oregon should assess the implications of its new water quality standards on existing TMDLs and the potential need to add such waters to the list in subsequent 303(d) listing actions. The Clean Water Act does not require states to revoke existing TMDLs upon adopting revisions to the state water quality standards (WQS). Instead states have considerable discretion regarding the manner and timing of any decision to revise existing TMDLs or develop new TMDLs to address the approved new WQS. In cases where the State revises its WQS, it is the State's responsibility, in the first instance, to evaluate if approved TMDLs will no longer achieve the applicable water quality standard and to make appropriate adjustments to its 303(d) list.

Regarding waters removed from the section 303(d) list based on the development of TMDLs for temperature, the EPA notes that a recent Oregon U.S. District Court decision found the EPA approval of Oregon's Natural Conditions Criteria for temperature to be arbitrary and capricious. However, to date, the Court has not issued an order invalidating any approved Oregon temperature TMDLs. Once the Court issues a final Order, including a remedy, Oregon will be in a position to assess the implications of the Court's decision including the need to make any necessary revisions to its 303(d) list.

Application of Oregon's New Toxics Water Quality Criteria

Commenter (15) noted that "the EPA used OAR 340-041 Table 40 Criteria which became effective October 17, 2011, past the date range under consideration for the 2010 303(d) list. Applying WQC retroactively is inappropriate and not in accordance with ODEQ's listing methodology, which was established prior to the effectiveness data of Table 40."

40 CFR 131.21 defines when water quality standards (WQS) are applicable for implementing the Clean Water Act (CWA) and regulations implementing the CWA, for example, in identifying impaired waters and calculating TMDLs under section 303(d). 40 CFR 131.21(c)(2) states that "[I]f a State or authorized Tribe adopts a WQS that goes into effect under State or Tribal law on or *after* May 30, 2000…then once the EPA approves that WQS, it becomes the applicable water quality standard for purposes of the Act..." 40 CFR 131.21(d) provides that "[a]pplicable water quality standards for purposes of the Act are the minimum standards which must be used when the CWA and regulations implementing the CWA refer to water quality standards, for example, in identifying impaired waters and calculating TMDLs under section 303(d)…." On October 17, 2011, the EPA approved Oregon's new and revised human health water quality standards for toxics. On March 15, 2012, the EPA disapproved Oregon's 2010 303(d) list and proposed a list of additional impaired waters that did not meet Oregon's applicable WQS. Since the EPA's 303(d) list disapproval occurred after the EPA's approval of Oregon's new and revised toxics WQS, then these new and revised toxics water quality standards were in effect for CWA purposes and these new and revised WQS were the applicable standards for implementing the CWA and regulations including the EPA's actions pertaining to Oregon's 2010 303(d) List on March 15, 2012. The commenter also states that applying the new WQS is inconsistent with ODEQ's listing methodology; therefore, the new WQS should not be used to add waters to Oregon's 2010 303(d) list. A state's listing methodology is not part of its WQS approved by the EPA.

Request the EPA Propose Additional Temperature Listings

Commenter (7) said that the EPA proposed no listings for temperature in numerous identified subbasins due to the absence of "usable data on temperature." The commenter said this omission points to the need to use "the gap-filling" aspects of water quality standards, namely the antidegradation policy, narrative criteria, and designated use support to inform listing decisions and said the agencies cannot omit waters from the list merely because the standards require a kind of data that is not available.

The lack of new proposed listings in the specified subbasins is not due to a lack of continuous monitoring data but, rather because some of the subbasins have already been listed as impaired for temperature or the data in LASAR and in the supporting documents show they are attaining the temperature criteria. There is no other readily available information or data indicating the waters in those subbasins are impaired for other designated uses or water quality standards nor was any information provided for the EPA to consider.

Commenter (7) disagreed with the EPA that the NWIS database contained no usable data on temperature. Of the STORET database entries, nearly all subbasins with substantial entries had no continuous data such that the EPA concluded "[n]o station had a week of continuous sampling data." Finally, roughly half of the subbasins in the LASAR database contained no usable data on temperature. As a result, the EPA finding of 195 impairments at 185 sites for 123 proposed new listings represents only the Coos, Chetco, Alsea, Coquille, Sixes, Yamhill, Upper Deschutes and Lower Crooked subbasins. The EPA proposed no listings for temperature in the Upper Quinn, Massacre Lake, Thousand-Virgin, Middle Snake-Succor, South Fork Owyhee, East Little Owyhee, Middle Owyhee, Jordan, Crooked-Rattlesnake, Lower Owyhee, Brownlee Reservoir, Burnt, Powder, Hells Canyon, Lower Snake-Asotin, Middle Columbia-Lake Wallula, Little Deschutes, Beaver-South Fork, Upper Crooked, Lower Deschutes, Trout, Siletz-Yaquina, Siuslaw, Siltcoos, Harney-Malheur Lakes, Silvies, Donner Und Blitzen, Silver, Summer Lake, Lake Abert, Warner Lakes, Guano, Smith, Lost, Butte, Upper Klamath, Lower Klamath, and Goose Lake subbasins.

The EPA did propose listings for temperature in the Siletz-Yaquina, Siuslaw, Siltcoos, Harney-Malheur Lakes, Lost, Silvies, and Donner Und Blitzen Subbasins, augmenting listings already set by ODEQ in these subbasins. In addition there are temperature listings already in place in the Beaver South Fork, Brownlee, Burnt, Goose Lake, Guano, Lake Abert, Little Deschutes, Lower Deschutes, Middle Owyhee, Powder, Silver, Summer Lake, Trout, Upper Crooked, Upper Klamath, Upper Quinn, Middle Columbia Lake Wallula and Warner Lakes. The EPA considered data from the Lower Owyhee, Jordan and Hells Canyon subbasins, which showed the major streams of these subbasins are attaining the numeric criteria. (The EPA found that 32 percent of waters assessed for temperature were unimpaired.) Of the remaining eleven subbasins mentioned, only the Crooked Rattlesnake and the Middle Owyhee are predominantly located in Oregon. Only small portions of the other nine subbasins are within the state (typically the headwater areas where the likelihood of temperature impairment is low). The Middle Owyhee and the Crooked Rattlesnake are both part of the Owyhee basin. ODEQ data from the Owyhee River, into which these areas drain, show it to be meeting temperature criteria. These two subbasins are the least developed and most inaccessible in Oregon, which may justify a low prioritization for data collection. In addition, no water quality-related data or information about any particular waterbody or stream segment was provided by this commenter for the EPA to evaluate.

Listing Toxics for Media Other Than Water Column

Commenter (7) noted that the EPA's listing methodology states that it used values, all of which are water column values, which indicates that data and information on toxic residues in aquatic life and sediment are not used for listing, except Oregon's use of Oregon Health Authority advisories. No rationale was provided by either agency as to why data and information

pertaining to media other than the water column. Additionally, the EPA's evaluating only water column data for toxics negates the explicit provisions of Oregon's narrative criterion and contrary to the requirement in the EPA regulations to use data and information about surface waters impaired by CERCLA sites.

The EPA used available water column data and information for toxics from LASAR, NWIS and STORET (which included the Portland Harbor CERCLA dataset) for making its toxics impairment determinations. For waters other than the Lower Willamette River, in the absence of sufficient information and data for media other than water column, the EPA cannot reach an impairment determination. The commenter did not provide any specific information or data regarding toxic impairment of a particular waterbody for the EPA to evaluate. Regarding the Lower Willamette River in which the Portland Harbor Superfund Site is located, at the time of our assessment, the remedial investigation studies, particularly the human health and ecological risk assessments, were still in draft and under review by the EPA's Office of Environmental Cleanup. In future listing cycles, the final risk assessments or other analysis from the Portland Harbor site may provide data and information to assess additional toxics impairments.

List on Basis of Information

Commenter (7) believed that the EPA ignored the requirement to assemble, evaluate, and list on the basis of information that is not data. There was no evidence that the EPA used any "information" as required by federal regulations and the EPA guidance. All the sources the EPA states it used for its proposed listings are "data" not "information."

The EPA considered the existing and readily available water-quality related data and information from ODEQ's LASAR, the EPA's STORET and USGS's NWIS. LASAR is the ODEQ's repository for data and information ODEQ gathers or has been gathered for it, and data and information submitted by partner agencies and watershed groups, and received in response to the "call for data" during the development of Oregon's 2010 303(d) list and during previous lists. The EPA also gathered data from the United States' Geological Survey's (USGS) National Water Information System (NWIS) and from the EPA's STORET (STOorage and RETrieval) data warehouse. The STORET Data Warehouse is a repository for water quality, biological, and physical data and is used by state environmental agencies, the EPA and other federal agencies, universities, private citizens, and many others. NWIS is repository of water- resources data (such as water quality and streamflow) collected by USGS at major rivers, lakes, and reservoirs. Examples of water-quality data collected are temperature, specific conductance, pH, nutrients, pesticides, and volatile organic compounds. See "EPA 303d listing methodology," "The EPA's Action to Add Waters to Oregon's 2010 303(d) List" and "EPA's Review of Oregon's 2010 303d List" for a more detailed description of sources of data and information used by the EPA.

Use of Antidegradation Policy, Narrative Criteria and Designated Use Support in Evaluating Impairments

Commenter (1) stated that the EPA must consider aquatic life parameters, beyond pH levels, that are not being met due to ocean acidification.

The EPA has considered all of Oregon's relevant water quality standards, including antidegradation, (OAR 340-041-004) the statewide narrative criteria (OAR 340-041-007) and the pH criteria (OAR 340-041-0021) as well as Basin specific criteria. In addition to reviewing the submitted articles for attainment with the pH Standard, the EPA also determined that there was no evidence of impairment based on Oregon's Antidegradation Standard (OAR 340-041-004. Also, there are no data to indicate that the numeric pH criteria are not being met. The commenter has identified no specific waterbodies that would need to be listed for antidegradation and has put forth no other evidence to support its comments regarding antidegradation, and has not provided a basis to justify such a listing. See Attachment 3 "The

EPA Evaluation of Ocean Acidification Information" for additional information on the EPA's review of issues and concerns regarding this topic.

> *Commenter (7) further urges the EPA to rely on antidegradation policy, narrative criteria and designated use support when there is a lack of usable data. The EPA cannot omit waters from the list because the standards require a kind of data that is not available. The regulations require the use of those aspects of standards. Commenter (7) also noted that in developing its list of impaired waters, the EPA used Oregon 2010 Listing Methodology which is flawed as it fails to make listings based on waters' noncompliance with narrative criteria, beneficial use support, and antidegradation policies and requirements -- all of which are essential and required components of water quality standards.*

The EPA agrees that antidegradation, numeric criteria, narrative criteria and designated uses must be considered when making impairment decisions. The EPA's Listing Methodology document reflects the numerous beneficial uses, narrative and numeric criterion that were considered in our assessment. Each parameter includes a list of beneficial uses affected, numeric criterion (as applicable), narrative criterion (as applicable), assessment methodology and summary of data and information evaluated and new listings (*See* the EPA 303(d) Listing Methodology). In developing its proposed list, the EPA assessed against over 100 numeric water quality criteria (a majority of them are toxics) designed to protect the applicable designated uses and added 526 waters to the list.

The EPA considered and evaluated data and information relating Oregon's designated uses and narrative criteria where readily available information or methodologies existed to make listing decisions. For narrative water quality criteria on clean sediments and biocriteria which are directly tied into beneficial use support, the EPA determined that readily available information or methodologies existed for making listing decisions and the EPA added 344 waters to the list.

For all other applicable water quality standards, including antidegradation, the EPA concluded that there was not sufficient, readily available information to make listing decisions and the commenter did not provide any additional relevant information or data during the comment period for such determinations. The EPA intends to work with States and other stakeholders to develop guidance on how best to assess and identify waters to determine whether a state's antidegradation requirements have been attained (*See* Information Concerning 2012 Clean Water Act Sections 303(d), 305(b), and 314 Integrated Reporting and Listing Decisions, US EPA March 21, 2011).

> *Commenter (7) requested the EPA add waters to Oregon 2010 303(d) list on the basis of beneficial use support for the following: (1) when NMFS lists an aquatic-dependent species as threatened or endangered under ESA as it is a prima facie demonstration that that beneficial use is not fully supported. (2) Oregon coastal coho study noting that past forest management practices combined with lowland agriculture and urban development has resulted in areas of highest habitat capacity are now severely degraded. (3) Threatened waters. (4) Bans on commercial shellfish harvest. (5) combined sewer overflows. (6) Antidegradation. (7) NPDES data. (8) nonpoint source assessments. (9) recreational use impairments. (10) adverse conditions.*

The commenter did not provide specific data or information about any particular waterbody or stream segment for the EPA to evaluate regarding listing on basis of beneficial use support. Below is a general description of how the EPA evaluated some of the items summarized above.

The Endangered Species Act (ESA) provides for the conservation of species that are endangered or threatened throughout all or a significant portion of their range. Given the species in question in Oregon

are primarily anadromous fish, the presence of an endangered or threatened species at a specific location does not per se indicate that an applicable water quality standard is not being met for that specific waterbody. Anandromous species can be listed as endangered or threatened due to many factors such as overharvest, ocean condition and migration barriers that are not site-specific to the river/stream that the EPA (or ODEQ) would be evaluating. Therefore, ESA listings of aquatic-dependent species as threatened or endangered under ESA is not, by itself, a demonstration that that beneficial use is not fully supported at any specific location.

The EPA considered the existing and readily available water-quality related data and information from ODEQ's LASAR, the EPA's STORET and USGS's NWIS. The data and information reviewed covered a significant amount of the waters within the State of Oregon, including waters used by ESA-listed species. Also Oregon's temperature water quality standard was developed to protect salmonids many of which are ESA listed. The EPA assessed whether waters were attaining criteria related to temperature, excess sediment, dissolved oxygen and toxics. These pollutants are typically implicated in negative effects to these species. All of these pollutants, except sediment, have Oregon water quality standards specifically designed to protect salmonids. If data and information showed exceedances of these water quality standards, the EPA added the waters to Oregon's list.

For recreational beach closures Oregon Public Health uses harmful algal bloom data and Beach program data. The harmful algal bloom data (HAB) was one of the data sets used by ODEQ in their 2010 listings. ODEQ regularly partners with the Oregon Department of Agriculture, USFWS and others on cooperative sampling, specifically related to recreational uses including monitoring for pesticides and pathogens. This data is in LASAR. The Beach program collects data on enterococci and the data is housed in LASAR. E-coli, fecal coliform, enterococci, chlorophyll a and pH pertain to recreational uses. The EPA used all of this data and listed 30 waters for pH, seven waters for chlorophyll a, 83 waters for e coli and 11 waters for fecal coliform. The EPA did not list any waters for enterococci.

The EPA evaluated fecal coliform data from shellfish bed areas and added 11 waters for fecal coliform, some of which may have had shellfish beds. ODEQ evaluated shellfish closure data (in conjunction with fecal colform data) from Oregon Department of Agriculture and Oregon Department of Fish and Wildlife which are the responsible agencies for shellfish bed closures to make impairment decisions.

The EPA's 2006 Integrated Report Guidance recommends that states consider as threatened those waters that are currently attaining water quality standards (WQS), but are projected to exceed WQS by the next listing cycle. Based on the data and information available, the EPA did not reach that determination for any of Oregon's waterbodies at this time.

The EPA did not find readily available data or information on dilution calculations to indicate nonattainment. However, receiving water data related to NPDES permits and CSOs is housed in LASAR, NWIS and Storet. The data that Oregon uses for their nonpoint source (319) assessment is the same data that is in LASAR.

See the EPA's response below on listing based on antidegradation.

The commenter did not provide specific data or information about any particular waterbody on these items for the EPA to evaluate.

> *Commenter (7) requested the EPA add waters to Oregon 2010 303(d) list on the basis of antidegradation policy, which contains a requirement that existing uses, namely those that have existed at any time since November 28, 1975, be protected even if they have not been designated by the state. Specifically, the commenter is concerned about the protection of aquatic species*

such as amphibians in waters unidentified by the temperature criteria maps and in waters where the temperature standard designation is not for cold water salmonid species. Aquatic Life or aquatic-dependent Wildlife uses that are species on the verge of extinction, local extirpation, or are otherwise vulnerable must specifically be identified for protection because their populations may not be able to withstand the effects of poor water quality without substantial risk to their viability.

In regard to the concern that waters unidentified in the Oregon temperature standards maps will not provide protection for non-salmonid cold water species, OAR 340-041-0028(5) specifies that unidentified waters will meet the criteria specified for the downstream water body into which they discharge, and cold water aquatic life uses are therefore protected in these locations. In waterbodies where the 20^{o} C "redband and lohantan cutthroat trout" criteria is applied, these species were determined to be the most sensitive indicator species for the Eastern Oregon basin, which generally have warmer summer weather and warmer summer water conditions.

The commenter identified no specific waterbodies that would need to be listed for not meeting antidegradation requirements, has put forth no other evidence to support its comments regarding antidegradation, and has not identified a basis to justify such a listing. The EPA intends to work with States and other stakeholders to develop guidance on how best to assess and identify waters to determine whether a state's antidegradation requirements have been attained (*See* Information Concerning 2012 Clean Water Act Sections 303(d), 305(b), and 314 Integrated Reporting and Listing Decisions, US EPA March 21, 2011).

Other Concerns

Commenter (9) raised a number of general concerns and it is difficult to address the issues raised that are not linked to specific listings. There was overlap between Commenter 9's concerns and specific comments on certain waters made by other commenters which the EPA has already addressed in this document. The commenter should review this document and its appendices for the EPA's responses to these issues as applied to specific listed waters.

Because there was overlap between Commenter 9's concerns and specific comments on certain waters made by other commenters which the EPA has already addressed in this document, the commenter should review this document and its appendices for the EPA's responses to these issues as applied to specific listed waters.

Commenter (1) noted that Oregon's standards that marine waters must have a pH between 7.0 - 8.5 and estuarine waters between 6.5 - 8.5 units, OAR 340-041-0021, is inadequate to protect the state's beneficial uses for aquatic life and fishing, O.A.R. 340-41-0230 tbl.230A; O.A.R. 340-41-0220 tbl.220A; O.A.R. 340-41-0300 tbl.300A and that "this is not even as stringent as the EPA's water quality criteria that limits pH change to less than 0.2 units beyond natural levels (which is also insufficiently protective to address ocean acidification, see Zeebe 2008).

The 303(d) Impaired Waters Listing process does not examine the adequacy of the State's water quality standards or the EPA's recommended water quality criteria for marine pH. Comments regarding the State water quality standards should be submitted to the State for inclusion in their standards review processes, such as the Triennial Review.

Commenter (1) noted that Oregon's water quality standards require that Oregon's water be "free from dissolved carbon dioxide in quantities that is deleterious to fish or other aquatic life." O.A.R. 340-041-0007(11).

OAR 340-041-0007 (11) states that, "The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish may not be allowed." This narrative criterion does not speak directly to dissolved carbon dioxide as a pollutant. Instead, this criterion generically addresses all "tastes, odors, toxics or other conditions" that may create conditions that may be deleterious to fish and aquatic life and limits those pollutants to levels that will not "create" the noted conditions. The EPA did not find readily available data or information to indicate nonattainment due to dissolved carbon dioxide or that dissolved carbon dioxide was causing deleterious conditions to fish or other aquatic life.

> *Commenter (1) submitted, scientific studies concerning ocean and asserted that Oregon's coastal waters are threatened and impaired by ocean acidification.*

The EPA has carefully reviewed all of the information submitted by the commenter. A detailed discussion of the EPA's evaluation of the submitted studies can be found in Attachment 3 to this Response to Comments.

> *Commenter (1) asserted that Barton et al. have now definitively linked oyster mortalities in Oregon to ocean acidification and submitted a new study of the Whiskey Creek hatchery and claims that study further demonstrates that the waters in Netarts Bay and along the Oregon coast, which are being bathed in corrosive waters during the upwelling season, are impaired by ocean acidification and should be included on the 303(d) list.*

While Barton *et al*. 2012 determined that their hatchery study "validates previous laboratory-based acidification experiments in which carbonate chemistry was manipulated," they also concluded that "two significant shortcomings exist with regard to understanding acidification effects on natural populations of organisms in variable coastal and estuarine habitats: prediction of how carbonate conditions will vary in coastal and estuarine environments with increasing atmospheric CO_2 and a better understanding of the fundamental biology underlying the responses of multicellular organisms to acidification." They went on to say "Our limited experience suggests that the multitude of forcing time scales still requires high-resolution monitoring of water CO_2 chemistry before we are fully capable of developing predictive models." Currently, hatchery studies, as well as the particular laboratory studies submitted to the EPA, do not provide sufficient information to account for the potential adaptation and acclimation of wild assemblages, so we are unable to apply those findings to an attainment decision in natural waterbodies. More information is needed on the biological condition within the waterbody (e.g., *in situ* field studies documenting the health of aquatic life populations). The 2012 Barton *et al*. paper included no data regarding the health of wild aquatic organisms. The only pH data presented indicated a pH in Netarts Bay of <7.6 and >8.2, both within the acceptable range of 7.0-8.5 for marine waters and 6.5-8.5 for estuarine waters.

Attachments List

Attachment 1: Table of Proposed the EPA Listings Removed in Response to Comments and Rationale for Each Removal

Attachment 2: Table on Clarifications or Corrections to the EPA's Listings

Attachment 3: The EPA Evaluation of Ocean Acidification Information