Memo

To: MidCoast TMDLs local stakeholder advisory committee (LSAC)

From: DEQ Project Team

Date: January 12, 2016

Subject: MidCoast TMDLs – DEQ Status Report to LSAC

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DEQ is providing this update on the status of the MidCoast Total Maximum Daily Loads (TMDLs) development to the local stakeholder advisory committee (LSAC) and members of the Sediment, Dissolved Oxygen, Temperature and Bacteria Technical Working Group (TWGs). It is meant to report on progress and provide status information since the July 15, 2015 LSAC meeting. Previous updates are posted on the Project website at: http://www.deq.state.or.us/wq/tmdls/midcoastLSAC.htm.

TMDLs development Schedule/Workplan: DEQ is periodically evaluating its TMDLs development Workplan and schedule, based on a combination of factors, including: the status of technical tasks, available resources, regulatory, legal and policy considerations, and the stakeholder involvement process. Our estimated schedules are shown below.

Freshwater Bacteria TMDLs: Based on current status and amount of work to be completed, we estimate that development of the freshwater Bacteria TMDLs (load duration curves, LDCs) will proceed according to the following schedule:

Estimated Schedule for LDC based freshwater TMDLs

Task	Target Completion Date
Review TWG comments on LDC and report back to TWG	Dec-2014
Load Reductions developed	Jun to Sep-2015
DMAs consult with ODEQ to develop implementation plans for load allocations	Jul to Mar 2016
DMA Implementation Plans submitted to ODEQ	Oct-2015 to May 2016
Develop Adaptive Resource Management plans	Jan to Sept-2016
Draft TMDL and WQMP[1] completed	May-2017

Big Elk Creek Bacteria TMDL: Based on current status and amount of work to be completed, we estimate that development of the freshwater Bacteria TMDL for Big Elk Creek (using watershed model, WM) will proceed according to the following schedule:

Estimated Schedule for WM based freshwater TMDL for Big Elk Creek

TMDL for Big Elk Creek Task	Target Completion Date
Discuss model performance measures with TWG members to review	Nov-2014
Present parameter estimation and model performance results to TWG members	Jan-2015
Third party (consultant) review of model (started Jun-2015)	Nov-2015
Model uncertainty analysis	Mar-2016
Distribute model uncertainty analysis results to TWG members for review	Jul-2016
Receive model uncertainty results reviews from TWG members	Oct-2016
Load Allocations developed	Nov-2016

[1] Water Quality Management Plan (see OAR 340-042-0030)

TMDL for Big Elk Creek Task	Target Completion Date
DMAs consult with ODEQ to develop implementation plans for load allocations	Dec-2016
DMA Implementation Plans submitted to ODEQ	Feb-2017
Develop Adaptive Resource Management plan	Apr-2017
Draft TMDL and WQMP completed	Jun-2017

Beach bacteria TMDLs: Similarly, we estimate that development of the Beach (recreational water contact) TMDLs will proceed according to the following schedule:

Estimated Schedule for Beach (recreational water contact) TMDLs

Task	Target Completion Date
Complete form used to review beach information and input about sources	Jan-2015
Distribute form and related information to TWG for review	Feb-2015
Receive Beach reviews from TWG members	May-2015
Review TWG comments on Beaches and report back to TWG	Jul-2015
Load Allocations developed	Feb-2016
DMAs consult with ODEQ to develop implementation plans for load allocations	Aug-2016
DMA Implementation Plans submitted to ODEQ	Sept-2016
Develop Adaptive Resource Management plan	Feb-2017
Draft TMDL and WQMP completed	Sep-2017

The estuarine waters TMDLs (to address fecal coliform in shellfish growing waters) will be developed following the Freshwater LDCs because of the connection between land surface run-off bacteria loads and estuarine conditions.

Sediment/Biocriteria/Turbidity TMDLs

Based on current status and amount of work to be completed, we estimate that development of the draft Sediment TMDLs will proceed according to the following schedule:

Estimated Schedule for Sediment/Biocriteria/Turbidity TMDLs

Task	Target Completion Date
Source Assessment Complete	Jan-2016
TMDL Allocations developed	Jan-2016
DMAs consult with ODEQ to develop implementation plans for allocations	Mar-2016
DMA Implementation Plans submitted to ODEQ	May-2016
Develop Adaptive Resource Management plan	Aug-2016
Draft TMDL and WQMP completed	Sep-2016

Adaptive Resource Management: there are no updates since the July 9, 2015 LSAC Update memo. DEQ plans to continue to develop an ARM framework for implementation of the MidCoast TMDLs in coordination with the LSAC and TWGs.

Litigation update: There is no final resolution for the TMDL litigation (see January 2014 LSAC update memo for links and information). Briefings to the court have been completed and we are waiting to hear from the judge on next steps.

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For CZARA litigation associated with Oregon's Coastal Nonpoint Pollution Control Plan (CNPCP), in a January 30, 2015 letter EPA and NOAA found that Oregon had not submitted a fully approvable CNPCP under Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA). EPA and NOAA identified deficiencies/shortfalls in Oregon's program related to forestry involving management measures to address temperature, sediment, and pesticides. In a July 28, 2015 letter from EPA and NOAA to the State of Oregon, the agencies identified how the State could expand and strengthen its forest management measures in the coastal zone management area to satisfy the statutory obligations for CZARA. Oregon state agencies are participating in a Workgroup with EPA and NOAA to address those issues. Section 319 Nonpoint Source (NPS) funds were withheld from Oregon for federal fiscal year 2015 as a result of the federal agencies' decision. Oregon is concerned that an additional reduction in FFY 2016 may occur if forestry management measures are not approved by EPA and NOAA. The Section 319 program funds DEQ's NPS Management staff and the NPS Grant Program, which provides support to cooperating entities for projects that emphasize NPS pollution reduction, watershed assessment, protection and restoration, voluntary stewardship and partnerships among watershed stakeholders. The EPA/NOAA decision also affects DLCD's funding for implementation of aspects of the Oregon Coastal Management Program.

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Temperature TMDLs technical work: DEQ will reconvene the Temperature TWG in the first quarter of 2016 to discuss cold water refugia and current status of the modeling.

Sediment/Biocriteria/Turbidity (Drinking water protection) technical work: The primary areas in which work is progressing include:

- **Biocriteria**: DEQ has revised the input data and is finalizing the statistical analyses based on feedback from TWG members and others outside the TWG. DEQ is documenting all sources of input data and calculation methods used to develop the input data. The revisions will be completed and results presented at the next Sediment TWG meeting (To be scheduled). Following the next Sediment TWG meeting DEQ intends to schedule follow-up meetings to begin discussions with DMAs regarding implementation planning.

- **Literature review**: DEQ is refining the framework for incorporation of the literature review into the TMDL and the WQMP. A contractor has been secured to evaluate the literature found through the searches for relevancy and to extract study results and site context from relevant literature. The results of the literature evaluation will be incorporated per the framework. The framework for incorporation and the results of the literature evaluation will be presented at the next Sediment TWG meeting (to be scheduled).

- **The source analyses for the Siletz turbidity** 303(d) listing will be evaluated using an empirical modeling approach relating watershed characteristics to observed turbidity levels. This analysis will begin following completion of the biocriteria/sediment modeling and subsequent distribution to the Sediment TWG.

- **Statewide Biomonitoring Program** (see July 9, 2015 LSAC update for background information)**:** DEQ is implementing a rotating-basin approach, with 10 basins across the state and two basins sampled per year. In 2015, DEQ boosted the reference population sample size for the Coast Range and Klamath Mountains Ecoregions. The reference work is part of a larger collaborative effort

among the DEQ, ODFW, USFS and BLM broad-scale monitoring programs. In 2016, DEQ will monitor 25 random sites in the Deschutes Basin, plus 12 annual repeat reference sites spread out across the state. Our goal is to survey all basins in the state over a period of 5 – 10 years; however, the actual time-frame in which we complete a full assessment of the state will depend on funding and staff resources. Sites will be sampled for biological communities, water chemistry and physical habitat.

Bacteria TMDLs technical work: The bacteria TMDLs technical activities are focused on the following topical areas:

- **Calculations of Load Duration Curves (LDCs) for freshwater streams**: DEQ received feedback from TWG members and others outside of the TWG on the LDC results. DEQ and the TWG developed automated methods to calculate the LDCs for more than 100 stations in the Mid-Coast basin and then report the results in standardized packets for 18 watersheds. This automation helps to ensure reproducibility and transparency in the TMDL development. DEQ reviewed and summarized the feedback about the LDC results for each of the 18 watersheds. DEQ then presented the results to the TWG. DEQ and the TWG identified potential load allocations for sources in the watersheds using the results packets. DEQ plans to develop separate TMDL plans for each watershed that has impairment. DEQ developed a schedule for development of the TMDLs and reported this to the TWG. DEQ will start working with DMAs this fall on implementations plans for the WQMP and will complete the first of these TMDLs in mid-2016. DEQ will continue working on TMDLs for the remaining watersheds and anticipates completion in summer of 2016.

- **Development of methods for the LDCs for the estuaries**: DEQ will use methods from LDC calculation for freshwater streams and rivers; an approach for development of the LDCs for the estuaries that accounts for the fluxes of fresh and saline water has been selected and major components of this approach will use the same methods from the LDC calculations for the freshwater streams and rivers. Once the LDCs are completed for the freshwater streams and rivers, DEQ staff will begin the tasks for calculating the LDCs for the estuaries and a projected schedule will be distributed.

- **Development of the Big Elk Creek watershed model:** DEQ is working with a consultant to review the Big Elk Creek watershed model. The consultant will verify the setup and execution of the model. This review will ensure that the model is performing as expected. Once the review is completed, DEQ will complete parameter estimation using model performance measures and then conduct model uncertainty analysis. DEQ is also working to extend the simulation time-period to include more recent bacteria sample data. DEQ worked with a consultant to extend the time-period covered in the meteorological data.

- **Development of the Upper Yaquina River watershed model:** DEQ is working with a consultant to develop a watershed model for the Upper Yaquina watershed that is similar to the model developed for Big Elk Creek watershed. The model for the Upper Yaquina will be used to assist with implementation and adaptive management by comparing possible management scenarios. The water quality information from the model will then be used in economic analysis of management alternatives and for setting water quality milestones in the adaptive

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management cycle. The consultant started development of the model in Fall 2015 with completion of the model anticipated in Summer of 2016.

- **Development of methods for interpretation of load reductions for beaches:** DEQ worked with the TWG to develop a method to review the bacteria data for the MidCoast beaches. This method is similar to the LDC results packet, except DEQ and the TWG decided to make the review method entirely electronic. The data is displayed via a Google Earth interface and review information is collected via electronic forms. DEQ set the review period from Feb to May 2015. TWG member and others reviewed the beach information and provided feedback. DEQ analyzed the information from these reviews to identify potential sources for load allocations. DEQ presented the results of the analysis to the TWG in July 2015. DEQ is working on the TMDL allocations and will present the allocations to the TWG for review and discussion in Spring 2016.

Dissolved Oxygen (DO) technical work:
As reported in the November 19th Dissolved Oxygen TWG meeting, DEQ initiated the process of developing IR-TMDLs for MidCoast freshwater rivers. We will finalize TWG membership in the near future. The overall technical approach will be to develop TMDLs on a watershed-by-watershed basis using continuous dissolved oxygen data as a basis for load and waste load allocations. Within each watershed, DEQ will:

(1) Evaluate the type(s) of dissolved oxygen data available for mechanistic modeling;
(2) Populate, calibrate, and validate an appropriate version of the QUAL2Kw model (Pelitier et al. 2006), which will allow DEQ and the TWG to examine factors controlling dissolved oxygen dynamics in the river reach of interest; and
(3) Develop a watershed model (SWAT, HSPF, VELMA, or other) to link riparian conditions, organic matter sources, and nutrient sources to the reach-scale QUAL2Kw. This will allow DEQ, the TWG, and appropriate DMAs to develop alternative management scenarios and water quality monitoring plans aimed at assessing progress of TMDL implementation.

DEQ is inviting LSAC & TWG members to identify and submit continuous dissolved oxygen data (and water quality data such as pH, temperature, and nutrient concentrations) that are available from recent monitoring activities in the MidCoast region that haven't already been submitted to DEQ, EPA or OWEB. DEQ will provide an electronic format to identify the data sources. Contact Dan Sobota (sobota.daniel@deq.state.or.us; 503-229-5138).

DEQ is also seeking input from TWG members on the sequencing of watersheds for dissolved oxygen TMDL development. We started our analysis with the Alsea River because more data is available. We plan on developing and refining the TMDL approach in this subbasin so that we can apply it elsewhere adapting to local conditions. We also envision that this process will help inform the development of monitoring in other MidCoast rivers that were placed on the Category 5 303(d) list in the 2010 Integrated Report, but continuous dissolved oxygen data were not collected to the best of our knowledge (e.g., Siletz, Big Elk Creek). DEQ and local partners are planning to deploy sondes for continuous monitoring of MidCoast rivers in 2016. We are soliciting feedback prior to next TWG meeting (planned for late in the first quarter of 2016) so that we can devote a portion of the meeting to this topic.

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Estimated near-term schedule for development of dissolved oxygen TMDLs

Task	Target Completion Date
DEQ & TWG agree upon sequencing of watershed for TMDL development and watershed model for source linkage analysis	Feb-2016
DEQ acquires additional continuous dissolved oxygen data and works with TWG on developing monitoring strategies in data-poor watersheds	Mar-2016
QUAL2Kw reach model and Watershed models for load and waste load allocations selected and developed for Alsea watershed	Summer-2016

Literature Cited

Pelletier, G.J., Chapra, S.C. and Tao, H., 2006. QUAL2Kw–A framework for modeling water quality in streams and rivers using a genetic algorithm for calibration. Environmental Modeling & Software, 21(3), pp.419-425.

Thank you for your patience and continued involvement in this TMDLs process. Please contact us if you have questions or comments. Updates and outputs will be posted at the MidCoast TMDLs project website at:
http://www.deq.state.or.us/wq/tmdls/midcoastLSAC.htm

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