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March 21, 2007

Stephanie Stirling and Jim Reese
RSET Policy Subcommittee
U.S. Army Corps of Engineers
P.O. Box 2870
Portland, OR 97208-2870

SUBJECT: DEQ Implementation of the Interim Final Sediment Evaluation Framework

Dear Stephanie and Jim:

The Department of Environmental Quality (DEQ) has reviewed the responses provided to DEQ comments submitted on the draft Sediment Evaluation Framework (SEF) in November 2005. We appreciate the efforts made to address a large number of comments.

It is our understanding that this draft SEF would continue to be a work in progress, with some key issues remaining to be resolved, via the Interagency Cooperation Plan (ICP), in a final version to be published in 2008. However, DEQ has some significant concerns (as identified in our original comments in 2005) with the current draft.

The purpose of this letter is to call out those significant issues and identify the procedures that DEQ will use, complementary to existing draft SEF procedures, to evaluate dredge projects until these issues are resolved. In addition, we are including 2 separate lists of additional comments. The first is a list of other comments that we would like to see addressed via a clarification, or incorporated now as part of a revised draft. The second is a separate list of issues we request be tracked and addressed in the final SEF.

We continue to be committed to working with you and the other members of RSET to complete the steps necessary to make the sediment evaluation approach as practical and straightforward as possible, while at the same time presenting an approach that we can feel will be protective of human health and the environment considering the state of the science (and available data).

Issues of Significant Concern

The following are issues of significant concern for DEQ in implementing the regional SEF as currently published. For these five specific topics discussed below, in addition to using draft SEF protocols, DEQ will compliment our reviews of dredge sediment projects with the following additional considerations until consensus in RSET is achieved through implementation of the ICP and issuance of a final manual.

Issue 1- DMMUs (Section 5.4): DEQ does not agree with the process described for characterizing dredge material management units (DMMUs) and has commented throughout the RSET process that relying on a single sample to characterize a large volume of proposed dredge material is inadequate. We will continue to recommend a minimum of 3 to 5 samples, depending on anticipated dredge volumes and site specific conditions (geology, flow, historical sampling, etc), from sediment that can be considered homogenous based on physical

characteristics and likely contaminant sources. This will assist in providing additional lines of evidence in decision making for projects.

Issue 2- Sediment Quality Guidelines (Chapter 7 via Table 7-1): DEQ supports the development of fresh-water toxicity screening criteria, agrees with the criteria used to define Screening Level 1 (SL1) and Screening Level 2 (SL2), and is generally comfortable with the theory behind the Floating Percentile Method (FPM); however, consistent with our past comments, we have several concerns with the use of the interim SQGs presented in this document at this time. The interim numbers are higher than the marine numbers for, most notably, the polynuclear aromatic hydrocarbons (PAHs). There is no supportable reason why organisms in marine systems would be more sensitive to the effects of PAHs than those in freshwater systems (e.g., Shepard 2004[1] has found no statistically significant differences between sensitivity and tissue residues in freshwater and marine biota (see page 9-19)). The interim numbers have not been validated and are based on a limited dataset which appears to be biased by the inclusion of PAH concentrations associated with pencil pitch which have a low bioavailability relative to other PAH sources. The certainty in the predictive model would be improved by including additional sites within the region that represent a range of PAH sources and potential bioavailabilities and scrutinizing the data to assess impacts of the nature of the source on bioavailability.

At this time, DEQ recommends that the interim SL1 and SL2 values be based respectively on the TEL and PEL values currently used in the DEQ cleanup program. The existing SL1 and SL2 values, as currently presented in the draft SEF, will be used as additional lines of evidence to assess sediment quality, in addition to other site specific conditions.

For the final version of the SEF, in order to develop a more robust set of SQGs using the FPM, complete the following steps:

1. Increase the freshwater data base by incorporating, at a minimum, the data from the Portland Harbor investigation. An attempt should be made to increase the resources for this project such that other available freshwater data sets in this region can also be added. In particular, it would be valuable to include additional data from the Columbia River.
2. Include the results from chronic, longer term freshwater tests in the database.
3. Review the representativeness of the data sets currently in the database. Determine whether some data sets may be biasing the results high due to inclusion of contaminants in forms in which they have low bioavailability.
4. Check the calculation process inherent in the FPM method to ensure that all steps can be easily explained and duplicated by others.
5. Validate the screening levels generated with a new data set.

Also, the table should include the reliability associated with the SLs. We have attached a memo that summarizes the reliability for various SLs, including those proposed in this document, for your use.

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[1]Shepard, B.K. 2004. An Evaluation of Uncertainties Associated with Tissue Screening Concentrations Used to Assess Ecological Risks from Bioaccumulated Chemicals in Aquatic Biota. Invited platform presentation, 13th Annual Meeting, Pacific Northwest Chapter, Society of Environmental Toxicology and Chemistry, Port Townsend, WA, April 15 – 17, 2004.

Note also the following:

- The guidance does not indicate the process used for contaminants for which freshwater SLs are not available (e.g. DDT and other organochlorines). The effort to further supplement the FPM data base should include a focus on accumulating sufficient data for these compounds such that freshwater screening values can be developed for them. As indicated above, DEQ will use PELs/TELs until these values can be generated.
- The guidance does not indicate how the SLs for total LPAH and HPAH should be used, if at all. We recommend against using the LPAH/HPAH sums and instead screening based on individual PAHs. Evaluation of developing SLs based on the molar sum of PAHs, TPH, and PCBs should be considered as part of the additional FPM evaluation.
- The guidance suggests there is a correlation between bioavailability and TOC in that an exclusionary criterion is provided for sediment with low TOC; however, this is not reflected in the SLs which are based on dry weight rather than TOC-normalized. The additional evaluation of FPM should include an assessment of the impact of TOC on sediment toxicity. Until this relationship is established, the TOC exclusionary criterion for freshwater sediments should be eliminated.

Issue 3- Section 7.7.4 As documented in DEQ's Bioaccumulation Guidelines, DEQ recommends use of wildlife TEFs for making ecological risk decisions. In fact this will be necessary to complete the evaluation of egg-based toxicity discussed in Section 9.8.2.4.

Issue 4- Bioassay Testing (Section 8.2.4): DEQ recommended including freshwater chronic tests in the one hit/two hit criteria for bioassay interpretation. This was not done. The text is contradictory on this subject as, at one point (page 8-8), the statement is made that chronic bioassay tests are not available for use in freshwater systems, yet freshwater chronic tests are identified in Table 8-1 and the text indicates that they may be required in certain circumstances. DEQ will recommend that chronic bioassay tests be included as part of the toxicity evaluation for freshwater sediments consistent with the protocols established for marine sediments.

Issue 5- Bioaccumulation (Chapter 9): The process described for evaluating bioaccumulating contaminants is somewhat confusing and proposes an interim period of data collection and use of professional judgment pending development of screening levels and specific testing guidelines. We recommend that DEQ's Guidelines for Assessing Bioaccumulative Chemicals of Concern in Sediment be incorporated into this section as the appropriate guidance to follow pending further developments from the RSET Bioaccumulation Subgroup. It is substantively consistent with the process described, but includes screening levels for this pathway for human and ecological receptors. This guidance has undergone public review and is now final.

Also, in reference to section 9.3, DEQ does not support the use of reference area data for evaluating results of bioaccumulation tests for anthropogenic compounds. Reference areas and consequently, associated tissue concentrations, should be free of anthropogenic compounds. We will compare bioaccumulations test results to appropriate ATLs from DEQ's newly published guidance referenced above.

Other comments to be addressed in current Draft SEF

The following are comments that DEQ feels should be addressed in a new draft version of the SEF, or would like additional clarification from the Corps as to what changes were made.

Section 2.2.2 Near the end of this section the statement is made that "In cases where no aquatic site is proposed for disposal, the Corps' decision to issue a permit is based solely on the public interest review and not the Guidelines." DEQ commented that a statement should be added indicating that input from the State would be required in cases where a solid waste disposal permit or permit exemption is required for disposal of sediment near shore or upland. This statement was not added though the "resolution" of the comment indicates that is was.

Section 3.1 DEQ commented that the phrase "and project approval" should be deleted from the first sentence. The comment resolution indicates this was done, but it was not.

Section 5.1 DEQ commented that a section should be added that describes the required format for SAPs and the resolution indicates that this will be provided in an Appendix; however, the Table of Contents does not indicate that such an Appendix will be included.

Section 5.5 DEQ commented that the wording "full characterization of a dredging project" be changed to "full characterization of the sediment" and the resolution indicates that this change was made; however, it was not.

Comments to be addressed in the final SEF

The following are remaining comments, consistent with those delivered in 2005, that DEQ would like to see addressed in the final SEF.

General: It was our understanding that an appendix would be provided that listed existing dredge material disposal sites, their locations, and the quality of material they accept. The response to our comment on this indicates that this has not yet been completed. Please provide a schedule for completion.

Section 2.2.5/2.2.8: DEQ comments that additional information be provided explaining how ESA affects dredging and NEPA procedures do not appear to have been addressed.

Section 2.4: The DEQ comment that a section describing upland disposal requirements in the State of Washington be added does not appear to have been addressed. (Note that DEQ also asked for reference to the upland authorization requirements in Chapter 3 where a note is added about getting use authorization from the State of Washington for inwater disposal.)

Chapter 3 General: DEQ provided several comments, including a very long and specific comment, asking for additional clarifications on the process for evaluating Sampling and Analysis Plans (SAPs) and the resolution indicates that this was done. However, this section is still confusing. The representatives of the RSET state team and the party responsible for taking the lead on document review and summarizing comments are not specified, and there is confusion between what is meant by RSET, RSET state teams, RSET local teams, and the RDT.

Figure 3-1: The DEQ comment asking for clarification on how the requirement for obtaining State permits is triggered was not addressed.

Figure 4-1: The list of resources referenced for evaluating upland, near shore, and confined disposal options should include pertinent guidance from Oregon, Washington and Idaho, as well as the federal documents cited.

Section 4.5 and 4.6: DEQ commented that these sections appear to describe significantly different processes for completing Level 2 assessments depending on whether the site is a dredge project or a cleanup site when the differences are much less dramatic. The changes made have not addressed this concern. At a minimum the evaluations described in Section 4.5; i.e., physical and chemical testing, biological and bioaccumulation testing, and special evaluations should be referenced in Section 4.6 as standard methods for evaluating risk of contaminated sediments.

Section 6.4: DEQ made recommendations for rewriting the description of the differences between sediment characterization for dredge and contaminated site projects and included some suggested language. The resolution of this comment indicates that the changes were made; however, they were not.

Section 7.8: This section defines SL2 as the "concentration at which minor adverse effects may be observed in the more sensitive groups of benthic organisms." This definition is subjective and, at a minimum, should not include the reference to more sensitive groups of benthic organisms as there is nothing in the derivation process to suggest that only more sensitive organisms would be impacted at the SL2 concentrations. DEQ recommends that the level be described based on the level of observed impacts that it represents; e.g., 25%, and indicate that it generally represents an action level for cleanup or unacceptability for disposal.

Section 7.8.1: This section should indicate that Washington State's SQGs were never promulgated and are currently not in use by the state until they can be validated.

Section 7.8.4: This section indicates that bioaccumulation testing is not required for dredging projects where material will be placed in a confined disposal unit or out of the water column because the short-term nature of exposures that might occur during dredging are not significant to this endpoint. DEQ disagrees with this as well as the response to our comment (Chapter 7, page 7-9). Re-suspension of bioaccumulative compounds in the water column or sediment surface can release significant mass of contamination in a more bioavailable form into the aquatic environment and food web. The release of this mass can have implications for species of concern that last longer than the duration of the dredging activity.

Chapter 8 General: Most of the comments made on this section were deferred for resolution by the biological subcommittee. A schedule and process for addressing the issues raised should be provided consistent with the ICP.

Section 8.2.3: DEQ commented that allowable variances in various parameters between reference site and project site be specified. This was not provided.

Section 9.4: Adjustments to steady state for 28-day bioaccumulation tests should be based on correction factors presented in the 1998 USEPA and US Army Corps of Engineers Inland Testing Manual, rather than Feijtel, 1997. The factors presented in the 1998 manual appear to be more relevant to benthic accumulation.

Section 9.8.3.4: The acceptable carcinogenic risk level (DEQ recommends using 10-5) that will be used for establishing bioaccumulation triggers for chemical classes should be identified.

Tables 9-2 and 9-3: Updated TCDD TEFs for humans and other mammals (Martin van den Berg, et al. *The World Health Organization Re-evaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds,* ToxSci Advance Access copy published 7 July 2006, http:"www.who.int/ipcs/assessment/tef_update/en/) should be used.

Chapter 10 General: No resolution is provided for comments made on this chapter and they do not appear to have been addressed in the document.

Section 11.4: The statement that program experience indicates that water quality effects are unlikely to occur, and elutriate testing is therefore not necessary, when bulk sediment concentrations fall below SL2s is not supportable considering that, to date, SL2s have not been widely used in sediment evaluations. The data set supporting this statement should be provided. If this data is not currently available, we recommend elutriate testing be performed for dredging projects where sediment exceeds SL1s until sufficient data is generated to support a higher cutoff.

Appendix A

List 3 DEQ has recent data on biota from various aquatic systems, including Columbia Slough and the Willamette River, that indicate detection of dieldrin at concentrations of potential concern for human exposure. Given this information, DEQ considers it appropriate to include dieldrin on List 1, rather than List 3.

DEQ appreciates the work the Corps has done to issue the draft SEF, as well as define remaining issues to be resolved for the final framework to be issued. DEQ will continue to participate in the continued development of the evaluation framework, as well as the dredge sediment review team ("beta test"), as resources allow. Making timely decisions for these projects is critically important to their success.

Sincerely,

Keith Johnson, Manager
Cleanup and Lower Willamette Section

Sally Puent, Manager
Water Quality

Attachment: DEQ Reliability Memorandum

cc: Mike Poulsen, NWR

Jennifer Peterson, NWR
Jeff Christensen, DEQ HQ
Audrey O'Brien, NWR
Jennifer Sutter, NWR
Alex Cyril, NWR
RSET Policy Committee members