

Final: 10/05/01

DMMP CLARIFICATION PAPER

QUALITY OF POST-DREDGE SEDIMENT SURFACES

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INTRODUCTION

One of the objectives established in the original Puget Sound Dredged Disposal Analysis (PSDDA) program was that the sediment surface exposed by dredging must meet acceptable sediment quality guidelines. For most dredging projects, the Evaluation Procedures Technical Appendix (EPTA) defined acceptable post-dredge sediment quality as chemical contamination below the maximum level guidelines (MLs) or as meeting appropriate State sediment quality standards (1). EPTA envisioned such standards in 1988, but they had not yet been promulgated.

In 1991, Washington State adopted a Sediment Management Standards (SMS) rule that contains both narrative and numeric sediment quality standards or SQS (2). Part I of the rule contains general information on authorities, purpose, applicability and administrative policies. The rule establishes “standards for the quality of surface sediments” in Part III. It also provides sediment source control standards in Part IV and sediment cleanup standards in Part V. The latter addresses minimum acceptable standards for sediment quality subsequent to cleanup actions.

PROBLEM IDENTIFICATION

Experience with several recent projects has resulted in the need to better define what is considered acceptable sediment quality for surfaces that remain after completing navigation or cleanup dredging projects. One project is known to have post-dredge surface sediment quality that exceeds DMMP MLs, DMMP biological guidelines, SMS chemical and/or SMS biological standards. A different project is believed to have unacceptable sediment quality at a depth that will become exposed by the dredging that is planned.

Unfortunately, it is not completely clear in either of the cases cited above which post-dredge surfaces comply with the DMMP guidance found in EPTA or the SMS rule. There are at least two reasons for this uncertainty. First, the language in EPTA does not define what is acceptable post-dredge sediment quality in terms of biological effects, e.g., observed toxicity or bioaccumulation. This appears to be inconsistent with other DMMP guidelines and SMS standards. Second, opinions differ regarding post-dredge surface sediment quality that fully complies with the SMS rule.

PROPOSED DMMP CLARIFICATION

The DMMP agencies propose the following revisions to the guidance on acceptable post-dredge sediment quality found in EPTA. The original text is preserved in Italics, while deletions appear in strikeout font and additions in bold.

2.3 New Sediment Surface Exposed by Dredging. Dredging operations can alter the condition of the surface sediments in the dredging area by exposing new sediments to direct contact with biota and the water column. Because the exposed surfaces may result in greater surface sediment chemical concentrations than existed before dredging, this aspect of dredging must be considered in project planning, review and decision-making.

A variety of options were considered for sampling of material that might be left following a dredging operation. EPWG specified that the new exposed surfaces be sampled to a depth of 1 ft below overdepth, and that the composited sample be archived. Chemical analyses of this material would only be required of the dredger if the sediment above the exposed surface indicated potentially elevated chemical concentrations.

Several options for disposition of, and responsibility for, material that might be left following a dredging operation were discussed. Resolution of this issue was as follows, with three separate cases considered:

- 1. Material with unacceptable chemical concentrations may be present adjacent to a dredged area, but in an area that is not proposed to be dredged. In such cases, the dredger has no requirement under the PSDDA program to address the fate of the sediment in the adjacent area.*
- 2. The dredging operation may result in exposure of sediment that has ~~higher-elevated~~ **greater toxicity, more bioaccumulation or higher risk** than the material that was dredged. ~~The concentrations of chemicals in the exposed sediment could:~~ **The following three scenarios are possible:**
 - a. ~~be less than the chemical ML for unconfined, open water disposal;~~*
 - b. ~~exceed the chemical ML for unconfined, open water disposal, but not the in situ sediment standard for chemical concentrations (i.e., a chemical guideline requiring evaluation of potential remedial action; such a guideline has not yet been established; or~~*
 - c. ~~exceed the in situ sediment standard for chemical concentration as well as the chemical ML for unconfined, open water disposal.~~**The dredger must overdredge or cap the exposed sediment if chemical concentrations in the sediment exceed the ML for unconfined open water disposal (see section II 8.2 and table II 11.1). Dredging that causes surface chemical concentrations to exceed this level is unacceptable.**

- a. *The post-dredge surface sediment exceeds no DMMP chemical or biological guidelines and no SMS chemical or biological criteria or standards. In this case, the dredger has no requirement under the dredging program concerning the fate of the exposed sediments.*
 - b. *The post-dredge surface sediment quality exceeds the chemical or biological SQS and/or minimum cleanup levels (MCUL). In this case, the dredger is not in compliance with the antidegradation policy in the SMS rule (WAC 173-204-120) and the dredger will be required by the SMS to 1) evaluate the impacts to beneficial resources, 2) apply for a sediment impact zone, and/or 3) determine the technical feasibility, cost and net environmental effects of overdredging and/or capping the new sediment surface. Henceforth, the DMMP supports the antidegradation policy contained in the SMS rule by also managing “sediment quality so as to protect existing beneficial uses and move towards attainment of designated beneficial uses”. This means that post-dredge surface sediment should be closer to meeting the chemical and biological SQS than the pre-dredge surface sediment.*
 - c. *The post-dredge surface sediment exceeds one or more DMMP MLs or biological guidelines for unconfined open-water disposal. In this case, the dredging causes the post-dredge surface sediment quality to exceed acceptable DMMP guidelines and the dredger must overdredge and/or cap the exposed sediment (see section II-8.2 and table II-11.1).*
3. *The dredging operation may leave material that contains lower chemical concentrations, less toxicity, less bioaccumulation and less associated risk than was initially present. In this case, the dredger has no requirement under the dredging program concerning the fate of the exposed sediments. However, there may be other regulatory programs that request or require additional dredging in this, and other cases. For example, the dredger may be determined to be responsible for discharge of the chemicals of concern and be required under a State or Federal regulation to conduct additional dredging as a remedial measure. However, while the post-dredge surface sediment may meet the intent of the antidegradation and designated use policies of the SMS rule (Section 120), additional dredging and/or capping of the exposed sediment may still be required by the SMS as part of an agreed cleanup or source control actions if post-dredge surface sediment quality still exceeds SMS chemical or biological sediment quality criteria or standards.*

REFERENCES

1. EPTA, 1988. Evaluation Procedures Technical Appendix. Prepared by the Corps of Engineers in cooperation with the Environmental Protection Agency, Region 10, and the Washington State Departments of Ecology and Natural Resources.
2. Sediment Management Standards, 1991. 173-204 Washington Administrative Code. Washington Department of Ecology, revised 1995.