

Frequently Asked Questions for Sediment Management Standards

Why do we need Sediment Management Standards?

When managing the environment, our government has often partitioned the natural world into different compartments such as air, land, water and sediment. In reality, these compartments are connected and contaminants move easily between them. Discharges of contaminants into the water often accumulate in the sediment, especially for contaminants that are not very soluble. The aquatic ecosystem is dependent on clean water and clean sediment to maintain healthy and diverse populations. Sediment standards are needed to protect the aquatic ecosystem, especially the animals that live in the sediment or depend on sediment-dwelling organisms as a food source. Sediment standards are also needed to protect people who eat fish and shellfish from our state's waters.

What are the Sediment Management Standards? What are they used for?

Sediment Management Standards (SMS) for the state of Washington (Chapter 173-204 WAC) were developed to reduce and ultimately eliminate adverse effects on biological resources and threats to human health from surface sediment contamination. The Sediment Management Standards are used to:

- Set standards for sediment quality (there are both numeric and narrative standards);
- Apply the standards to reduce pollutant discharges; and
- Provide a decision process for the cleanup of contaminated sediment sites.

The SMS contains only narrative standards for sediment in freshwater and brackish water areas. Numeric criteria are developed on a site specific basis to meet the narrative standards in the SMS.

For sediment in marine environments, there are numeric criteria for 47 chemicals or chemical groups and narrative criteria for chemicals not on the list. Some SMS criteria are based on dry weight, while others are normalized with the organic carbon content of the sediment. There are also confirmatory biological effects criteria related to acute and chronic effects. These effects are determined by laboratory toxicity tests or benthic abundance tests as compared to reference sediment sites. Both chemical concentrations and biological effects tests are used to evaluate sediment standards, but the results of the biological effects tests can override the chemical concentration results.

The SMS contains two different levels of criteria for Puget Sound sediment.

- The **Sediment Quality Standards**, also known as **SQS**, correspond to sediment quality that will result in no adverse affects to biological resources or significant risk to human health. The SQS serve as the cleanup objective for all cleanup actions.
- The **Cleanup Screening Levels**, also known as **CSL**, Minimum Cleanup Levels (MCUL), or Maximum Chemical Criteria for Sediment Impact Zones (SIZmax), correspond to sediment quality that may result in minor adverse effects. The different names correspond to how the criteria are used in three different situations, but the criteria are the same.

The **SQS** (WAC 173-204-320) and **CSL** (WAC 173-204-520) have numeric criteria for chemical concentrations of 47 chemicals and chemical groups and narrative criteria for other chemicals. If the sediment exceeds the chemical concentrations listed in Table 1, or the practical quantitation limit is above the SQS criteria, biological effects tests are needed to confirm whether or not the sediment are causing toxicity to aquatic life. Other types of evaluation or confirmatory testing may be needed if there is a potential risk to human health.

The SMS allow for Sediment Impact Zones (**SIZ**) to be established via discharge permits or other administrative actions (WAC 173-204-415). There are a number of requirements for Sediment Impact zones which include but are not limited to:

- The discharge receives all known, available and reasonable prevention, control and treatment.
- The sediment quality inside the SIZ does not exceed the minor effects standards (**SIZmax**).
- The discharger's activity is in the public interest.
- The SIZ area boundaries are the minimum practicable surface area.

The SMS describe a decision making process for managing contaminated sediment sites in Puget Sound (WAC 173-204-500). The procedures include screening, assessing and ranking contaminated sites, conducting site cleanup studies, selecting site specific cleanup standards, and site specific cleanup actions. Sediment cleanup standards should be as close as practicable to the **SQS** standards, but may also consider cost and technical feasibility and net environmental effects. The upper limit of the site specific cleanup standards are the Minimum Cleanup Levels (**MCUL** or **CSL**). The Department of Ecology may authorize a Sediment Recovery Zone with monitoring for a specific amount of time at sites where a cleanup action is not practicable.

What is the authority for the Sediment Management Standards?

The SMS adopted in 1995 are described in WAC Chapter 173-204. This chapter is promulgated under the authority of:

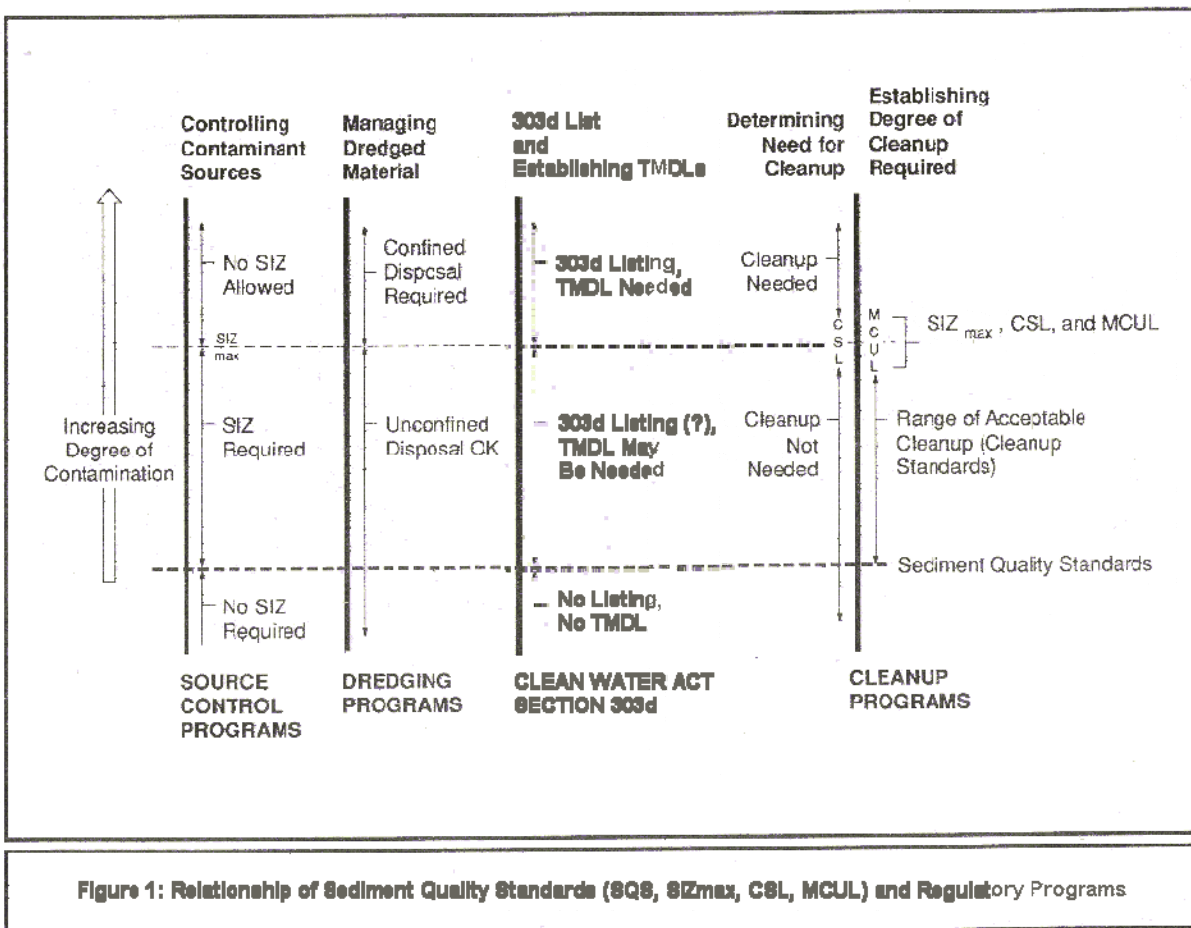
- Chapter 90.48 RCW, the Water Pollution Control Act
- Chapter 70.105D RCW, the Model Toxics Control Act
- Chapter 90.52 RCW, the Pollution Disclosure Act of 1971
- Chapter 90.54 RCW, the Water Resources Act of 1971
- Chapter 43.21C RCW, the state Environmental Policy Act

What kind of sediment tests are used to evaluate Sediment Management Standards?

Testing sediment to evaluate SMS is described in detail in two documents: the Sediment Management Standards WAC 173-204, and the Sediment Sampling and Analysis Plan Appendix. The objectives of the sediment investigation will determine the number and type of samples and analyses needed. A typical screening sediment investigation might include multiple sediment samples of the top 10 centimeters of sediment. These samples would be analyzed for the 47 SMS chemicals or chemical groups as well as conventional analyses. If there is reason to suspect toxicity (practical quantitation levels or concentrations that exceed SQS criteria, high ammonia or sulfides), confirmatory biological effects tests would be performed to determine whether the sediment was causing toxicity.

How do Sediment Management Standards relate to Ecology programs?

As mentioned in the previous section, SMS are used for source control of pollutants and describes procedures for establishing cleanup levels at contaminated sites. The numeric criteria in the SMS are used for determining whether water bodies are impaired due to sediment contamination and need to be placed on the 303d list of impaired water bodies. The SMS criteria parallel those developed for regulating dredged material under the Dredged Material Management Program (DMMP). The figure below shows how SMS standards are used in these different regulatory programs.



References

Ecology 1995. *Sediment Management Standards*. Chapter 173-204 WAC. Amended December 1995. http://www.ecy.wa.gov/programs/tcp/smu/sed_standards.htm

Ecology 2003. *Sediment Sampling and Analysis Plan Appendix: Guidance on the Development of Sediment Sampling and Analysis Plans Meeting the Requirements of the Sediment Management Standards* (Chapter 173-204 WAC). Ecology Publication No. 03-09-043. Revised April 2003. <http://www.ecy.wa.gov/biblio/0309043.html>

Abbreviations and Definitions

CSL – Cleanup Screening Levels- numeric and narrative criteria for chemical and biological effects tests that correspond to an upper bound of sediment quality that will result in minor adverse effects to biological resources or no significant risk to human health.

MCUL – Minimum Cleanup Levels – Numeric criteria are the same as CSL, but are used in the process of establishing minimum cleanup levels at sediment cleanup sites.

Reference sediment sites - The SMS mandates that reference areas (i.e. relatively uncontaminated areas) be sampled to provide data suitable for comparison with data on potentially contaminated sediments. A guidance document on performance standards for reference areas is available for Puget Sound. Samish Bay, Holmes Harbor and Carr Inlet were selected as suitable reference areas based on location and available data. Ecology Publication 06-09-096. <http://www.ecy.wa.gov/biblio/0609096.html>

SAPA – Sediment Sampling and Analysis Plan Appendix – Guidance document for developing sediment sampling and analysis plans that meet the requirements of the Sediment Management Standards. Ecology Publication No. 03-09-043. <http://www.ecy.wa.gov/biblio/0309043.html>

SIZ – Sediment Impact Zone – An area near a discharge that is authorized to exceed the sediment quality standards (SQS). The sediment quality dilution zone is allowed pursuant to RCW 90.48, the Water Pollution Control Act. The SIZ must meet a number of conditions which are described in the SMS (WAC 173-204-415).

SIZmax – Maximum levels for Sediment Impact Zones - Numeric criteria are the same as CSL, but are used in the process of establishing maximum levels allowed in Sediment Impact Zones.

SMS – Sediment Management Standards – Standards that apply to all Washington State surface sediment to reduce and ultimately eliminate adverse effects on biological resources and human health from surface sediment contamination (WAC 173-204). http://www.ecy.wa.gov/programs/tcp/smu/sed_standards.htm

SRZ - Sediment Recovery Zone – A sediment recovery zone may be authorized for cleanup sites where selected actions leave in place sediment that exceed the SQS. The authorization is for a specific amount of time and may include operational terms and conditions such as monitoring and closure (WAC 173-204-590).

SQS – Sediment Quality Standards – numeric and narrative criteria for chemical and biological effects tests that correspond to sediment quality that will result in no adverse affects to biological resources or significant risk to human health.