

Sediment Cleanup User's Manual Summary of Public Comments

Washington State Department of Ecology
Olympia, Washington

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Department of Ecology's Regional Offices

Map of Counties Served



Southwest Region 360-407-6300	Northwest Region 206-594-0000	Central Region 509-575-2490	Eastern Region 509-329-3400
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Region	Counties served	Mailing Address	Phone
Southwest	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	PO Box 47775 Olympia, WA 98504	360-407-6300
Northwest	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	PO Box 330316 Shoreline, WA 98133	206-594-0000
Central	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	1250 W Alder St Union Gap, WA 98903	509-575-2490
Eastern	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	4601 N Monroe Spokane, WA 99205	509-329-3400
Headquarters	Across Washington	PO Box 46700 Olympia, WA 98504	360-407-6000

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DEPARTMENT OF
ECOLOGY
State of Washington

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Comments and Responses on the Sediment Cleanup User's Manual May 2021 Proposed Revisions

This document is an informal response to the public comments received on the draft May 2021 Sediment Cleanup User's Manual (SCUM). Ecology does focused and limited revisions to SCUM approximately every odd year to keep it up to date and relevant (e.g., 2017, 2019, 2021). In order to retain Ecology's ability to revise the document on a frequent basis, we invite comments only on the revisions highlighted in the draft SCUM document and which are documented in SCUM Appendix M. These revisions were also presented at the May 2021 Sediment Management Annual Review Meeting.

We also received comments on areas of SCUM that were not open for public comment. These comments will be considered during the next revision. However, if the change was minor we may have addressed it in the final December 2021 SCUM.

Tables 1-5 in this document includes a summary of comments received on the proposed revisions, minor comments received on areas of SCUM not included in the proposed revisions, and Ecology's responses. Table 6 in this document includes a summary of comments received on areas of SCUM not included in the proposed revisions. These comments will be considered during the next revision of SCUM.

We would like to thank all commenters for taking the time to provide your thoughts on the 2021 proposed revisions. SCUM is much improved because of your careful attention to detail.

Summary of comments received and Ecology's responses.

Table 1. Public comments and responses.

Topic	Chapter/Section	Summarized Comment	Open for Public Comment	Ecology Response
Biologically Active Zone	Chapter 3, subsection 3.4.1.2 Biologically active zone	The discussion on flowing and isolated water bodies is confusing. Suggest including reference to more standard terminology "lentic" and "lotic" and removing language on Lake Washington as a flowing water system. The language does not improve clarity.	Yes	These terms are intentionally general in nature to encompass all potential conditions. For example, a lake that has been manipulated into a less than natural state (e.g. Lake Washington). Clarification was made to include "lentic" and "lotic" and that many flowing or isolated water bodies may have aspects of both.
		Ponds created by beaver dams at a cleanup site may require special consideration for depth of sediment chemical characterization.	Yes	No change made. We agree. But, the proposed language allows for identification of a site-specific biologically active zone.
		Provide rationale for the recommendation of extending the biologically active zone 10 cm deeper than maximum root depth in environments with wetland plants.	Yes	Change made. Clarification and rationale was added.
		Suggest removing the language about hyporheic zones or adding as a footnote. SCUM is concerned with contaminated fine sediment at the sediment surface or at depths potentially exposed by flood scour or propeller wash, the biologically active zone hyporheic is irrelevant to SCUM.	Yes	Change made to clarify that understanding the hyporheic zone is important because during the dry season lateral flow or flow under the creek bed could still occur, thus extending the biologically active zone in sediment.
		The discussion on lake turnover is confusing, suggest removing for clarity.	Yes	No changes made. Stratification and turn over are important to consider when identifying the biologically active zone. Since specific language to clarify the language was not provided, changes will not be made.
Biological Toxicity Testing	Chapter 4, subsection 4.2.3	Mussels can be spawned year round.	No	Change made.
	Chapter 4, subsection 4.2.5	<i>Neries virens</i> is now <i>Alitta virens</i>	No	Change made.
	Chapter 4, Table 4-4	Confusion about certain headings and what they mean.	No	Changes made to clarify.
	Chapter 4, Table 4-7	Make changes based on comments to the 2021 SMARM paper on mercury holding times.	Yes	Changes made.

Table 2. Public comments and responses.

Topic	Chapter/ Section	Summarized Comment	Open for Public Comment	Ecology Response
Biological Toxicity Testing	Chapter 4, subsecti on 4.3.2	This has no relevance for toxicity testing since tests not run under field conditions. Per PSEP protocols, temperature and dissolved oxygen are controlled in the laboratory with set dissolved oxygen and temperature limits.	No	Changes made. This section has been clarified related to seasonal impacts, which are distinctly separate from laboratory standard test conditions where temperature and dissolved oxygen is adjusted.
	Chapter 4, subsecti on 4.3.2	Requiring all sampling for toxicity testing to occur between Aug 15 and Sept 30 places a needless burden on samplers and toxicity testing labs (and analytical labs, since sampling for them usually occurs at the same time) to perform all sampling and analyses during a short window of the year.	No	No changes made. SCUM recommends, but does not require, sampling for bioassay testing to occur during this time frame. This section includes many factors that should be taken into account to determine the appropriate time for sampling. When these factors are considered as a whole, it may be determined that a different sampling time frame is most appropriate.
	Chapter 4, subsecti on 4.6.1.2	Nitrogen is not necessary if the sediments are held in a container where headspace can be removed, such as a bag. If the container is rigid and air space above the sediment is unavoidable, then nitrogen may be necessary.	No	Change made. Zero headspace option was added to text and Table 4-7, but DMMP requirements have been retained since this is their protocol.
	Chapter 4, Table 4-3	Revise the interstitial salinity text based on the DMMP 2020 Clarification paper submitted at SMARM.	No	No changes made. This DMMP Clarification paper on interstitial salinity was specific to dredged material being moved to an environment with different salinity, so acclimation is done. For cleanup, the <i>in situ</i> sediment and test sediment have the same salinity. If salinity will differ at a cleanup site over time, then samples will be taken at different times to account for varying salinity. The 2020 Clarification paper recommended an adjusted pH test condition of 7.5 - 9.0. For cleanup, the goal is to understand how <i>in situ</i> conditions may adversely affect the benthic community. So adjustments of pH would not be appropriate.

Table 2. Public comments and responses.

Topic	Chapter/ Section	Summarized Comment	Open for Public Comment	Ecology Response
Benthic Criteria	Chapters 6/8, subsections 6.3.2.1, 6.3.2.2, Table 8-1	Explain the decision as to why total PCB congeners is an acceptable substitute for Total PCB Aroclors at the Sediment Cleanup Objective but not the Cleanup Screening Level.	Yes	Clarifications made. Details have been provided in a new Appendix O.
	Chapter 8, section 8.1	Explain the added text that concentrations above the Cleanup Screening Level are predicted to have severe adverse effects. There are not any clear relationships to concentrations above the Cleanup Screening Level and severity of benthic impacts. The Sediment Management Standard states that Cleanup Screening Levels establish a minor adverse effects level. The added text is inconsistent with the regulation.	Yes	The Sediment Management Standards is clear that sediment concentrations for minor adverse effects to the benthic community is between the Sediment Cleanup Objective (SCO) and Cleanup Screening Level (CSL) [WAC 173-204-562(2)(b) and 173-204-563(2)(b)]. In other words, at or below the CSL but not below the SCO. This revision was made due to the misinterpretation that any exceedance of the CSL means minor adverse effects, without regard to sediment concentrations. It is appropriate to infer that the higher the concentration the more severe the adverse effects to the benthic community. For example, a chemistry CSL exceedance for mercury could be any concentration above 0.59 ppm (e.g., 10 ppm). Changes were made to state "Chemical concentrations above the CSL may have greater adverse effects on the benthic community."
	Chapter 8, section 8.2	The text on use of chemical benthic criteria as screening criteria for the benthic community but not for bioaccumulatives is unclear. Suggest clarifying that benthic chemical criteria are appropriate to screen for benthic receptors even if the chemical is bioaccumulative.	Yes	Change made. It was not our intent to prevent the use of benthic criteria for screening bioaccumulatives to protect benthic receptors (e.g., mercury). This language was intended to clarify the distinction between criteria for benthic receptors from acute and chronic toxicity vs higher trophic levels from bioaccumulative impacts. Language has been changed to clarify that the benthic chemical criteria can be used to screen for impacts to benthic receptors and as cleanup levels for the benthic community, but not for bioaccumulative impacts (e.g., human health).
	Chapter 8, Table 8-1	Table 8-1 is difficult to read resulting in mistakes for units of measure for organics and chlorinated organics. Rearrange chemicals so they have the same units of measure.	No	Change made.

Table 3. Public comments and responses.

Topic	Chapter/ Section	Summarized Comment	Open for Public Comment	Ecology Response
Benthic Criteria	Chapter 8, Table 8-1	Make the table footnote "c" consistent with section 6.3.1.1 "the sample <u>may</u> be compared..."	Yes	Change made.
	Chapter 9, Tables 9-1, 9-3, Appendix E	It is unclear how Ecology derived the sediment-to-skin adherence factors or dermal surface areas. We recommend calculating this value using the EPA 2011 Exposure Factors Handbook data from Shoaf et al. 2005 from Table 7-4.	Yes	Changes made. We clarified the source of the sediment-to-skin adherence factor and dermal surface areas as U.S.EPA 2011 Exposure Factors Handbook, Tables 7-4 and 7-20. We added details on how the exposure parameters were calculated in SCUM Appendix E, section E.2.2.6, and added a new SCUM Table E-4. New calculations to establish the exposure parameters were not necessary. Table 9-3 Risk-based sediment values for sediment ingestion and dermal contact, Chapter 9, has been updated to include risk-based values for certain chemicals using the revised exposure parameters.
	Chapter 9, Tables 9-3 & 9-5	Recalculated values for cPAHs were updated in this table using the revised sediment-to-skin adherence factors and dermal surface areas. The other chemicals should be publicly reviewed before the final version of SCUM.	Yes	Changes made. All chemicals in SCUM Table 9-3 have been updated using the revised exposure parameters and calculated using Appendix K and the equations in SCUM Chapter 9. Since Appendix K is part of SCUM and a publicly available spreadsheet for anyone to do calculations, Ecology does not deem it necessary to have the updated values publicly reviewed.
	Chapter 9, Table 9-1	The dermal surface areas for clam digging and net fishing are biased high due to: 1) including children ages 6-18 but does not account for the number of daytime low tides available when children are in school, and 2) the clamming scenario assumes full leg, arm, and feet exposure even when clamming in cold weather, 3) The net fishing scenario does not account for less exposure to children vs adults, 4) the limited season for net fishing, 5) This is inconsistent with EPA guidance and how the Lower Duwamish risk assessment was done.	Yes	Changes made. We agree that site-specific factors need to be considered when finalizing calculated values. We have clarified this language in Appendix E, Section E.2.2. that site-specific changes to the default RME may be appropriate. The recommendations in SCUM are specific to sediment, based on U.S. EPA's 2011 Exposure Factors Handbook Chapter 7, Tables 7-4 and 7-20, and based on conservative assumptions which is consistent with Ecology practice. The methods used in SCUM to calculate the sediment-to-skin adherence factor (AF) and dermal surface area are consistent with EPA guidance and uses the latest data in EPA's Exposure Factors Handbook. The child AF is based on intertidal shoreline play which is the most appropriate for exposures in Washington state. The body-specific AFs are based on the geometric mean, not the 95th percentile. As with all guidance, Ecology will work with entities when assessing site-specific factors may need to be adjusted from the default RME in SCUM to ensure that any adjustments are scientifically rigorous, practical for the exposure from the site, and conservatively protective.

Table 4. Public comments and responses.

Topic	Chapter/ Section	Summarized Comment	Open for Public Comment	Ecology Response
Miscellaneous	Chapter 3, section 3.1.1	It is unclear why SCO was added to the bullet related to identifying and listing sites when WAC 173-204-510 states sites are listed based on the CSL criteria.	Yes	No changes made. This was added to clarify that benthic SCO can be used to list sites. WAC 173-204-510(2)(a)(ii) and 173-204-520(3) allow averaging chemistry over three stations. Of those stations, SCO exceedances could occur, but the average could still be an exceedance of the CSL. In addition, two SCO exceedances of the benthic biological criteria equates to a CSL exceedance [WAC 173-204-562(3)(b)(ii) and 173-204-563(3)(b)(ii)].
	Chapter 3, section 3.3.6.2	It is unclear why "natural" was added to the sentence referring to "elevated above natural background". How can natural background be elevated?	Yes	Change made. The sentence has been clarified that this was for chemicals known to be above natural or regional background.
	Chapter 3, section 3.4.1.1	It is unclear why the RME for human health in WAC 173-204-561(2)(b)(i)(A) is added to the section on biologically active zone.	Yes	Change made. A clarification was made to reference the SMS remedial investigation conceptual site model requirements in WAC 173-204-550(4)(c) for "current and future" ecological receptors (e.g., the benthic community).
	Chapter 4, Table 4-7	Revise Total Organic Carbon holding time from 14 - 28 days and from 4°C to 6°C temperature consistent with EPA SW-846.	No	Change made. Revised holding time to 28-days but retained 4°C temperature. Added a footnote that temperature should be maintained at 4°C but could intermittently fluctuate +/- 2°C.
	Chapter 5, Table 5-1	Add new methods for analyzing grain size consistent with ASTM.	No	Change made. Updated ASTM D-422 method for grain size to recognize it consists of two different methods: ASTM D-6913 (sand fractions) and ASTM 7928 (silt/clay fractions). Clarified that both should be used to document sand, silt, and clay fractions.
	N/A	Make the past copies of SCUM available on the website.	No	No changes made. Due to Ecology's policy on server storage, we do not retain copies of superseded guidance on our website. As one can imagine, SCUM requires a lot of storage. If you need a past version of SCUM, contact Chance Asher for an electronic copy.

Table 5. Public comments received that will be considered during the next revision of SCUM.

Chapter/Section	Summarized Comment
Chapter 5, Tables 5-3, 5-4, 5-5	Revisions regarding updates to quality control procedures for organics, metals, and conventionals analyses.
Chapter 4, subsection 4.2.3 Biological toxicity tests	Multiple comments to revise language, procedures, and criteria for bioassay testing based on updated protocols or best professional judgement.
Chapter 4, subsection 4.2.3.2 Freshwater biological tests	Revise to clarify that the requirements for multiple tests multiple endpoints can be derived from an individual test, that some tests are chronic-sublethal and/or sublethal
Chapter 4, Table 4-6	Add PFAS/PFOA and an emphasis on not using fluoroplastics
Chapter 5, Tables 5-8, 5-9	Updates on performance standards and control limits.
Chapter 8, Tables 8-1 & 8-4	Change from AFDW to DW, update protocol references