

# Sediment Cleanup Users Manual II Technical Workshop (1<sup>st</sup> of 3)

July 17, 2014

WA Department of Ecology  
Toxics Cleanup Program

# Goals and Objectives

- Communicate specific policy and technical issues identified during SCUM II public comment period
- Focus on this subset of issues at the workshops
- Collaboratively work to help Ecology resolve identified issues
- Engage in thoughtful discussion to elaborate on ideas proposed by commenters
- Ecology to come away with well thought out ideas to help finalize the guidance document

# A Few Guiding Principles

- Focus on the main thing and ensure the main thing remains the main thing
- This is a limited and focused discussion on key unresolved issues
- Work to understand the needs or viewpoints of others to lead to workable solutions
- Have fun

# Workshop Format

- Communicate what we plan to work on in the guidance
- Introduce key unresolved issues for discussion
- Pose specific questions to consider related to the issues
- We will record ideas and solutions for resolving the key issues under consideration to help finalize the guidance

# Introduction

- In part, the SMS rule was revised to provide a more implementable cleanup framework for sites with bioaccumulatives because of:
  - Increased costs to cleanup to low levels
  - Inconsistency with cleanup decisions
- Key features of the revised SMS rule:
  - Recognition that cleanup is one key part of a broader strategy
  - Provide incentives to get cleanup done and minimize the lengthy process:
    - Regional background, cleanup units, recontamination clause
  - Integrate cleanup with broader source control and prevention measures to reduce contaminant concentrations to natural background or risk values:
    - PLP source control, sediment recovery zones, post cleanup monitoring

# Acknowledgements

## Department of Ecology

Chance Asher

Laura Inouye

Russ McMillan

Dave Bradley

Pete Adolphson

Pete Kmet

Craig McCormack

Ivy Anderson

## Technical Consultants

Teresa Michelsen, Avocet Consulting

Chris Waldron, Pioneer Technologies

Lorraine Read, TerraStat Consulting

Mike Ehlebracht, Hart Crowser

Roger McGinnis, Hart Crowser

Taku Fuji, Anchor QEA

Lon Kissinger, EPA

SMS Advisory Group Members

# Why We're Doing What We're Doing

- Implementing the revised SMS rule includes incorporating and considering a range of scientific, policy, and practical issues.
- The rule and draft guidance attempt to reasonably balance:
  - Flexibility and predictability
  - False positives and false negatives
  - Short term cleanup actions and longer term source control and prevention measures
- Based on the comments, we need to improve on this attempt to better reflect the rulemaking goals and objectives

# Issues / Themes

- **Burdensome process:** Cleanup process too burdensome due to more conservative requirements (cleanup levels, assessments)
- **Feasibility:**
  - New SMS rule more conservative
  - SCUM II incorporates more conservative assumptions than the already conservative SMS rule
  - Resulting in unattainable cleanups
- **Streamlined process:** Develop more streamlined processes to get cleanup done, reduce risk, and provide finality for PLPs

# Issues / Themes – Proposed Ideas

- **Streamlined Process:** Determine a process to make cleanup more efficient (for both simple and complex sites)
- **Simple vs. Complex Sites:** Develop a more efficient process for simple sites that is less burdensome than for complex sites
- **Bioavailability:** Incorporate new technologies and assess availability of bioaccumulative CoCs
- **Attaining Compliance:** Develop successful monitoring approach
- **Remedy Selection:** Include more approaches
- **Recontamination:** How to determine if source control is effective

# Three Technical Workshops – Draft Topics

July 17, 2014	July 31, 2014	August 7, 2014
<ul style="list-style-type: none"> <li>• Preliminary CSM</li> <li>• Simple or Complex Sites</li> <li>• Screening CoPCs</li> <li>• Use/Need for Tissue Data</li> </ul>	<p><b>Natural/Regional Background:</b></p> <ul style="list-style-type: none"> <li>• Statistical Metrics</li> <li>• Regional Background Definition</li> </ul>	<ul style="list-style-type: none"> <li>• Establishing Cleanup Levels</li> <li>• Adjusting from SCO</li> </ul>
<ul style="list-style-type: none"> <li>• Remedial Investigations:</li> <li>• Simple vs. Complex Sites</li> <li>• Default screening values</li> </ul>	<p><b>Compliance Monitoring:</b></p> <ul style="list-style-type: none"> <li>• Area weighted averaging</li> <li>• Point by point</li> <li>• Incremental sampling</li> <li>• Use of tissue data</li> </ul>	<p style="text-align: center;"><b>Remedy Selection</b></p>
<p style="text-align: center;"><b>Bioavailability</b></p>	<p style="text-align: center;"><b>Establishing PQLs</b></p>	<p style="text-align: center;"><b>Sediment Recovery Zones: Monitoring requirements</b></p>
<p><b>Ecological risk assessments</b></p>		<p><b>Recontamination:</b></p> <ul style="list-style-type: none"> <li>• Monitoring for remedy failure/source control</li> <li>• Settling liability</li> </ul>

# SCUM II - Framework and Reorganization

- **Chapter 1:** SMS rule framework & guidance document organization
- **Chapter 2:** Identification of sites and sediment cleanup units:
  - Default screening approaches for bioaccumulatives
  - Use of sediment background
  - Use of tissue background
  - Use of area weighted averaging for bioaccumulatives

# SCUM II - Framework and Reorganization

## Chapter 3: Remedial Investigation Workplan and Preliminary

### Conceptual Site Model:

- RI goals and objectives
- Develop preliminary CSM for screening purposes
- Evaluate size and complexity of site (simple vs. complex)
- Identify pathways, receptors, and screen CoPCs
- Identify RME – use of default
- Identify exposure areas, site units, and/or sediment mgmt areas
- Identify data gaps

# SCUM II - Framework and Reorganization

- **Chapter 4:** Field Sampling Methods
- **Chapter 5:** Chemical and Biological Testing and QA/QC procedures
- **Chapter 6:** Remedial Investigation Report and Data Evaluation:
  - Contents and requirements of RI Report
  - Contents and requirements of human health and eco risk assessments
  - Data treatment methods and data submittal requirements

# SCUM II - Framework and Reorganization

- **Chapter 7:** Cleanup standards framework
  - **Chapter 8:** Benthic criteria
  - **Chapter 9:** Human health criteria
  - **Chapter 10:** Higher trophic level criteria
  - **Chapter 11:** Natural and regional background
  - **Chapter 12:** Practical quantitation limits.
- **Chapter 13:** Feasibility study & remedy selection
- **Chapter 14:** Sediment recovery zones
- **Chapter 15:** Compliance monitoring
- **Chapter 16:** Applicable laws and authorizations required
- **Chapter 17:** References



# Preliminary Conceptual Site Model

What we plan to do:

- Refine and streamline preliminary CSM for screening purposes
- Include evaluation of size/complexity of site (simple vs. complex)
- Identify complete exposure pathways, receptors, and screen CoPCs
- Identify exposure areas
- Identify possible sediment cleanup units and/or sediment management areas
- Identify data gaps

# Simple and Complex Sites

Based on comments received we propose:

- Differentiate “Simple” and “Complex” sites, with the goal of streamlining the cleanup process
- Identify physical and/or administrative thresholds that serve to identify Simple sites
- Establish off-ramps that simplify how we deal with bioaccumulatives

# Screening Chemicals of Potential Concern

Based on comments received we plan to:

- Provide more options for screening CoPCs, taking into account the possibility that there may be limited sediment and/or tissue data
- Not require tissue data for all screening approaches, particularly at simple sites
- Identify chemicals for which risk-based values typically fall below sediment background concentrations
- Identify conservative default values for screening (e.g., TTLs, BSAFs, reference or non urban tissue values) that can later be updated using site-specific RI data
- Allow use of both natural and regional background concentrations (where relevant) for screening CoPCs

# Defining Simple Sites

Proposed Criteria	Questions for Discussion
1) Size and nature of site.	1a) Should acreage and/or volume serve as a threshold? 1b) How can a site's physical conditions be used to distinguish physically simple or complex? 1c) Could a sediment cleanup unit be a simple site?
2) Limited number of: <ul style="list-style-type: none"><li>○ CoPCs</li><li>○ PLPs</li><li>○ Sources of contamination</li></ul>	2a) Limited to risk driver chemicals? 2b) Include only PLP sources or sources that pose risk of recontamination?
3) Discrete chemical signature.	3a) Include list of chemical type(s) and/or concentrations?
4) Limit remedial alternatives: <ul style="list-style-type: none"><li>○ Dredging</li><li>○ Capping</li><li>○ Enhanced natural recovery</li></ul>	4a) Limit to use of permanent solutions? 4b) Include in-situ amendments? 4c) Include monitored natural recovery?

# Screening Chemicals of Potential Concern

## Proposal

- 1) Include various approaches for screening bioaccumulatives:
  - Site sediment data compared to:
    - Natural or regional background concentrations
  - Site tissue data compared to:
    - Site-specific TTLs, or
    - Non-urban/reference area tissue concentrations

## Questions for Discussion

- 1a) Are there other approaches that could be considered?
- 1b) Should some of these approaches be given greater weight or precedence than others?

# Screening Chemicals of Potential Concern

## Proposal

2) Screen bioaccumulative CoPCs by comparing site sediment data to natural or regional background sediment concentrations

## Questions for Discussion

2a) What approaches are available if sediment natural and/or regional background has not been established?

Current options:

- Use natural background if it is available and regional background is not
- PLPs/others develop natural and/or regional background with approval by Ecology

2b) Other ideas?

# Screening Chemicals of Potential Concern

## Proposal

3) Screen bioaccumulative CoPCs by comparing onsite tissue data to TTLs or reference/non-urban tissue data

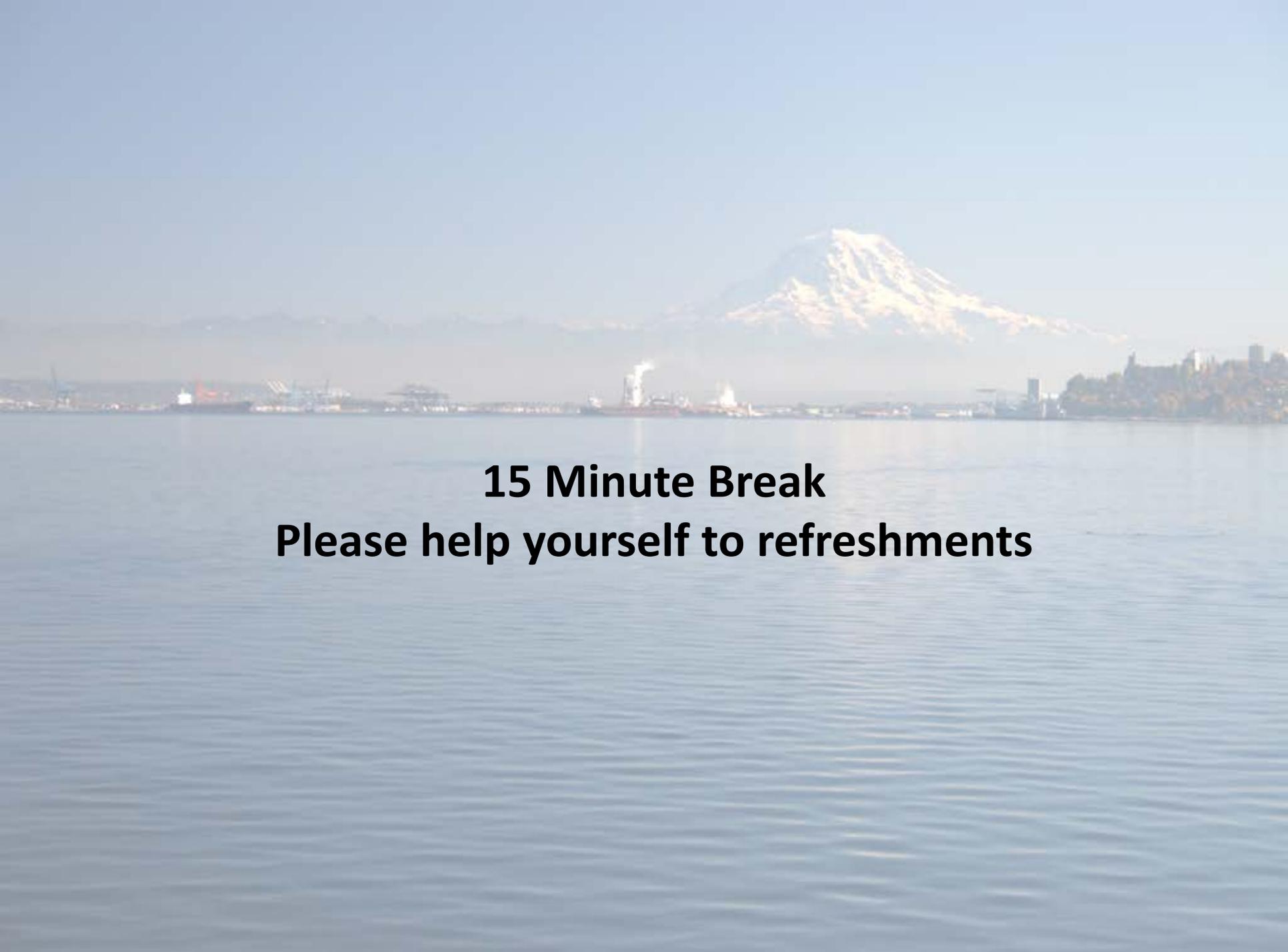
## Questions for Discussion

3a) Are available tissue data (e.g., non-urban Puget Sound data) sufficient or is an updated, more comprehensive data set required?

3b) How should “reference” or “non-urban” areas be identified?

3c) What factors should be considered in determining which species should be used for screening?

3d) If TTLs and background concentrations in tissues are below PQLs, should the PQL for tissues be used for screening?



**15 Minute Break**  
**Please help yourself to refreshments**

# Remedial Investigation

Based on comments, we plan to:

- Have a separate chapter focusing on the requirements of the RI report, data evaluation methods, and data submittal
- More clearly link these activities and sufficiency of data to the conceptual site model, identified data gaps, and RI goals
- Comprehensively integrate exposure areas and spatial averaging techniques
- Clarify site-specific point of compliance for human health
- Provide more clarity on requirements for different kinds of sites

# Remedial Investigation – Simple vs. Complex

Issue	Questions for Discussion
1) COC analysis and decision-making	1) Allow use of indicator or risk-driver chemicals to focus RI/FS processes? <ul style="list-style-type: none"><li>• Sediment management units</li><li>• Site boundaries</li><li>• Selection of remedies</li></ul>
2) Default cleanup levels	2) Options? <ul style="list-style-type: none"><li>• Background based</li><li>• Bioaccumulative risk-based</li></ul>
3) Risk assessments not required	3) If defaulting to natural/regional background as cleanup levels?
4) Tissue data collection not required	4a) <b>No tissue data:</b> If defaulting to sediment natural/regional background as cleanup levels? 4b) <b>Existing tissue data:</b> If using TTLs + conservative literature-based BSAFs to determine cleanup levels?

# Remedial Investigation – Simple vs. Complex

Issue	Questions for Discussion
5) RI sampling and reporting requirements	5a) Identify requirements for all sites vs. some that could be discretionary for simple sites?  5b) Ideas for what should be discretionary?
6) Degree to which influence of surrounding areas/PLPs needs to be determined (sediment cleanup units)	6) Focus on immediate unit for clearly differentiable cleanups and/or dredging/construction projects?
7) More default values (e.g., BSAFs, BAZs, etc.)	7) Which parameters should be included?
8) Other ideas?	



**20 Minute Break**

**Please help yourself to refreshments**

# Bioavailability: Application of new tools

- How can new technology of passive samplers of various types be used within the cleanup process?
- Limitations of these new technologies:
  - Sediment point of compliance vs. pore water: Rule vs. Policy
  - Passive samplers cannot appropriately mimic biological factors: metabolism, selective feeding, potential increased availability due to digestion, etc
  - Increased layers for modeling increases errors: Bioaccumulation in benthic species vs. fish

# Bioavailability: Passive samplers, pore water

## Potential Uses

1) Passive samplers, pore water analysis as a surrogate for tissue chemistry testing to measure bioaccumulation?

2) Passive samplers may provide feedback on remedy effectiveness:

- Depth profiles
- Cap break through
- Effectiveness of amendments
- Others?

## Questions for Discussion

1a) What chemicals or groups of chemicals are various samplers targeted towards?

1b) Under what circumstances during a remedial investigation would these approaches be preferable to direct measurements?

2a) What are the pros and cons of deployment of the various samplers?

2b) Under what circumstances during compliance monitoring would these approaches be preferable to direct measurements?

# Ecological Risk

We heard:

- Chapter is not ready as is
- Need simpler approaches for small sites
- Comments on BSAFs and TTLs
- Add in area-based exposure concepts

Planned tasks:

- Better division between human health and ecorisk chapters
- Simplify process where possible
- Integrate area-based exposures throughout
- Focus on sediment impacts (considering removing water column and soil TEE references)
- Add more info to appendix on TTL derivation

# Options for BSAFs

BSAF Alternative	Questions for Discussion
<p>1) Provide more detail and/or direction, e.g.,</p> <ul style="list-style-type: none"><li>• Do not force BSAFs through origin</li><li>• Not necessarily linear or ratio</li></ul>	<p>1a) Be more specific about which approaches we recommend?</p> <p>1b) Recommendations on which methods?</p> <p>1c) Provide some examples of calculation methods?</p>
<p>2) Reference existing guidance</p>	<p>2a) Existing guidance detailed enough and reflects consensus?</p> <p>2b) Clear enough how to decide which methods to use?</p>
<p>3) Allow use of default conservative BSAFs based on literature</p> <ul style="list-style-type: none"><li>• Wide potential range for many chemicals</li><li>• May default to background</li><li>• Override with site-specific values</li></ul>	<p>3a) For simple sites or all sites?</p> <p>3b) Opinions on how doable/useful this is?</p>

# Target Tissue Levels

- Although developed for RSET, TTLs were designed to be independent of application (dredging vs. cleanup)
- TTLs represent risks to fish and to birds, mammals, and humans from consuming fish (in any context)
- Vetted through a 6-year peer review process, including regulatory and resource agencies, consultants, public
- Detailed information on development methods is reference in SCUM II and available in SEF appendices, including latest Pellston research
- Intended to be site-specific with respect to species, etc. We recognize that this was not well represented in the recent draft

# Target Tissue Levels

Proposed Approaches	Questions for Discussion
<p>1) Better describe the ways in which these values were intended to be used:</p> <ul style="list-style-type: none"><li>○ Site-specific selection of species</li><li>○ Comparison to background &amp; PQLs</li><li>○ To interpret bioaccumulation testing results or field tissue data</li></ul>	<p>1) Is this helpful? What concerns remain?</p>
<p>2) Use as screening values and/or for simple sites (still have default to sediment background options)</p>	<p>2) Only for simple sites or available for all sites?</p>
<p>3) Allow overrides based on site-specific RI data and describe how this would be conducted</p>	<p>3) How would these values be modified on a site-specific basis (aside from selection of species)?</p>
<p>4) Add detailed information on derivation</p>	<p>4) What kinds of information would be useful?</p>



# July 31 Technical Workshop – Preliminary Agenda

- **Background and Compliance:**
  - Definitions: Natural and Regional Background
    - Describe policy considerations on background
    - Definitions of natural and regional background
  - Determining Compliance w/Cleanup Levels
    - Describe SMS rule and policy considerations
    - Statistics: Approaches for determining compliance
    - Monitoring: Methods for determining compliance
- **Practical Quantitation Limits:**
  - Establishing PQL based cleanup levels: Policy and analytical considerations
  - Use of TEQs to establish PQL based cleanup levels

# August 7 Technical Workshop – Preliminary Agenda

- **Establishing Cleanup Levels**
  - Use of multiple cleanup standards and / or remediation levels
  - Adjusting upwards from the Sediment Cleanup ObjectiveInterpretation of technically possible/adverse impacts criteria
- **Remedy Selection**
  - Technologies:
    - Consideration of in situ amendments
    - Simple vs complex sites: Use of select remedies
    - Marine vs. river systems: Consideration of unique approaches
  - Disproportionate Cost Analysis: Alternative approaches
- **Sediment Recovery Zones**
  - Monitoring requirements and who does what
- **Recontamination**
  - Remedy effectiveness and PLP source monitoring
  - Issues related to settling liability

# SCUM II – Timeline and Next Steps

March – May  
2014

May – June  
2014

July 17 & 31 & August 7, 2014

Fall 2014

Draft posted  
for a 75 Day  
Public  
Comment  
Period



Process Public  
Comments



Conduct Technical  
Workshops to Discuss  
Specified and Resolve  
Issues



Utilize  
Collective  
Feedback to  
Finalize  
SCUM II



Additional comments?

# For More Information

- **Sediment Management Standards:**

[http://www.ecy.wa.gov/programs/tcp/smu/sed\\_standards.htm](http://www.ecy.wa.gov/programs/tcp/smu/sed_standards.htm)

- **Sediment Cleanup Users Manual II:**

<https://fortress.wa.gov/ecy/publications/SummaryPages/1209057.html>

- **Port Gardner Regional Background:**

[http://www.ecy.wa.gov/programs/tcp/sites\\_brochure/psi/everett/pg-sed.html](http://www.ecy.wa.gov/programs/tcp/sites_brochure/psi/everett/pg-sed.html)

- **Port Angeles Regional Background:**

[http://www.ecy.wa.gov/programs/tcp/sites\\_brochure/portAngelesHarborSed/background.html](http://www.ecy.wa.gov/programs/tcp/sites_brochure/portAngelesHarborSed/background.html)

- Chance Asher [chance.asher@ecy.wa.gov](mailto:chance.asher@ecy.wa.gov) (360) 407-6914