Surface Water Quality Standards Policy Forum

Second Meeting

December 10, 2012

DEPARTMENT OF ECOLOGY
State of Washington

Agenda

Time	Topic
8:30 a.m.	**Introduction** Logistics for meeting will be explained, and updates provided on toxics reduction efforts happening at Ecology.
8:45 a.m.	**Scope of the Clean Water Act and State Authority** This session will provide background and intent of federal and state authorities related to toxics criteria.
10:15 a.m.	**Scenarios and discharge permit alternatives** A description will be given of scenarios that have been developed to enable a more in-depth discussion of potential effects of adopting new human health criteria and updating implementation tools.
12:00 p.m.	**Human Health Criteria Equation** This session will explain the various factors that go into establishing new human health criteria for Washington.
12:30 p.m.	**Adjourn Policy Forum** Summary of topics covered in this Forum, overview of what will be covered in next Forum, next steps.

Webinar Participation Tips

- At times during the presentation, you may want to request clarification or ask a question. Pressing * then 1 on your phone will place you in a queue to be heard. If you no longer need clarification or your question has been answered, pressing the # key will take you out of the queue.

- Pressing * then 4 will adjust the volume on your phone receiver.

Sediment Management Standards Rule Revisions

- **Status:** Public Review of proposed rule language ended 10/29/12. We are now working through comments.
- **Next Steps:**
  - Prepare final rule language
  - Revise Cost Benefit Analysis
  - Prepare Concise Explanatory Statement / Response to Comments
- **Target Date for Rule Adoption:**
  - CR 103 filed: Mid-February 2013
  - Effective date: Summer 2013

Fish Consumption Rate Technical Support Document

- **Status:** Public comment period ended late October. We are now working through comments and making changes.
- **Types of changes:**
  - Editorial (clarifications, corrections)
  - Adding and/or expanding discussions (i.e., definitions)
  - Refinement (i.e., context for and presentation of data)
- **Next Steps:**
  - Finalize the document, including statistical evaluations
  - Prepare a memo summarizing changes
- **Target Date for Completion:** January 2013

SMS and FCR Technical Support Document Information

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Sediment Management Standards: http://www.ecy.wa.gov/programs/tcp/regs/2011-SMS/2011-SMS-hp.html

Fish Consumption Rate Technical Support Document: http://www.ecy.wa.gov/programs/tcp/regs/fish/2012/FCR-doc.html

Washington Toxics Reduction Strategy Workgroup

GOAL: to explore opportunities to develop a new framework for preventing toxic pollution that delivers greater environmental and human health benefits while minimizing transaction costs for controlling such pollution.

Washington Toxics Reduction Strategy Workgroup, continued…

The following areas were identified to develop recommendations:

1. **Prioritize chemicals of concern**
2. **Create incentives for safer alternatives**
3. **Enhance Fairness**
4. **Ensure a backstop of protection**
5. **Pilot Projects**
6. **Realizing Opportunities for Economic Gain**

Washington Toxics Reduction Strategy Workgroup, continued…

- Meetings will be held December 11, 2012 and January 11, 2013 to finalize the recommendations. The meetings are open to the public and we invite public comment during all meetings.

- Final recommendations will be delivered to the Governor Elect and others soon after the last meeting.

- Information can be obtained on Ecology's website: http://www.ecy.wa.gov/toxics/policy_trs.htm

Washington Toxics Reduction Strategy Workgroup Information

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Washington Toxics Reduction Strategy Workgroup:
http://www.ecy.wa.gov/toxics/policy_trs.htm

Geographic and Source Control Scope of the CWA and Washington Standards

Policy Forum #2

December 10, 2012

Human Health Criteria and Implementation Tools Rule-makings

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How is “scope” being used here?

Geographic Scope:

- Where do Washington’s CWA Surface WQS apply? (Designated uses and criteria)

Source Control Scope:

- What sources can Washington regulate under the CWA and related state law and regulation?

Emphasize – this analysis is not finalized – consider it “preliminary” – will get more review

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WQS –Water Quality Standards

Why is the scope of the CWA and state requirements important in HHC development?

Helps to explain EPA's current HHC guidance and how marine fish are treated

Several important policy questions stem from knowledge of the scope of the CWA and state requirements, including:

- How should anadromous fish be considered in criteria development?
- How are sources outside the control of CWA and WA requirements accounted for in criteria development?

Geographic Scope: Where do the CWA SWQS apply?

Surface Waters of the State of Washington

- WAC 173-201A- 010(2) "Surface waters of the state" include lakes, rivers, ponds, streams, inland waters, saltwaters, wetlands, and all other surface waters and water courses within the jurisdiction of the state of Washington."

Jurisdictional Boundaries in Marine Water

- **Coastal Waters**: The Water Quality Standards for Surface Waters (Chapter 173-201A WAC) apply **3 nautical miles out** from the low ordinary low water mark. This is supported explicitly in Section 502 of the Clean Water Act which establishes the definition of territorial seas.

- **Puget Sound and Strait of Juan de Fuca**: The state considers Puget Sound and the Strait of Juan De Fuca to be **inland waters** rather than part of the territorial seas. As such, the jurisdiction of the standards applies **one-half of the distance between Washington and Canada.**

Why is the geographic scope important?

Designated uses and **water quality criteria** are applied to waters within Washington's jurisdictional authority.

Washington's WQS do **not** apply to marine waters outside the 3-nautical mile limit or to waters of other states/countries.

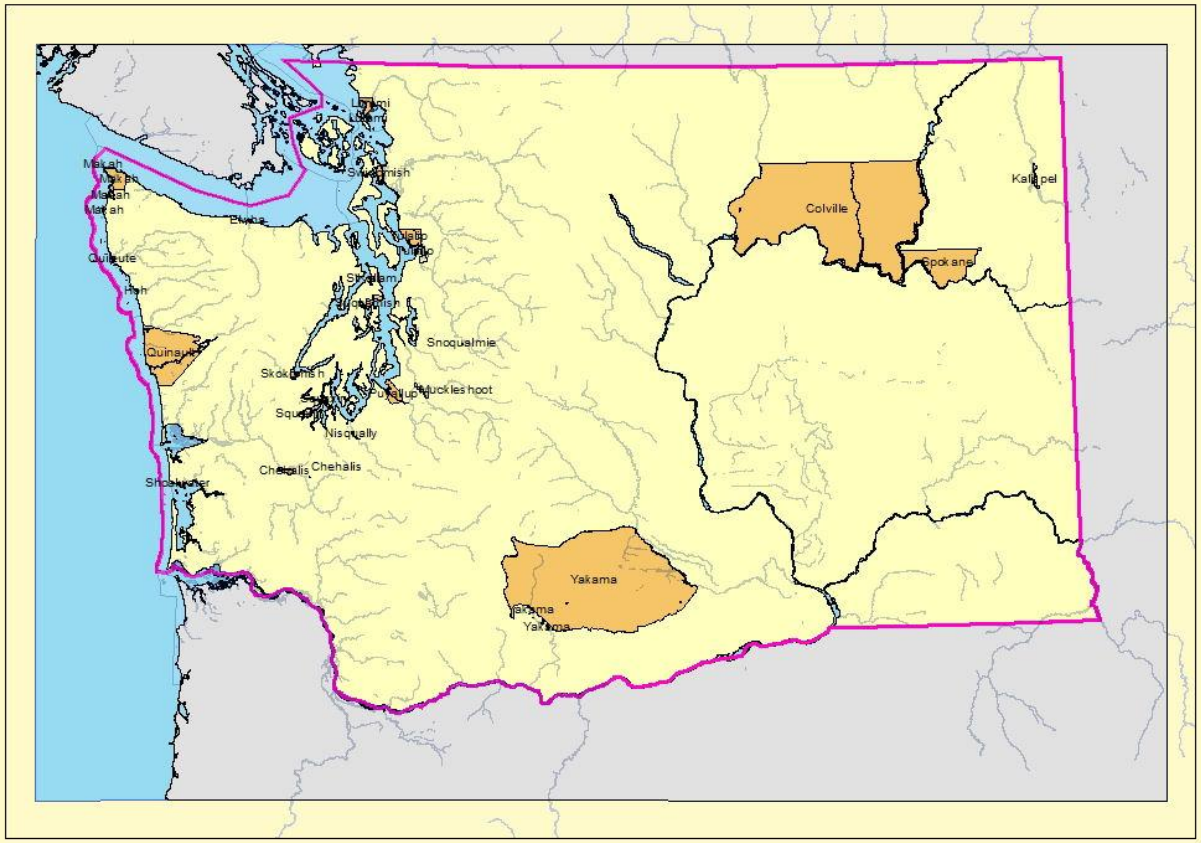
Washington WQS do **not** apply to waters in tribal lands and generally not to federal lands.

WA CWA-authorized source controls occur for waters of the state within WA jurisdictional boundaries.

Draft

Generalized map of Washington's CWA jurisdictional boundaries.

Magenta line indicates outer limits of jurisdictional boundaries around state perimeter. Note: detailed depictions of tribal and federal water areas that are outside Washington's jurisdiction are not shown on this map – but they are there and real even though not represented here.



Source Control Scope

Washington's CWA programs apply source control requirements to many types of discharges to surface water, including:

EPA approved State NPDES Permit Program

EPA approved State Pretreatment Program

EPA approved General Permits Program

EPA approved Biosolids (Sludge) Program

CWA §401 certification program

In general, Washington does not permit facilities on federal or tribal lands, or to sources outside the state.

Washington does not regulate facilities outside the state.

Washington issues CWA permits to discharges to surface "waters of the state."

The CWA does not address permitting of air sources (even though they might impact water quality).

NPDES Permits
National Pollutant Discharge Elimination System

When you hear the terms “wastewater permits” or “discharge permits”, NPDES is frequently the permit being referred to.

An NPDES Permit is required for a discharge of wastewater to waters of the U.S (**surface** waters).

The NPDES permit is issued by Ecology by delegated authority of the Clean Water Act.

NPDES permits are issued for a maximum of 5 years.

EPA’s NPDES program regulations : 40 CFR Part 122.
Washington’s NPDES regulations: WAC 173-220, 221, 221A
(https://fortress.wa.gov/ecy/publications/UIPages/PublicationList.aspx?IndexTypeName=Program&NameValue=Water%20Quality&DocumentTypeName=WAC)

CWA §401 certification program

CWA §401 certification program -

- Limited in scope and application to situations involving federally-permitted or licensed activities that may result in a discharge to a water of the U.S.
-
- If a federal permit or license is not required, or would authorize impacts only to waters that are not waters of the U.S., the activity is not subject to CWA §401.

§401 certification program: WAC 173-225
https://fortress.wa.gov/ecy/publications/SummaryPages/173225.html

Next graphic combines information on geographic and source control scope of the CWA

NEW terms used in the graphic on the following slide	**What the terms mean**
"In-state" areas	Areas within Washington's CWA geographic boundaries
"Out-of-state" areas	Areas outside Washington's CWA geographic boundaries
Primary sources (1° sources)	**In-state sources** to surface waters that **are** regulated under the Washington CWA WQS (within the CWA geographic boundaries)
Secondary sources (2° sources)	**In-state sources** to surface water that **are not** regulated under the Washington CWA WQS (e.g., atmospheric deposition)

DRAFT Exposure routes and sources of chemical X for purposes of discussing CWA HHC development, regulation, and geographic scope of the WA WQS. Does not include drinking water ingestion route.

All exposures to chemical X (**dermal, inhalation and oral routes**); in-state and out-of state areas and 1° and 2° sources

All oral exposures to chemical X; in-state and out-of state areas and 1° and 2° sources

All oral exposures to chemical X **from fish and shellfish**, in-state and out-of-state areas and 1° and 2° sources

Outside scope of WA CWA WQS

1. Fish/shellfish from out-of-state or out-of-country waters
(often store-bought fish and shellfish, fish caught outside 3-mile boundary)
2. Anadromous fish –
a. Fish caught outside 3-mile boundary,
b. Fish caught in-state: the portion of contamination that was accumulated in out-of-state waters or is from 2° sources or sources out-of-state

Chemical X picked up from out-of-state waters, or, derived from 2° sources or sources from out of state

Within scope of WA CWA WQS

1. In-state (resident) fish and shellfish
2. Anadromous fish – caught in-state, applies to portion of contamination that is from in-state waters and from 1° sources

Chemical X picked up from in-state waters and from 1° sources

Net-pen raised fish? Where do they fit in? (Non-wild feed source + bioconcentration from water sources)

Where have "scope of the CWA" considerations been used in WA regulation?

303(d) Impaired waters listings and resident fish

- Resident fish are used in 303(d) listings – reflect local uptake of contaminants, and likely local sources to control
- Anadromous salmon are not used for 303(d) listings – because tissue samples cannot rule out oceanic sources of contaminants. Based on credible data act.
- Resident Puget Sound black mouth salmon used for 303(d) listing – resident salmon reflect contamination acquired in state waters

Again – why is this important? The fish and shellfish.

Knowing geographic and source control limitations and authorities helps to explain EPA's current 2000 HHC guidance and how salmon are treated in the fish consumption rate (FCR) for national recommended HHC:

- EPA 2000 treats salmon as a marine fish – not included in FCR.

Bioaccumulation of toxics in areas and from sources outside the control of the CWA and Washington's regulations leads to the question of whether or not salmon should be included in the FCR in the criteria equations. (Or what fraction of salmon?)

This is a **policy** question that will be touched on throughout the Policy Forums, and is currently scheduled for full discussion at Policy Forum #6.

Whatever the final policy decision, we know that we have specific pollutants of concern that need to be addressed. These include pollutants causing fish advisories, such as PCBs and mercury.

USEPA. 2000. *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)*, EPA-822-B-00-004

Specific Policy Questions:

1. How should anadromous fish be considered in criteria development?

- In Oregon the policy decision was made to include salmon in the fish consumption rate used in the criteria equations.

2. How to address exposures from fish/shellfish and surface water ingestion that are occurring in Washington but are not within the scope of CWA controls for Washington?

- Use of a Relative Source Contribution (RSC)is often included in different regulatory levels that address exposure **for non-carcinogens**.

- For HHC, RSCs help account for exposures to a chemical that come from sources other than drinking surface waters and eating fish and shellfish.

- Other ways? Explore this as Policy Forum's continue.

And again – why is this important? Source control

Knowing geographic and source control limitations and authorities helps to define where we can control sources of pollutants.

CWA has clear boundaries and requirements on source control

What about pollutant sources outside the CWA?

- WA state law looks to give a broader authority: RCW 90-48-080

As we pursue more information on the scope of CWA and state requirements, we are pursuing the WA authorities and boundaries on the regulation of:

- Non-point sources
- Pollution control activities in collection systems that go beyond pretreatment requirements
- Sources of air deposition to waterbodies from air sources in Washington

This will be revisited during the Policy Forums as we get more resolution.

Things to think about as we work through future Policy Forums

There are areas of the state where waters contain fish and/or shellfish that have concentrations of chemicals that are of concern (e.g., WDOH fish advisories), so we know source controls are necessary.

There are populations that eat a lot of fish and/or shellfish, so real exposures to specific contaminants in tissues are occurring.

The “bad actor” chemicals, from a HHC exceedance and fish advisory standpoint, seem to be dominated by a small number of chemicals out of the 90+ that have HHC. (Think PCBs, mercury, sometimes DDT, and a handful of others.)

The state can address many local and direct sources of contaminants with our CWA and state WQ authorities.

State cannot regulate ocean bioaccumulation of toxics by anadromous fish, and can’t regulate sources of accumulation from out of state with existing WQ authorities.

Things to think about as we work through future Policy Forums

Is there a way to keep the CWA HHC calculation linked to those areas and sources under the control of the CWA and state WQ authorities, and at the same time pursue more focused source controls (see examples below) for the bad actor chemicals that are from sources both inside and outside the CWA/state WQ authorities?

- If so, could we develop an approach that gets at the issues of the concerned populations, stakeholders, etc..?

Examples of more focused source control:

- Legislative phase-out of phosphorus in detergents in Washington.
- Legislative phase-out of copper in brake pads in Washington
- Current work with EPA to reduce PCBs in printing inks
- Work with dental providers to get effective mercury removal

Questions/Comments/Discussion

What is the geographic scope of effluent limit source controls under the CWA?

Water quality related effluent limitations – Section 302(a) CWA

CWA Section 302(a). *"Whenever… discharges of pollutants from a point source or group of point sources… would interfere with the attainment or maintenance of that water quality in a specific portion of the navigable waters which shall assure protection of public health, public water supplies, agricultural and industrial uses, and the protection and propagation of a balanced population of shellfish, fish and wildlife, and allow recreational activities in and on the water, effluent limitations… shall be established which can reasonably be expected to contribute to the attainment or maintenance of such water quality."*

Washington CWA WQS apply to waters of the state, which includes territorial waters

CWA, General Definitions. Section 502

"(7) The term "navigable waters" means the waters of the United States, including the territorial seas.

(8) The term "territorial seas" means the belt of the seas measured from the line of ordinary low water along that portion of the coast which is in direct contact with the open sea and the line marking the seaward limit of inland waters, and extending seaward a distance of three miles."

What is the scope of the CWA in Washington?

WAC 173-201A- 010(2) “Surface waters of the state” include lakes, rivers, ponds, streams, inland waters, saltwaters, wetlands, and all other surface waters and water courses within the jurisdiction of the state of Washington

(RCW 90.56.010) (26) "Waters of the state" includes lakes, rivers, ponds, streams, inland waters, underground water, salt waters, estuaries, tidal flats, beaches and lands adjoining the seacoast of the state, sewers, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

http://apps.leg.wa.gov/rcw/default.aspx?cite=90.56.010

Draft Discharge Scenarios for Policy Forum Discussion

Policy Forum #2

December 10, 2012

Human Health Criteria and Implementation Tools Rule-makings

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Discharge Scenarios - Policy Forum #2

Hypothetical draft scenarios were developed to assist in discussions surrounding the development of new human health criteria and new implementation tools for Washington's Surface Water Quality Standards (WQS).

The scenarios are best estimates of likely permitting outcomes, but have not undergone thorough legal and technical review, thus in some cases alternative approaches or different approaches might be available. They are DRAFT.

As with all permitting decision, discharge-specific information affects final requirements.

The scenarios were developed in large part to prompt discussion of *difficult* permitting situations (except Scenario 1a).

The majority of permitting situations in Washington are not as difficult as those highlighted here.

While the scenarios focus on only a few key parameters, most criteria parameters for the majority of dischargers are not found at levels that result in the need for effluent limits.

How will the Scenarios be used?

The scenarios will be used at Policy Forum meetings to explore how *changes in human health-based criteria* could change discharge requirements, for instance:

The current scenario drafts examine permitting using the implementation tools in the current water quality standards, and the human health criteria issued to Washington in the National Toxics Rule. When risk levels are discussed at a future Policy Forum (currently planned for meeting #3) the scenarios will be used to compare NTR-based requirements with the requirements based on possible future human health criteria set at a different risk level.

The scenarios will help facilitate *discussion of implementation tools*:

Situations contrasting current variance and compliance schedule regulations can be compared with variances and compliance schedules with extended time lines, as discussed in the Implementation Tools Rule-making.

Who do the scenarios represent?

The scenarios are representative of discharge and waterbody situations that have occurred, are occurring, or are likely to occur in Washington waters.

The scenarios are not directly based on any individual discharger in Washington.

The scenarios in general represent *difficult* permitting situations (except Scenario 1a).

We will add additional specific discharge situations to the scenarios as we progress, such as industrial stormwater permits and drinking water treatment plants.

The scenario that addresses arsenic will be discussed when chemical specific issues and naturally occurring chemicals are discussed – Policy Forum #4.

Background information to help with scenarios

DRAFT

Permitting when waters are 303(d) listed but a TMDL is not completed

The NPDES permit process that is used in Washington when a waterbody segment is 303(d) listed, but a TMDL is not completed, contains the following three components:

- Confirm water quality impairment at the point of discharge
- Impose interim effluent limits where the water quality at the point of discharge is not meeting standards to prevent an increase in loading (likely performance-based limits)
- Facility required to develop and implement a pollutant minimization plan.

See Ecology publication 05-10-006 for a more complete summary of this approach, as well as information on new discharges and general permits: https://fortress.wa.gov/ecy/publications/SummaryPages/0510006.html.

New discharges - The Pinto Creek decision:

- In simplified terms, the Pinto Creek decision says that a new source of the pollutant causing the impairment cannot discharge to a 303(d) listed segment until a TMDL is completed.

The Pinto Creek decision is at EPA's website:
http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/EAB%20Decisions%20Pending%20Federal%20Court%20Review/223FDB61DD09834A85257082003F0D03/$File/Friends%20of%20Pinto%20Creek.pdf

Background information to help with scenarios

Can a state issue a variance for a National Toxics Rule criteria?

A state does not have authority to waive a federal regulation. Washington's human health-based criteria are contained in federal regulation - the National Toxics Rule (NTR).

Submitting a variance to EPA for a NTR criteria would likely have a very low probability of resulting in federal rule-making to approve the variance via modification of the NTR.

For NTR language on variances: See 1992 NTR at pages 60860-60861, columns 3 and 1 respectively, and, page 60891, column 3, Comment # 94 and accompanying Response; or, see NTR http://water.epa.gov/lawsregs/rulesregs/ntr/ for the text of the federal rule

Background information to help with scenarios

What about a variance adopted (1) after new human health criteria are adopted and approved by EPA and (2) under the current WAC language on variances?

If Washington adopts new state-specific criteria, then Washington's human health criteria would no longer be found in federal rule and Ecology could propose a 5-year variance for the water body based on 40CFR131.10(g), 40CFR131.10(g), and WAC 173-201A-420 (https://fortress.wa.gov/ecy/publications/publications/0610091.pdf) .

If supportable, Ecology could formally revise the WQS to incorporate the variance, and submit the revised standards to EPA for CWA approval.

If the variance is approved by EPA, and under the current regulations, Ecology would need to repeat this rule-making process every 5 years as each variance expires.

Under the current water quality standards, language in WAC 173-201A would help guide the permitting requirements for the specific pollutant for which the variance is adopted:

- Current WAC 173-201A-420(1)(c) states that *"Variances may be approved by the department when: … (c) Reasonable progress is being made toward meeting the original criteria."*

Scenarios 1a and 1b

Scenarios 1a and 1b show the same waterbody and discharger information, but differ in whether a 303(d) listing exists and TMDL has been required.

West side marine scenario with PCBs and mercury at issue.

Scenario #	Waterbody and Discharge Situation	
1a	303(d) listings:	None
	TMDL status:	NA
	Discharges:	POTW Stormwater 5 Industries
1b	303(d) listings:	Mercury and PCBs
	TMDL status:	Completed and loads allocated, the water is no longer on the 303(d) list
	Discharges:	POTW Stormwater 5 Industries Contaminated sites

Scenarios 2 and 3

East-side scenarios with temperature and DDT at issue.

Today will not discuss Scenario 2 unless time allows – will focus on toxics scenarios.

Scenario #	Waterbody and Discharge Situation	
2	303(d) listings:	Temperature
	TMDL status:	Completed and loads allocated, the water is no longer on the 303(d) list
	Discharges:	POTW
3	303(d) listings:	DDT
	TMDL status:	Completed and loads allocated, the water is no longer on the 303(d) list
	Discharges:	POTW 1 Industry

Scenarios 1a and 1b – the picture

Waterbody:

- Marine shoreline area with healthy shellfish beds located nearby and active sport fishing for both fish and shellfish in the area.
- Rainfall is heavy and generally confined to the fall/winter/spring months.

Human Development and Discharges:

- Urban area with one municipality (approximately 100,000 people)
- Secondary treatment plant (POTW) and several stormdrains.
- One contaminated site located along the shoreline where clean-up levels are being developed to address historic contamination of PCBs and mercury.
- Three industries (Industries A-C) discharge directly to the water.
- Growth projections for this area indicate that populations will increase and there will be growth both within and outside the service area of the POTW.
- Two new industries (Industry D and Industry E) from outside the state are considering locating facilities in this city.
- The POTW is running close to design capacity, and the city expects that it will need to expand the POTW in the near future to handle additional population growth.
- The natural landscape and climate preclude removal of the discharge from the water and movement to land discharge.

Scenario 1a – waterbody and discharge information

Focus on PCBs and mercury
PPS = Priority Pollutant Scan

Waterbody – criteria and uses met so no 303(d) listing		**Permit Requirements for PCBs/mercury**
Discharger	Effluent data	Permit requirements
POTW – w/ facility expansion	Meeting all permit limits, PPSs do not detect PCBs, mercury is detected	No PCB or mercury limit.
Stormwater	In compliance under the Phase 1 Municipal Stormwater general permit.	None.
Industry A – existing and expanding	Meeting all permit limits, PPSs do not detect PCBs, mercury is detected	No PCB or mercury limit.
Industry B - existing	PPSs do not detect PCBs or mercury	None
Industry C - existing	PPSs do not detect PCBs or mercury	None
Industry D - new	The facility will generate mercury in its processes, no detectable PCBs.	Mercury
Industry E - new	The facility will generate small concentrations of mercury in its processes, no PCBs.	None

Scenario 1b – TMDL information

DRAFT

PCBs:

- Tissues from resident sport fish were used to determine that the fishable use of the waterbody was impaired for PCBs (based on use of NTR tissue equivalent levels).
- The Department of Health is evaluating fish tissue information to see is a fish advisory is needed.
- PCBs are present in sediments, tissues, and also in sources as diverse as storm drains, treated municipal and industrial effluent streams, upland and in-water contaminated sites, and atmospheric deposition (from out-of-state sources).
- Modeling indicates that after the measured sources (apart from atmospheric deposition) are accounted for (and are significantly reduced) it will likely take approximately 20 additional years for natural attenuation to remove PCBs from the aquatic system or otherwise make them unavailable to the food web (e.g., burial).
- Allocations for PCBs have been made in the TMDL. Because there is no assimilative capacity and only reductions are required, wasteload allocations for point sources are set to meet the PCB criteria at the end of the pipe.

Scenario 1b – TMDL information

Mercury:

- Mercury was found in the water column at levels that exceed the aquatic life-based criteria.
- Mercury is present in sediments, tissues, and also in treated municipal and industrial effluent streams, upland and in-water contaminated sites, and atmospheric deposition (from out-of-state sources).
- Modeling indicates that after the measured sources (apart from atmospheric deposition) are accounted for, the waterbody will likely show compliance with water quality criteria levels
- Because there is no assimilative capacity and only reductions are required, wasteload allocations for point sources are set to meet the mercury criteria at the end of the pipe.

Scenario 1b – waterbody and discharge information

Focus on PCBs and mercury
PPS = Priority Pollutant Scan

Waterbody – Water was 303(d) listed, TMDL has been completed, water no longer on 303(d) list		**Permit requirements for PCBs and mercury only**
Discharger	Effluent data – PCBs measured using Method 1668C – very sensitive	Post-TMDL Permit Requirements
POTW – facility expansion in future	PCBs and mercury detected	PCB and mercury limits = criteria at the end of pipe, 10-year compliance schedule for existing
Stormwater	No PCB or mercury limits	No immediate change
Industry A – existing and expanding	PCBs and mercury detected	PCB and mercury limits = criteria at the end of pipe, 10-year compliance schedule for existing
Industry B - existing	No PCBs, mercury is present	mercury limits = criteria at the end of pipe, 10-year compliance schedule
Industry C - existing	No PCBs or mercury present	No effluent limits
Industry D - new	PCBs and mercury will both be present.	No permit issued. Cannot meet criteria-based effluent limits for PCBs at end-of-pipe.
Industry E - new	Mercury will be present, no PCBs	Permit issued if criteria-based effluent limits for mercury can be met at end-of-pipe.

Scenario 3– the picture

Waterbody:

- This is a mid-sized perennial stream in eastern Washington with reproducing native fish populations. The area supports a popular recreational fishery composed of resident fish and anadromous salmonids. The climate is generally dry with typical east-side snowmelt-driven high flows in spring and lower flows through the remainder of the year.

Human Development and Discharges:

- There is one town (4,000 population) located on the waterbody. The land uses along the stream are primarily agricultural uses.
- The town is served by a secondary treatment plant (POTW) and a few storm drains are located along the shoreline.
- The POTW and a fruit-packing plant are the only permitted discharges to the waterbody.
- It would be possible to remove the discharges from the waterbody and discharge to ground, but the cost to the town and the industry would be high.
- The effluents are currently providing flows to the stream that help maintain the stream's perennial flows and reproducing fish populations.

Scenario 3 – TMDL information

DDT:

- Tissues from resident sport-fish were used to determine that the fishable use of the waterbody was impaired for DDT.
- Fish showed high levels of the contaminant, and water column data indicate that significant reductions in DDT to the system will need to be made in order for WQS to be met.
- The Department of Health is evaluating fish tissue information to see is a fish advisory is needed.
- DDT is present in sediments, tissues, and also in sources as diverse as storm drains, treated municipal and industrial effluent streams, and agricultural drains.
- Modeling indicates that after the measured sources are accounted for (and are significantly reduced) it will likely take approximately 5-10 additional years for natural attenuation to remove most of the DDT from the aquatic system or otherwise make it unavailable to the food web (e.g., burial).
- Allocations for DDT have been made in the TMDL. Because there is no assimilative capacity and only reductions are required, allocations are set to meet the DDT criteria at the end of the pipe.

Scenario 3 – Community involvement

The local city government, the fruit-packing plant, the agricultural community, and residents in the area have been very involved with the TMDL development.

The major concerns with regard to required DDT reductions have been (1) the fear that requirements for DDT reductions will impact agricultural uses, and (2) that the POTW and fruit-packing plant have no economically feasible ways to meet end-of-the pipe limits for DDT set at the criterion level.

During the TMDL the local stakeholders, working with Ecology staff, developed a plan to focus on four DDT control strategies (following slide)

Scenario 3 – Community involvement

During the TMDL the local stakeholders, working with Ecology staff, developed a plan to focus on four DDT control strategies:

- Reduce DDT by reducing sediment in run-off waters entering the stream: Plant trees and other vegetation along the riparian corridor to filter out sediment. Because agriculture in this area is mostly crops the riparian corridor will need little fencing to exclude livestock. Local land owners agree to this approach and funds for purchase of plants and labor is provided by the town, Ecology grants, and local conservation district assistance. Local school and youth groups also provide volunteer labor to assist Ecology field crews in planting vegetation.
- Reduce DDT by removing sediment from agricultural drains. Different irrigation techniques will be investigated by the local community to determine effective approaches. Less erosive tillage and planting techniques will be investigated. Funding to help implement changes will be sought from state and federal sources.
- The POTW and municipality will work to reduce DDT entering the POTW collection system and also to reduce erosion into storm drains which drain to the stream. This will include BMPs for stormwater.
- The fruit-packing plant, which receives DDT into its system the fruit it processes, will work with its suppliers to reduce DDT on produce received at the plant, and will also investigate the possibility of discharge to land or to ground.

DRAFT

Scenario 3 – waterbody and discharge information

Permit limits equal criteria because the waterbody exceeds criteria.

Waterbody – Water was 303(d) listed, TMDL has been completed, water no longer on 303(d) list		**Permit requirements for Temperature only**
Discharger	Effluent data	Post-TMDL Permit Requirements
POTW	DDT present in discharge and in storm drains	5-10-year compliance schedule, final limits = criteria at end-of-pipe. Work to control DDT into storm drains.
1 Industry - Fruit packing Plant	DDT present in discharge	5-10-year compliance schedule, final limits = criteria at end-of-pipe. Will investigate discharge to ground and work with suppliers

Source	**Source data**	**Post-TMDL BMPs**
Agriculture	DDT present	This group will investigate BMPs and plant riparian vegetation

What next?

- Please look at scenarios and become familiar with permitting situations.

- At the next meeting we will talk about risk and whether changing the risk level in a human health criterian calculation would change permit requirements in the scenarios.

Questions/Comments/Discussion

Human Health-based Criteria equations

Policy Forum #2

December 10, 2012

Human Health Criteria and Implementation Tools Rule-makings

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Emphasis in this discussion is on RSC and Risk Level

Relative Source Contribution (RSC)

- Touched on in the first presentation as a possible way to address sources of contaminants in salmon outside WA's CWA or state controls
- More explanation here

Risk Level

- Preparation for discussion focused on risk levels that will happen at Policy Forum #3.
- We will look at how different risk levels change some specific criteria, and what that means to permit limits in the discharge scenarios.

Focus on organism-only equation and RSC (very simplified – drinking water exposure omitted)

Note: This equation will be the subject of many future discussions – we will describe the inputs as we go on…

HHC for Carcinogens:

$$HHC = \frac{RL \times BW}{CSF \times FCR \times BCF}$$

HHC for Non-carcinogens:

$$HHC = \frac{RfD \times \mathbf{RSC} \times BW}{FCR \times BCF}$$

RSC is only in the criteria equations used for non-carcinogens.

Inputs to the simplified non-carcinogen equation:

HHC for Non-carcinogen:

$$HHC = \frac{RfD \times \mathbf{RSC} \times BW}{FCR \times BCF}$$

RfD = Reference dose (mg/kg-day), values from IRIS

- The EPA defines an oral reference dose (abbreviated **RfD**) as: An estimate, with uncertainty spanning perhaps an order of magnitude, of a daily oral exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime.
- Used to be called the Allowable Daily Intake (ADI)

RSC = *Relative Source Contribution.* The RSC accounts for the percentage of the pollutant that comes from sources other than fish/shellfish.

BW = *Human body weight*

FCR = *Fish consumption rate*

BCF = *Bioconcentration factor*

For full equations with all the inputs see: USEPA, 2000. *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)*, EPA-822-B-00-004, or, EPA, 2002. *Nationally Recommended Water Quality Citeria:2002. Human Health Criteria Calculation Matrix*. EPA-822-02-012.

How is the RSC used?

In plain-talk summary language:

The RSC is used to account for exposures that do not come from fish/shellfish or surface water.

For example, if you assume that 20% of a person's daily contaminant dose comes from sources outside fish/shellfish/surface water, the other 80% is available for use in calculating the HHC.

RSC = 1 means that 100% of a persons exposure is available for use in the criteria equations.

How could a RSC approach be used to address CWA and state WQS geographic and source control scope issues?

The RSC accounts for sources outside fish/shellfish and surface water

Use of the RSC (or some other construct in the equation) could be framed to address CWA and WA WQS jurisdiction and scope issues.

- Would this be desirable?
- Would this meet the needs of interested parties
- Would this get at reducing toxics and reducing levels of contaminants in fish/shellfish and water?

How could a RSC approach be used to address CWA and state WQS geographic and source control scope issues?

The RSC is set at 100% in most current EPA nationally recommended HHC.

RSCs from 20% to 80% are developed for 17 of EPA's current nationally recommended HHC.

Science and Science/Policy question: Is there a way to set a default RSC (or other construct) to account for pollutant sources outside CWA and WA WQS jurisdiction and scope?

Policy Question: Should Washington use a RSC (or other construct) to account for sources outside CWA and WA WQS jurisdiction and scope?

Discussions surrounding the scope and ability to control contaminants that affect WA designated uses, and, how to calculate the HHC will continue throughout the Policy Forums.

Risk level in the HHC equations – Focused discussion at Policy Forum #3

Simplified equation for HHC for Carcinogens - drinking water omitted:

$$HHC = \frac{\mathbf{RL} \times BW}{CSF \times FCR \times BCF}$$

RL = *Risk level* (10^{-6} current risk level in NTR and WQS)

10^{-6} means: Risk of one occurrence of cancer, in one million people, at the given exposure assumptions:

Daily exposure over 70 years, at given fish consumption rate (currently 6.5 g/day), for a 154 lb. person

Note: As the risk level goes up, the criteria concentration goes up and the level of protection goes down.

CSF = *Cancer slope factor*, values are from EPA's Integrated Risk Information System (IRIS)

- A measure of the potency of the carcinogen – how strong it is

BW = *Human body weight*

FCR = *Fish consumption rate*

BCF = *Bioconcentration factor*

Remember: Carcinogens make up a little over half of the criteria chemicals

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For full equations with all the inputs see: USEPA, 2000. *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)*, EPA-822-B-00-004, or, EPA, 2002. *Nationally Recommended Water Quality Criteria:2002. Human Health Criteria Calculation Matrix*. EPA-822-02-012.

Next Policy Forum

At Policy Forum #3 we will:

- Explore risk levels more fully
- Look at how changing the risk level changes the criteria for specific pollutants
- Look at how changing the risk level would affect the scenarios

Questions/Comments/Discussion

Adjourn Policy Forum

- Summary of topics covered in this Forum
- Overview of what will be covered in next Forum
- Next steps

Thank you for your participation!