DEPARTMENT OF
ECOLOGY
State of Washington

Draft Environmental Impact Statement

Washington State's Proposed Changes to Water Quality Standards for Surface Waters of the State of Washington – WAC 173-201A

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January 2015

Dear Interested Party:

The Washington State Department of Ecology (Ecology) is issuing this draft Environmental Impact Statement (DEIS) on the changes to the Water Quality Standards for Surface Waters of the State of Washington - WAC 173-201A (Water Quality Standards). This DEIS was prepared to satisfy the requirements of the State Environmental Policy Act (SEPA). Ecology determined that due to the controversial nature of this rule making, and in order to provide as much information as possible to aid in decision making, an Environmental Impact Statement will be prepared.

The state's Water Quality Standards set limits on pollution in our lakes, rivers, and marine waters in order to protect beneficial uses, such as swimming and fishing. The Water Quality Standards are implemented through discharge permits under the federal Clean Water Act. They are also used to identify polluted waters and set levels for water cleanup.

Specifically, this rule-making activity will:

1. **Establish new human health criteria to protect designated uses.** Human health criteria are limits set for toxic substances to protect people who consume water, fish, and shellfish from Washington's water bodies. They address substances such as metals, pesticides, and other organic compounds. Washington's surface Water Quality Standards currently lack human health criteria. Therefore, Ecology is required to operate under the federal criteria established in EPA's 1992 National Toxics Rule (NTR; 40CFR131). In 2000 the U.S. Environmental Protection Agency (EPA) published updated nationally recommended criteria for states. Rather than update the NTR, EPA has encouraged Washington to use new science and information to adopt updated human health criteria into our state's surface Water Quality Standards that make use of Washington state-specific information on consumption of fish and shellfish in addition to other updated information.

   The process of developing new human health criteria will take into account factors used to calculate each chemical criterion including risk and more accurate data about how much fish and shellfish people eat in Washington State. This will involve developing numeric criteria for up to 96 chemicals. Those criteria are then used to implement the permitting program, identify impaired waters, and clean up impaired waters under the Clean Water Act.

   The rule will also develop specific criteria and alternative control strategies for the challenging chemical arsenic.

2. **Provide predictable regulatory implementation tools to help dischargers comply with existing and new source control requirements or discharge limits.** The changes

will allow for compliance with requirements while dischargers effectively work to meet permit limits and control sources of pollutants.

Ecology recognizes the need to expand options on the compliance and implementation tools available for dischargers to effectively address increasingly more restrictive concentration limits for all contaminants. New human health criteria may result in revised discharge permit limits for industries and municipalities. The new criteria may be challenging to achieve in both the short term and over the long term because some of the chemicals are ubiquitous and naturally occurring. Others are present in the environment largely due to past (legacy) uses, and some are still being discharged. Technology, to both measure pollutant concentrations and to remove pollutants, has not kept pace with the ability to calculate protective water quality criteria. In addition to new human health criteria for toxics, other conventional water quality criteria for parameters such as temperature and dissolved oxygen drive regulatory actions and control requirements that present similar challenges over both short and long terms. Recognizing this, Ecology is clarifying and expanding the regulatory tools to make them more effective and predictable. Successful use of these tools will allow dischargers to remain in compliance as they effectively work toward improving technology and implementing pollutant reduction actions.

This DEIS addresses only the key parts of the Water Quality Standards that Ecology is proposing to change. They include:

A- Adoption of new human health criteria (and the expectation that EPA will remove Washington from the federal National Toxics Rule).
B- The adoption of new or expanded/clarified Implementation Tools and amendments to existing language on these implementation tools:

1. Intake Credits – new tool
2. Compliance Schedules – expanded tool
3. Variances – expanded and clarified tool

During the Scoping period for this DEIS we received three comment letters which are included on our website: http://www.ecy.wa.gov/programs/wq/swqs/whatpeoplesay.html

Those letters were from: Lummi Indian Business Council, Northwest Indian Fisheries Commission, and Seattle Human Rights Commission.

Please visit the Water Quality Standards website for a comprehensive discussion of the proposed changes at: www.ecy.wa.gov/programs/wq/swqs. For assistance or questions, please contact Melissa Gildersleeve at 360-407-6461or email SWQS at: swqs@ecy.wa.gov

Sincerely,

Heather R. Bartlett
Water Quality Program Manager

Fact Sheet

Title:	Washington State's Proposed Changes to Water Quality Standards for Surface Waters of the State of Washington – WAC 173-201A (Water Quality Standards)
Description:	A rule amendment to adopt new human health surface water quality criteria and to add and expand/clarify implementation tools for discharge permitting.
Lead Agency and Responsible Official:	Washington State Department of Ecology Heather R. Bartlett, Water Quality Program Manager
Person to contact for more information:	Cheryl Niemi Water Quality Program Washington State Department of Ecology
Date DEIS was issued	January 12, 2015
Date DEIS Comments Due:	March 23, 2015
Public Hearings:	March 3 Spokane Centerplace Regional Events Center 2426 N. Discovery Pl., Spokane Valley 99216 6:00 p.m. open house; 6:30 p.m. presentation with Q&A session, followed by a public hearing. This is an in-person only public event.
	March 4 Yakima Convention Center 10 N. 8th St., Yakima 98901 6:00 p.m. open house; 6:30 p.m. presentation with Q&A session, followed by public hearing. This is an in-person only public event.
	March 12 Ecology Headquarters Building 300 Desmond Drive, Lacey 98503 Two sessions – you may attend either session in person or by webinar. A webinar is an online meeting that you can attend from any computer using internet access and a phone. **Comments by webinar:** Ecology will accept comments at the Olympia location and through the webinar via phone at 800-868-1837 **To join the webinar**: Go to the following link for more

information and instructions: Website: www.ecy.wa.gov/programs/wq/ruledev/wac173201A/1203inv.html

Session 1: 1:30 p.m. open house; 2:00 p.m. presentation (webinar begins) with Q&A session, followed by a public hearing which will end at 5:00 p.m.

Session 2: 6:00 p.m. open house; 6:30 p.m. presentation (webinar begins) with Q&A session, followed by a public hearing.

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Summary

The purpose of this Draft Environmental Impact Statement (DEIS) is to identify the potential impacts caused by proposed changes to the Water Quality Standards for surface Waters of the State of Washington – 173-201A WAC (Water Quality Standards) and to identify and analyze reasonable alternatives and mitigation measures. An Environmental Impact Statement provides an impartial discussion of significant environmental impacts. It is used to inform decision makers and the public of reasonable alternatives, including mitigation measures, which would avoid or minimize adverse impacts or enhance environmental quality.

The purpose of the DEIS is not to address every possible alternative. The DEIS is also not specifically designed to meet the requirement of "least burdensome" (which is evaluated in the draft Administrative Procedures Act (APA) material). Each alternative analysis in the DEIS includes an "ease of implementation" consideration. Drafts of the rule materials, which also include the Cost Benefit Analysis, are available on the Water Quality Standards Website along with the support material for the rule.

This DEIS is for a nonproject activity. Nonproject actions are governmental actions involving decisions on policies, plans or programs that contain standards controlling use or modification of the environment. This includes the adoption or amendment of comprehensive plans, ordinances, rules and regulations, (WAC 197-11-704(20(b)).

In accordance with the APA, the Washington State Department of Ecology (Ecology) filed two pre-proposal statements of inquiry (CR 101) in September 2012 to notify the public of Ecology's intent to begin rule-making for the Water Quality Standards for Surface Waters of the State of Washington – Chapter 173-201A WAC. The two CR 101 statements addressed development of human health criteria and revisions to implementation tools, respectively. These two CR 101 statements are being merged into one formal proposed rule-making (CR 102) process. The agency decided that due to the controversial nature of this rule an EIS would be completed.

This DEIS is focused on (1) the specific policy decisions and the subsequent calculated criteria concentrations, and (2) the language for implementation tools that are proposed in the draft rule and outlined in this document. The objective of the draft rule is to adopt human health criteria for the state of Washington that protect people who consume fish and shellfish in waters regulated by Ecology. In addition, the objective is to adopt additional provisions for implementing the Water Quality Standards that will keep dischargers in compliance with their National Pollutant Discharge Elimination System (NPDES) permits while they actively implement actions and control strategies to address pollutants.

Ecology has been working on the draft rule that is being proposed since 2012. A lengthy public process has been under way since then to reach the stage in the rule development process of proposing a draft rule. The past process steps included holding 7 public Policy Forums, 7 Delegates Table meetings, 3 public workshops, and multiple meetings with tribes and individual stakeholders. After this lengthy public process, several important changes to the state's Water

Quality Standards are being proposed. The changes are based on new science, public feedback, special work sessions, correspondence with tribes and stakeholders, and a specific risk management and policy decision from Governor Inslee. These factors are discussed in the materials accompanying the draft rule. All the rule support material is incorporated by reference into this DEIS.

New human health criteria.

Numeric criteria

The human health criteria are water concentrations for toxic substances that protect people who consume fish and shellfish from local waters and who drink untreated water from local surface waters. These criteria are calculated from a variety of different factors, including chemical-specific toxicity to humans, how chemicals move from water into fish and shellfish and then into humans, as well as other factors. The development and adoption of new human health criteria includes consideration of new science on toxicity factors and new information on body weight and Washington-specific fish consumption. The factors that are included in the criteria calculations are a mix of average and higher percentile values, and are consistent with the United Sates Environmental Protection Agency (EPA) guidance and practice. This approach results in high levels of consumer protection from pollutants that could be found in untreated surface water, fish, and shellfish from Washington.

Arsenic criteria

A chemical-specific approach is developed for arsenic.

Revised and expanded implementation tools.

The Water Quality Standards contain a number of tools that relate directly to how the criteria are met. These tools are implemented both in permits and orders, as well as specifying how the current designated uses and criteria can be changed if certain factors can be demonstrated. Ecology is proposing revisions to two of the tools (compliance schedules and variance requirements) that are already in the Water Quality Standards, and the addition of a new tool (intake credits). These tools and preliminary proposed changes are briefly summarized below:

Compliance schedules

Compliance schedules are tools used in Ecology discharge permits, orders, or other directives that allow time for discharges to make needed modifications to treatment processes in order to meet permit limits or requirements. They are commonly used for construction and treatment plant upgrades, and cannot be used for new or expanding discharges. Compliance schedules are used when there is an expectation that the discharge will meet permit limits at the end of the schedule. The current Water Quality Standards contain a maximum time limit of ten years for compliance schedules. In 2009 the Washington legislature passed a law requiring Ecology to develop longer compliance schedules for certain types of discharges.

Variances

Variances are changes to the Water Quality Standards that temporarily waive Water Quality Standards for a specific chemical and designated use for either a single discharge or for multiple discharges, or for specified stretches of surface waters (e.g., for a specific tributary, a lake, a watershed, etc.). Variances are used in situations where it can be demonstrated that: (1) a discharge can meet the permit limit or a water body can meet the criteria and designated use, but needs a longer time frame than allowed in a compliance schedule, or (2) it is not known whether the discharge will ever be able to meet the permit limit or a receiving water body's criteria and designated use. Because a variance is a temporary change to a criteria and use, variances are considered changes to the Water Quality Standards and must go through a rulemaking and subsequent EPA federal Clean Water Act (CWA) approval to be effective. The current Water Quality Standards give a brief list of the requirements for granting variances, including a maximum five-year time frame. The federal and state requirements for variances are brief.

Intake credits

Intake credits are a permitting tool that allows a discharge limit to be calculated in a way that does not require the discharger to "clean-up" pollutants in the discharge beyond the level of intake water when the intake and water body receiving the discharge are the same water body. This tool is currently used for technology-based limits, but Washington does not have a regulation that allows use of this tool to meet limits based on water quality criteria (a.k.a. water quality-based limits). This tool is used to meet water quality-based limits in several other states, including Oregon and the Great Lakes states.

Purpose and need of the proposal

Under the federal CWA all states are required to develop Water Quality Standards that protect the designated uses of the states waters. Federal requirements further define what those standards must contain. The state's Water Quality Standards set limits on pollution in our lakes, rivers and marine waters in order to protect existing and designated beneficial uses, such as swimming and aquatic life. The CWA requires states to review and revise as necessary their Water Quality Standards every three years.

The need to adopt more current human health criteria and updated implementation tools has been identified by numerous stakeholders and EPA. Each of the substantive issues being addressed (adoption of human health criteria and compliance schedule language) were highlighted as priority rule areas when Ecology conducted it triennial review in 2010. The overview of the triennial review process can be found at this site:

www.ecy.wa.gov/programs/wq/swqs/triennial_review.html.

Federal regulatory requirements

Clean Water Act 303(c) (2)

The Clean Water Act 303 (c) (2) states:

> **"***The Governor of a State or the State water pollution control agency of such State shall from time to time (but at least once each three year period beginning with the date of enactment of the Federal Water Pollution Control Act Amendments of 1972) hold public hearings for the purpose of reviewing applicable water quality standards and, as appropriate, modifying and adopting standards. Results of such review shall be made available to the Administrator.*
>
> *Whenever the State revises or adopts a new standard, such revised or new standard shall be submitted to the Administrator. Such revised or new water quality standard shall consist of the designated uses of the navigable waters involved and the water quality criteria for such waters based upon such uses. Such standards shall be such as to protect the public health or welfare, enhance the quality of water and serve the purposes of this Act. Such standards shall be established taking into consideration their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and also taking into consideration their use and value for navigation."*

State regulatory requirements

Water Pollution Control Act

90.48.010 Policy enunciated.

> *It is declared to be the public policy of the state of Washington to maintain the highest possible standards to insure the purity of all waters of the state consistent with public health and public enjoyment thereof, the propagation and protection of wild life, birds, game, fish and other aquatic life, and the industrial development of the state, and to that end require the use of all known available and reasonable methods by industries and others to prevent and control the pollution of the waters of the state of Washington. Consistent with this policy, the state of Washington will exercise its powers, as fully and as effectively as possible, to retain and secure high quality for all waters of the state. The state of Washington in recognition of the federal government's interest in the quality of the navigable waters of the United States, of which certain portions thereof are within the jurisdictional limits of this state, proclaims a public policy of working cooperatively with the federal government in a joint effort to extinguish the sources of water quality degradation, while at the same time preserving and vigorously exercising state powers to insure that present and future standards of water quality within the state shall be determined by the citizenry, through and by the efforts of state government, of the state of Washington.*

90.48.035 Rule-making authority.

The department shall have the authority to, and shall promulgate, amend, or rescind such rules and regulations as it shall deem necessary to carry out the provisions of this chapter, including but not limited to rules and regulations relating to standards of quality for waters of the state and for substances discharged therein in order to maintain the highest possible standards of all waters of the state in accordance with the public policy as declared in RCW 90.48.010.

90.48.260 Federal Clean Water Act – Department designated as state agency, authority – Powers, duties and functions.

The Department of Ecology is hereby designated as the State Water Pollution Control Agency for all purposes of the federal clean water act as it exists on February 4, 1987, and is herby authorized to participate fully in the programs of the act.

Water Resources Act of 1971

90.54.020 General declaration of fundamentals for utilization and management of waters of the state.

(b) Waters of the state shall be of high quality. Regardless of the quality of the waters of the state, all wastes and other materials and substances proposed for entry into said waters shall be provided with all known, available, and reasonable methods of treatment prior to entry. Notwithstanding that standards of quality established for the waters of the state would not be violated, wastes and other materials and substances shall not be allowed to enter such waters which will reduce the existing quality thereof, except in those situations where it is clear that overriding considerations of the public interest will be served.

Framework for federal review and action

Ecology is conducting a formal revision of the state rules for Water Quality Standards. If the state moves forward and adopts a rule then that rule is required to be submitted to EPA for federal action (approval or disapproval). The following outlines the steps and timing of the federal action:

1. Ecology submits the adopted rule to EPA.
2. EPA reviews the submittal for acceptability under the CWA.
3. EPA has 90 days to make a determination on whether the State's rule meets the CWA
4. If the CWA would not be met by the rule then EPA can disapprove Ecology's rule.

EPA has indicated that if Washington State does not adopt human health criteria in a timely fashion then they will be forced to promulgate revised criteria for the state. The Water Quality Standards website has a number of letters and correspondence from EPA on Washington's Water Quality Standards.

http://www.ecy.wa.gov/programs/wq/swqs/whatpeoplesay.html

History and summary of the proposal

Water Quality Standards are the foundation of water pollution control programs under the CWA. The standards are required to protect public health and welfare and identify designated uses (aquatic life, drinking water, recreation, etc) and the numeric criteria to protect those uses.

Water Quality Standards are used in writing permits, identifying polluted waters, and setting allocations to cleanup already polluted waters. Under the CWA all states are required to develop Water Quality Standards. All state-adopted Water Quality Standards are required to be submitted to EPA for review and approval (or disapproval). If EPA does not approve state Water Quality Standards then they are required to promulgate water quality standards for states that do not adopt standards.

States are required to update standards to reflect updated science/data. In 1992, EPA promulgated the National Toxics Rule (NTR) that included national criteria to protect human health and aquatic life. States that did not adopt toxics criteria were placed under the NTR by EPA. During that time, Washington standards incorporated aquatic life criteria for toxics but not human health criteria for toxics. Thus, Washington was one of 14 states/territories that were placed under the NTR.

The CWA requires that states hold public hearings to review their Water Quality Standards at least once every three years and make changes as appropriate. This effort is often called the "Triennial Review". Ecology completed its last Triennial Review in 2010. The process started with outreach to our stakeholders to identify issues that needed to be reviewed and revised in the Water Quality Standards. Ecology held a series of public meetings to get feedback and developed a 5 year plan based on that feedback. During that process and through other venues Washington heard a number of concerns about the fact that the federal human health criteria Washington is implementing are significantly outdated and do not include updated information on fish consumption rates that apply in Washington.

This current rule revision is the first time the state has published a formal draft rule to adopt human health criteria for toxics under the CWA. Therefore, all factors that go into developing the criteria are being considered and discussed as part of this rule adoption process. There are four separate equations used to calculate the actual human health criteria for toxics that are proposed with the rule that is out for review. This results in four distinct lumping of the 96 chemicals that will have criteria:

1. Carcinogenic chemical for exposures from drinking untreated surface water and consuming fish and shellfish (most freshwaters).
2. Noncarcinogenic chemicals for exposures from drinking untreated surface water and consuming fish and shellfish (most freshwaters).
3. Carcinogenic chemical for exposures consuming fish and shellfish only (marine waters).
4. Noncarcinogenic chemicals for marine water exposures from consuming fish and shellfish only (marine waters).

For purposes of simplifying the discussion, these scenarios will be referred to as fresh waters or marine waters, respectively. However, some freshwaters in Washington do not have "domestic water supply" as a designated use, and for these waters the criteria that address only the consumption of organisms are applied.

The other issue highlighted in the Triennial Review was the need to update the implementation tools (e.g., compliance schedules or variances) in the Water Quality Standards. Current water quality cleanup plans (Total Maximum Daily Loads – TMDLs) and regular permitting situations sometimes result in effluent limits that cannot be successfully met within the life of a permit cycle (e.g. temperature), nutrient controls and toxics controls). The goal of the implementation rule language is to provide predictable regulatory implementation tools to help dischargers comply with existing and new source control requirements or effluent limits over both short-term and longer time frames. The changes will allow for compliance with requirements while dischargers effectively work toward meeting effluent limits and controlling sources of pollutants. The DEIS looks at several options related to the three different areas of focus for the implementation tools: intake credits, compliance schedules, and clarified and expanded language for variances.

Summary of environmental impacts

The Water Quality Standards contain criteria to protect designated beneficial uses. Under the CWA, Section 303 (c)(2), States must provide :

> "*water quality standards to protect the public health or welfare, enhance the quality of water and serve the purposes of the Act. Such standards shall be established taking into consideration their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and agricultural , industrial, and other purposes, and also taking into consideration their use and value for navigation."*

This proposed rule revision addresses the beneficial use of protecting human health through the recreational use (fishable/swimmable) goals. The criteria in the standards are used to develop permits for discharge facilities, to identify waters that are polluted and need to be cleaned up and to set the final cleanup limits. The proposed criteria were developed to protect people that drink surface water and consume fish and shellfish from Washington State waters.

The implementation tools (intake credits, compliance schedules, and variances) will apply to the implementation of human health criteria and they will also apply to criteria that are designed to protect aquatic life and recreational uses. Therefore the tools alternatives will have an expanded analysis for how they might impact aquatic life and recreational uses.

Other documents incorporated by reference.

This is a DEIS for a nonproject proposal of adopting new human health criteria and new/revised implementation tools under the CWA. As a part of this rule adoption process other documents have been prepared which are being incorporated by reference.

The following documents can be viewed at:
www.ecy.wa.gov/programs/wq/ruledev/wac173201A/1203inv.html.

1. Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment, January 2015.
2. Preliminary Cost-Benefit and Least Burdensome Alternative Analysis, January 2015.

Summary of alternatives

Alternatives for the adoption of new human health criteria (HHC)	
Alternative 1	No action alternative. Remain under the National Toxics Rule for human health criteria. This uses a fish consumption rate of 6.5 grams/day and a risk level of one in a million for the carcinogenic chemicals.
Alternative 2	Adopt criteria based on a fish consumption rate of 175 grams/day and a risk level of one in 100,000 for the carcinogenic chemicals.
Alternative 3	Adopt criteria based on a fish consumption rate of 175 grams/day, a policy overlay that no calculated criteria will be less protective than the existing federal NTR, and a decision to use a risk level of one in 100,000 for the carcinogenic chemicals. This is the preferred alternative and the alternative presented in the September 30, 2014 preliminary draft rule
Alternative 4	Adopt the criteria values adopted in Oregon State.
A comparison of the criteria concentrations for each of these Alternatives is found in Appendix A.	

Alternatives for the challenging chemical Arsenic	
Alternative 1	No action alternative. Remain under the National Toxics Rule for arsenic.
Alternative 2	Adopt 10 µg/L (total arsenic) and accompanied by required arsenic pollution minimization efforts. This is the preferred alternative and the alternative presented in the September 30, 2014 preliminary draft rule.
Alternative 3	Adopt the criteria values that were adopted in Oregon State.

Alternatives for the Implementation Tools	
Compliance Schedules	
Alternative 1	No action. Make no changes to the existing Water Quality Standards.
Alternative 2	Adopt a 20 year maximum time frame for compliance schedules and requirements to meet the Water Quality Standards in the shortest time possible.
Alternative 3	Adopt language that does not specify the amount of time provided for compliance schedules and rely on a permit by permit analysis to meet the Water Quality Standards in the shortest time possible. This is the preferred alternative and the alternative presented in the September 30, 2014 preliminary draft rule.
Variances	
Alternative 1	No action. Make no changes to the existing Water Quality Standards

Alternative 2	Adopt a provision allowing for a 10 year variance time period in rule.
Alternative 3	Adopt language that does not specify the amount of time that can be granted for variances and rely on a variance-specific analysis to meet the Water Quality Standards in the shortest time possible. Add language clarifying requirements. This is the preferred alternative and the alternative presented in the September 30, 2014 preliminary draft rule.
Intake Credits	
Alternative 1	No action. Do not add any intake credit language to the Water Quality Standards.
Alternative 2	Add intake credit language to allow intake credits to be used in developing water quality based effluent limits for NPDES permits. Add specific restrictions on concentration and mass the permitting process. This is the preferred alternative and the alternative presented in the September 30, 2014 preliminary draft rule.
Alternative 3	Add intake credit language to allow intake credits to be used in developing water quality based effluent limits for NPDES permits. Add specific restrictions on concentration only during the permitting process.

Summary of Mitigation Measures

The state does not expect any adverse impacts associated with the preferred alternative. That being said the following measures are a part of the state's efforts to address toxics:

- Increased monitoring.
- Increased water clean-up actions.
- Increased pollution prevention actions.

Increases in these categories would help mitigate any potential negative environmental impacts associated with the current proposal.

Alternatives

An EIS is a tool for identifying and analyzing probable adverse environmental impacts, reasonable alternatives and possible mitigation. Alternatives were developed for the development of human health criteria, the development of specific criteria for arsenic and alternatives for each of the three implementation tools.

The DEIS analyzes the proposed September 30, 2014 alternative (*Preferred Alternative*), the no action alternative, and one or two reasonable alternatives proposed by stakeholders. A reasonable alternative is a feasible alternate course of action that meets the proposal's objective. Reasonable alternatives may be limited to those that an agency with jurisdiction has authority to control either directly or indirectly through the requirement of mitigation.

The proposed alternative and the additional alternatives have been discussed in the public involvement process. That process included a large amount of public comment from stakeholders, including the regulated community, environmental groups, tribes, and other interested parties. As such, these alternatives incorporated many concerns of cost, feasibility, and environmental protection. The no action alternative is the existing federal rule language (NTR at 40 CFR 131) and the language in WAC 173-201A. Because all alternatives were developed in consideration of cost, complexity, effectiveness of implementation, and level of environmental protection, all are considered to be "reasonable."

The issues can be loosely grouped into the following categories of reasonable alternatives that meet the proposal's objectives: human health criteria, arsenic, and implementation tools. These are compared later in this document.

This DEIS examines the overall protectiveness of these types of criteria by looking not only at the context of the proposed value or description, but also examines how effectively each alternative can be managed in a regulatory context to provide environmental protection. Each section within the DEIS contains a table summarizing the information used in the evaluation.

Each of the alternatives is evaluated using two characteristics: usability and environmental protection. These three elements are ranked independent of each other. However, the reader may want to balance the pros and cons of both categories when determining what they believe would be the best alternative, or when determining the environmental consequences of any single alternative. Following are the specific characteristics evaluated for each alternative.

Usability (Can the alternative be used effectively to protect water quality?)

This characteristic has an implementation focus that asks the question: is there something about this alternative that would make it unable to be implemented effectively? Would something about an alternative lead to incorrect uses, thus providing less protection? This does not address

the stringency of the alternative for the regulated community – which analysis is in the draft APA documentation. Usability of the alternatives is evaluated according to the following system:

High – A very easy alternative to use. There are no expected obstacles to implementing the alternative that would diminish its effectiveness. For example, the alternative could be effectively written into permits and TMDLs. This alternative is clearly defined in federal guidance and regulations.

Moderate – A moderately easy alternative to use. There are no or few expected major obstacles to implementing the alternative that would diminish its effectiveness. For example, the alternative could usually be effectively written into permits and TMDLs, though it may require additional complex modeling or analysis. This alternative meets federal regulations and meets intent of federal guidance.

Low – A more difficult alternative to fully and effectively use. There may be obstacles to implementing the alternative that would diminish its effectiveness. For example, it might require complex modeling, multi-party negotiations, long-term data collection, or detailed analysis before the alternative could be used in permits and TMDLs. Complexity might affect the intended function. This option meets federal regulations but might not be consistent with federal guidance.

Level of environmental protection

This characteristic is a best assessment of what level of protection the criteria would provide, and is based on the information presented. The intent is to describe how close each alternative comes to meeting the objective of the rule. The level of environmental protection does not factor in issues of simplicity and usability. The reader should evaluate simplicity, usability, and level of environmental protection when determining the consequences of adopting any single alternative. The level of environmental protection of the alternatives is evaluated according to the following system:

High – The alternative *would have a high likelihood* of fully protecting the beneficial uses. The alternative addresses nearly all of the potential risks to the beneficial use for that issue. There are no or few exemptions that might reduce the level of protection. The protection the alternative provides is effective immediately.

Moderate – The alternative *would most likely* provide full protection for the beneficial uses. The alternative addresses most of the potential risks to the beneficial use for that issue, but there are some exemptions or simplifying assumptions that might reduce the level of protection. The protection the alternative provides is effective immediately or in the near future.

Low – The alternative *might* fully protect the beneficial uses. The alternative addresses many, but not all, of the potential risks to the beneficial use for that issue. There are many simplifying assumptions that might reduce the level of protection. The protection the alternative provides might not be effective immediately.

Issues Not Addressed in DEIS

Unchanged parts of the Water Quality Standards

There are many parts of the Water Quality Standards that Ecology is not proposing to change. This rule revision is just focused only on those issues and items indentified above.

Postponing the implementation of the proposal

The CWA requires states to review their Water Quality Standards every three years. The last substantive revision to Washington's Water Quality Standards occurred in 2003/2006. Some of the changes in this proposal have been discussed for many years. EPA has indicated that if Washington State does not adopt Human Health Criteria then it will update the federal National Toxics Rule for Washington to be more reflective of data in Washington.

Development of implementation tools to address toxics were identified as a priority in the last triennial review process. These tools were developed to bring about compliance with the Water Quality Standards yet recognize that to meet some of these water quality standards it will take longer time due to the complex nature of some of the pollutants that are being addressed in Washington State.

Ecology could postpone the human health criteria rule in which case it would default to the federal government to update their existing human health criteria for Washington State. Ecology has received significant feedback from a variety of stakeholders that they want to see different parts of the rule package move forward. The decision to combine each of the CR 101s into one combined rule document is a result of that feedback from a diverse set of stakeholders and tribes wanting to see different parts of this rule move forward.

How Water Quality Standards Criteria are Implemented in the Clean Water Act Programs

Once a State has adopted Water Quality Standards, those standards then provide a foundation for implementing key provision of the CWA. The Water Quality Standards are used to implement the following four programs/authorities:

1. The National Pollutant Discharge Elimination System (NPDES).
2. The CWA 401 certification authority.
3. Section 303(d) of the CWA to identify polluted waters.
4. The TMDL or water cleanup program.

The National Pollutant Discharge Elimination System (NPDES) program

In 1972, Congress enacted the NPDES as part of the CWA. The NPDES program requires that all entities have an NPDES permit if they discharge pollution into State waters. The permit describes:

- What the discharger must do to protect water quality.
- The types of monitoring and reporting the discharger must perform.
- Limits on how much pollution can be discharged to maintain water quality.

The state of Washington issues two types of wastewater discharge permits:

Individual permits - cover individual facilities.

General permits - cover a category of similar dischargers. Boatyards, municipal stormwater and upland fin fish hatcheries are examples of industries which are covered under general permits. General permits provide efficient and effective permitting of wastewater discharges. The general permit approach produces a permit for a group of similar dischargers at diverse locations. Once issued, many facilities can be covered under a single general permit quickly and efficiently. A general permit is appropriate when the characteristics of the discharge are similar and a standard set of permit requirements can effectively provide environmental protection. To develop a general permit, Ecology collects information about typical pollutants and discharge conditions from the targeted group and sets permit requirements to regulate this generalized set of pollutants and discharges.

A wastewater discharge permit is a legal document issued by Ecology to control the discharge of wastewater to surface or ground waters and to publicly-owned sewage systems. Permits place limits on the quantity and concentrations of contaminants that may be discharged. When necessary, permits require treatment of wastewater or impose other operating conditions on

dischargers to ensure that permit limits are met. Permits may also set other conditions, including monitoring and reporting requirements, spill prevention planning, and other regulatory activities.

Permit conditions will specify how a facility must operate to remain within the effluent limits. Effluent limits are specific restrictions on the volume and concentration of certain pollutants that can be discharged. Federal and state regulations require that effluent limitations in a permit must be either technology-based or water quality-based. The more stringent of these two types of limits must be chosen for each pollutant of concern identified in the permit.

Technology-based limitations are performance standards established under federal and state regulations. Water quality-based limitations are based on compliance with the state Water Quality Standards.

Technology-based effluent limits for the discharge are derived first. Washington State requires dischargers to use all known and available reasonable technology (AKART) to control pollutants in their effluent. If technology-based controls fail to cause a discharge to meet state Water Quality Standards, the permit will impose additional conditions so the discharge meets Water Quality Standards. These are water quality-based effluent limits.

Effluent monitoring, recording, and reporting are required in most permits to verify that treatment or control processes are functioning correctly and that effluent limitations are being achieved. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The frequency of monitoring is the minimum frequency needed to document compliance.

Requirements for preparation of pollution prevention plans, spill control plans, and other operating conditions can also be a permit condition.

There are a number of steps and key decision points that need to be made as a permit is developed.

- Does the permitted facility discharge a toxic chemical?
- Is there a reasonable potential for that facility to discharge a toxic chemical?
- Does the concentration of that chemical exceed the criteria at the compliance point?

A more detailed discussion of how permits are issued can be found in Ecology' *Permit Writers Manual*, Revised December 2011, Publication No. 92-109. Appendix A also provides flow charts stepping through the permit process that were developed for this rule effort.

401 Certifications

Ecology also implements the Water Quality Standard through the CWA, Section 401 State Water Quality Certifications. This is a certification action required for federally permitted or licensed projects that could result in discharge to the state's waters. Applicants receiving a permit or license from the following federal agencies are required to apply to Ecology for a 401

certification; U.S. Army Corps of Engineers (Section 404 or nationwide permit), the Coast Guard (River and Harbors Act, Section 10 permit) or the Federal Energy Regulatory Commission (hydropower license). To ensure water quality is protected, Ecology may take one of the following actions:

- Approve the project without condition.
- Deny the project.
- Waive the state 401 authority.
- Condition the project to include further protections necessary to meet Washington State Water Quality Standards.

If the certification is denied, then the federal permit or license is not issued. If the certification includes conditions, then these become requirements of the Federal permit or license. If the state approves the project or waives its 401 authority, then the permit or license can proceed as written by the federal agency.

303(d) – list of polluted waters

The CWA established a process to identify polluted waters. Every two years states are required to prepare a list of water bodies that do not meet Washington's Water Quality Standards. This list is called the 303(d) list because the process is described in Section 303(d) of the CWA. To develop the list, Ecology compiles available water quality data. Ecology frequently gets data from other federal and state agencies, local government, citizen groups, tribes, and industries. All data submitted are reviewed to ensure that they were collected using the appropriate scientific methods before they are used.

The data are then assessed to determine if waterbodies exceed the Water Quality Standards. A determination of whether they exceed the standards is made according to the 303(d) Assessment Policy – 1-11 at www.ecy.wa.gov/programs/wq/303d/WQpolicy1-11ch1.pdf.

Water cleanup programs (Total Maximum Daily Load)

The CWA also requires that a water quality cleanup plan be developed for each of the waterbodies on the 303 (d) list. The technical name for a water cleanup plan is a Total Maximum Daily Load, or TMDL. A TMDL identifies how much pollution needs to be reduced or eliminated to achieve Water Quality Standards. A waterbody stays on the 303(d) list until a TMDL has been developed for it, its pollution problem is addressed through some other pollution control process, or it meets Water Quality Standards.

All TMDLs have five main components:

1. An identification of the type, amount, and sources of water pollution in a particular water body or segment.
2. A determination of how much the pollution needs to be reduced or eliminated to achieve clean water.
3. An allocation showing how much pollution each source will be allowed to discharge.

4. A strategy to meet these allocations.
5. A monitoring plan to make sure the water is getting cleaner as the TMDL is implemented.

In general, the TMDL identifies the problem and its sources. For pollution coming from point sources, once the amount of pollutant a point source will be allowed to discharge has been determined, Ecology implements the TMDL by placing the necessary pollutant limits in the NPDES permits.

For pollutants coming from nonpoint sources, once the source or sources have been identified, the TMDL implementation plan must evaluate potential methods to control the pollutants and suggest an array of methods that can be used. These methods are referred to as "best management practices."

Measuring chemical concentrations - quantification levels

The NPDES program uses EPA-approved and required chemical analytical methods to measure concentrations of pollutants in wastewater. However, some methods are more sensitive than others, and in some cases the EPA-approved and required methods for measuring chemicals cannot measure at the very low levels that these chemicals at which these chemicals are found. The concentration at which a laboratory or method can reliably report a determination of accurate measurement is called the "quantification level." Ecology requires use of the most sensitive analytical method and quantification levels that are allowed by EPA for NPDES program use under the federal regulations (40 CFR 136). The quantification levels for each of the criteria that are being adopted are included in Appendix B with each of the human health criteria alternatives.

Adopting Human Health Criteria

Background on human health criteria

The human health water quality criteria (HHC) are chemical-specific concentrations applied to surface waters. The HHC are developed to protect human populations from undue risks to chemical exposures from drinking untreated surface-water and eating fish and shellfish that live in those waters. The criteria are calculated using equations developed by EPA that incorporate information on risk and exposure, and the degree to which the pollutant accumulates in fish tissue and water. EPA has developed equations for both carcinogens and noncarcinogens that apply to either fresh waters or marine waters (EPA 2000). Ecology developed a detailed document that explains how human health criteria are calculated: *Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment, January 2015.* That document is incorporated into this DEIS by reference.

In total, there are four equations that are used to calculate HHC:

1. Carcenogens in freshwater.
2. Carcenogens in marine water.
3. Non-Carcinogens in fresh water.
4. Non-Carcinogens in marine water.

These equations are based on chemical effects (carcinogens or noncarcinogens/threshold chemicals) and routes of exposure (fresh or marine water).

Chemical effects: HHC equations are used to calculate criteria for both cancer causing chemicals, called carcinogens, and non-cancer causing chemicals, called noncarcinogens. The criteria for any one chemical are based on the most sensitive effect (the effect that would occur at the lowest water concentration).

Cancer Risk: (carcinogens) – based on modeled risk levels with an assumption of non-threshold effects (what does this mean?) Even one molecule of the chemical causes some additional risk of effect. These are modeled risks affects.

Non-cancer hazard: (noncarcinogens) – based on threshold levels developed from toxicity testing. There are safe levels: below a certain dose no response is detected, above a certain level safety decreases and effects could occur. These are measurable affects.

Routes of exposure: Washington has both marine and fresh waters under CWA and state jurisdiction. Therefore, separate equations are needed for each to account for presence or absence of an untreated drinking water exposure route. Marine waters are assumed to include estuarine waters and they are assumed to not serve the use of drinking water.

Each of the alternatives presented are alternatives that meet the EPA existing guidance to states with the exception of the "No Action" alternative. The "No Action" alternative relies staying under the federal NTR which does not provide adequate environment protection (see alternatives analysis). EPA has commented that they are likely to update the NTR if Washington does not adopt criteria to fully protect the designated uses. This outcome is not aligned with state law as specified in the overarching language in RCW 90.48.010:

> *"…The state of Washington in recognition of the federal government's interest in the quality of the navigable waters of the United States, of which certain portions thereof are within the jurisdictional limits of this state, proclaims a public policy of working cooperatively with the federal government in a joint effort to extinguish the sources of water quality degradation, while at the same time preserving and vigorously exercising state powers to insure that present and future standards of water quality within the state shall be determined by the citizenry, through and by the efforts of state government, of the state of Washington."*

Human health criteria alternatives

Four different alternatives are presented here for 95 of the 96 chemicals being addressed (arsenic will be reviewed separately below). To see a side by side numeric comparison of the criteria concentrations in each of the alternatives go to Appendix B.

Alternative #1- No Action Alternative: No action alternative. Remain under the National Toxics Rule for human health criteria. This uses a fish consumption rate of 6.5 grams/day and a risk level of one in a million for the carcinogenic chemicals.

This alternative would be to stay under the existing federal National Toxics Rule. This federal rule uses a fish consumption rate of 6.5 grams/day. This fish consumption rate is reflective of the national consumption of fish by the general public (consumers and nonconsumers). This alternative also relies on a one in a million risk rate for carcinogens and a relative source contribution of 1 for non-carcinogens. See *Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment,* January 2015.

Alternative #2: Adopt criteria based on a fish consumption rate of 175 grams/day and a risk level of one in 100,000 for the carcinogenic chemicals.

Alternative #3: Adopt criteria based on a fish consumption rate of 175 grams/day, a policy overlay that no calculated criteria will be less protective than the existing federal NTR, and a decision to use a risk level of one in 100,000 for the carcinogenic chemicals.

This is the preferred alternative and the alternative presented in the September 30, 2014 preliminary draft rule.

For more information, see *Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment,* January 2015.

Alternative #4: Adopt the criteria values adopted in Oregon State. These include a fish consumption rate of 175 g/day and a risk level of one-in-one-million.

Comparison of Alternatives

Please refer to the Alternative Section for more detail on the considerations used in rating the alternatives.

Usability **Can the alternative be used effectively to protect water quality?**			
Alternative 1 No Action	Alternative 2	Alternative 3 Preferred alternative	Alternative 4
Moderate to Low	Moderate to Low	Moderate to Low	Moderate to Low
Note on usability comparison: All four alternatives will have obstacles in the way of their use. An important obstacle shared by all four alternatives is the inability to detect and quantify the concentrations of many of the chemicals in the environment and in discharges at the low levels of the criteria in the four alternatives. See Cost Benefit Analysis that accompanies this proposed rule. These issues associated with chemical analytical methods make some criteria difficult to implement. Permitting tools to address this have been developed and are in use. Because of this shared obstacle all alternatives below have been rated in overall effectiveness (to meet water quality criteria) to be "moderate to low."			

Level of Environmental Protection **This characteristic is a best assessment of what level of protection the criteria would provide.**			
Alternative 1 No Action	Alternative 2	Alternative 3 Preferred alternative	Alternative 4
Moderate - Low	High - Moderate	High	High
Note: All three action alternatives (Alternatives 2-4) provide protection of the environment and the designated uses that they are specifically designed to address. In some cases other types of water quality standards (e.g. those designed to protect aquatic life) are more stringent (protective) than the criteria in the proposed alternatives. In those cases the most stringent (protective) of the criteria are used to determine discharge effluent limits to protect the most sensitive use. Among the three action alternatives the different concentration levels are generally very low and are tied to levels of protection that are well within EPA guidelines and past and current practices for human health criteria. Because of that all of the three action alternatives are rated as "high." Within these three choices, however, small differences used to calculate the criteria result in Alternatives 2-4, respectively, having increasing levels of protection. Alternative 2's rating is qualified with the addition of a "high to moderate" rating because it does not reflect the risk management decision by Washington that none of these 95 criteria should be of a lower concentration then the existing federal NTR criteria. Alternative 1 is rated as "moderate – low" because, while the levels of protection afforded by the criteria for carcinogens is within EPA guidelines, the protection afforded by the criteria for non carcinogens does not meet a "no effects level" as determined by state-specific data for the fish consumption rate input to the equation, therefore the level of protection used in EPA guidelines and chosen by Washington as part of its risk management process is not met by Alternative 1.			

Adopting Human Health Criteria for Arsenic

Background on arsenic

Arsenic is a naturally occurring element present in the environment in both inorganic and organic forms. Inorganic forms of arsenic are considered to be the most toxic, and are found in ground water and surface water, as well as in many foods. A wide variety of adverse health effects, including skin and internal cancers and cardiovascular and neurological effects, have been attributed to chronic arsenic exposure, primarily from drinking water (NAS, 1999; CTD, 2013).

There are also anthropogenic sources of arsenic in the environment which include: pesticides and herbicides, fertilizers, pharmaceuticals, electronic semiconductors, automobile lead-acid batteries, lead bullets and shot, metal smelting, and pressure treated lumber. (Pressure treated lumber is a legacy source. Production of new pressure treated lumber treated with an arsenic compound has been phased out.)

A more in depth discussion on the issues and challenges with arsenic is found in *Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment*, January 2015.

Arsenic standards in Washington

Washington's current Water Quality Standards for arsenic are contained in the state's Water Quality Standard rule (WAC 173-201A) that is administered by the Washington Department of Ecology (Ecology). Arsenic standards are also contained in the United States Environmental Protection Agency (EPA)-promulgated National Toxics Rule (NTR) (EPA 1992; 40 CFR 131.36). Both human health criteria (HHC) and aquatic life criteria are shown in Table 1 and are expressed as micrograms per liter (µg/L), which is equivalent to parts per billion (ppb).

Washington's Current Water Quality Standards for arsenic					
National Toxics Rule (NTR) – Human Health Criteria (1992)		Washington State Water Quality Standards (WAC 173-201A) – Aquatic Life Criteria			
Freshwater (µg/L)	Marine (µg/L)	Acute Marine (µg/L)	Chronic Marine (µg/L)	Acute Freshwater (µg/L)	Chronic Freshwater (µg/L)
0. 018 (inorganic)	0.14 (inorganic)	69 (dissolved)	36 (dissolved)	360 (dissolved)	190 (dissolved)

In addition to the NTR and the state Water Quality Standards, EPA establishes Maximum Contaminant Levels (MCL) for arsenic under the Federal Safe Drinking Water Act (SDWA). EPA lowered the Arsenic MCL for drinking water from 50 µg/L to 10 µg/L in 2001, based on National Research Council studies, among others. The new standard went into effect in 2006.

SDWA standards for arsenic are under the authority of the Washington Department of Health (WDOH) in Washington.

EPA is currently in the process of reviewing the toxicity information in the Integrated Risk Information System (IRIS) related to inorganic arsenic, and plans to submit the next draft to the National Research Council for peer review (EPA, 2014). The cancer slope factor currently in IRIS is an older value developed in 1988. This value was not used in the development of the 2001 Safe Drinking Water Act MCL nor was it used by EPA in their promulgation of CWA HHC for the state of California in 2000, called the California Toxics Rule (EPA, 2000).

HHC for arsenic in other states

Nationwide, nearly half of the states use the Safe Drinking Water Act MCL value of 10 µg/L for their Clean Water Act HHC arsenic criterion. (ODEQ, 2011, P. 19)

In the west, where natural levels of arsenic are prevalent, six states have also adopted the SDWA MCL as their HHC for arsenic. Oregon took a different approach and adopted HHC for arsenic using the 1998 IRS cancer slope factor, and different risk levels than the other HHC. EPA promulgated HHC for the state of California in 2000, as the California Toxics Rule (CTR). EPA did not promulgate human health criteria for arsenic for the state of California using the 1988 IRIS cancer slope factor. The following is language from the EPA's 2000 promulgation of the California Toxic's Rule (EPA, 2000):

> *"EPA is not promulgating human health criteria for arsenic in today's rule. EPA recognizes that it promulgated human health water quality criteria for arsenic for a number of States in 1992, in the NTR, based on EPA's 1980 section 304(a) criteria guidance for arsenic established, in part, from IRIS values current at that time. However, a number of issues and uncertainties existed at the time of the CTR proposal concerning the health effects of arsenic…."*
>
> *"…Today's rule defers promulgating arsenic criteria based on the Agency's previous risk assessment of skin cancer…."*

A summary of HHC for arsenic in western states

Table 2: Human Health Standards for Arsenic in Western States

State	Inorganic Arsenic Criteria (Freshwater; water + organisms.)	Basis
Alaska	10 µg/L	Same as SDWA MCL
Idaho	10 µg/L	
Wyoming	10 µg/L	
Nevada	10 µg/L	
Utah	10 µg/L	
New Mexico	10 µg/L	
Oregon	2.1 (Drinking surface + fish and shellfish: "fresh waters".)	1×10^{-4} risk level
	1.0 (Fish and shellfish only: marine and estuarine.)	1×10^{-5} risk level
California	N/A (See explanation above.)	

Concentrations of arsenic in surface waters of Washington

Arsenic is naturally elevated in many western states based on geology. In Washington, natural levels of inorganic arsenic in surface waters, based on discrete samples, may infrequently exceed the SDWA MCL of 10 µg/L, but frequently exceed the NTR human health criteria concentration of 0.018 and 0.14 ug/L.

Alternative #1: No action alternative. Remain under the National Toxics Rule for arsenic Use the National Toxics Rule value for arsenic. The existing federal National Toxics Rule human health criteria are 0.018 for freshwater and 0.14 ug/L for marine.

Alternative #2: Adopt 10 µg/L (total arsenic) and accompanied by required arsenic pollution minimization efforts.

This is the preferred alternative and the alternative presented in the September 30, 2014 preliminary draft rule.

For more information, see *Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment*, January 2015.

Alternative #3: Adopt the criteria values that were adopted in Oregon State. These are:

- Water and Organism exposures - 2.1 µg/L.
- Organism only exposures – 2.1 µg/L (freshwater) and 1.0 µg/L (saltwater).

Comparison of alternatives – Arsenic

Usability **Can the alternative be used effectively to protect water quality?**		
Alternative 1 No action	Alternative 2 Preferred alternative	Alternative 3
Low	High	Low
Note: Alternatives 1 and 3 include criteria levels for arsenic that are below natural concentrations of arsenic in many waters in the state. This hinders usability of these alternatives because of difficulties associated with determining natural vs. non-natural concentrations. Alternative 1 suffers this flaw more greatly than does Alternative 3. Because of this, these alternatives are rated "low" for usability. Alternative 2 criteria concentrations are exceeded frequently in the state, but less frequently than Alternatives 1 and 2. Alternative 2 also includes specific narrative pollution prevention requirements to reduce arsenic that is added to discharge systems in Washington, which is likely to result in more reductions in arsenic in discharges than the criteria in either Alternatives 1 or 3. Because of this Alternative 2 is ranked as "high."		

Level of Environmental Protection **This characteristic is a best assessment of what level of protection the criteria would provide.**		
Alternative 1 No action	Alternative 2 Preferred alternative	Alternative 3
High	High	High
Note: Alternatives 1-3 are all ranked "high" in the comparison. Alternative 2, the preferred alternative, is consistent with EPA's Safe Drinking Water Act regulatory levels and was developed using a nationwide risk assessment that incorporated information on cancer and non-cancer effects. This preferred alternative is used in many states as a CWA criterion and has been approved by EPA. Alternatives 1 and 3 are lower concentration values than Alternative 2, and because Alternative 2 is rated "high", Alternatives 1 and 3 also are rated as "high."		

Implementation Tools

Background: Washington is a "delegated state" under the CWA for purposes of NPDES permitting. This means that Washington State (instead of EPA) writes the NPDES discharge permits for discharges to surface waters in Washington. Many of the sources of pollution that are a challenge to deal with need additional implementation tools to address the pollutant as well as to address some of the challenges associated with getting those pollutants from impacting water quality. Ecology is proposing some additional tools, and additional language around existing tools, to use for dischargers that are actively working to reduce pollutants but need additional time. While these tools will be available for all water quality standards the development of human health criteria has highlighted the need to have these tools available.

There are a number of issues that make regulating some of the toxics chemicals more of a challenge. These issues include natural background and legacy pollutants. Under the CWA the final Water Quality Standard must be met, and there is no ability to incorporate cost impacts of meeting the Water Quality Standards.

One type of implementation tool that is being proposed for revision is a compliance schedule that is used to meet the standards in the shortest time possible yet recognize that for some pollutants the "shortest time" might be more than a permit cycle (5 years). Ecology is also proposing additional language around variances that recognize that it may take longer than a compliance schedule timeframe to address temperature or some legacy contaminants. Ecology is proposing a new implementation tool, allowing the use of intake credits to account for background contaminants that a discharger is getting from their intake water.

Compliance schedules

Background: A compliance schedule is an enforceable tool used as part of a permit, order, or directive to achieve compliance with applicable effluent standards and limitations, Water Quality Standards, or other legally applicable requirements. Compliance schedules include a sequence of interim requirements such as actions, operations, or milestone events to achieve the stated goals. Compliance schedules are a broadly used tool for achieving state and federal regulations; compliance schedules under the CWA are defined federally at CWA 502(17) and 40 CFR Section 122.2.

Schedules of compliance have existed in regulations at 173-220-140 for the NPDES permit program since 1974. These regulations require that compliance schedules set forth the shortest, reasonable period of time to achieve the specified requirements, and require that such period be consistent with federal guidelines and requirements of the CWA. Compliance schedules become an enforceable part of the permit. If a permittee fails or refuses to comply with interim or final requirements of a compliance schedule in a permit, such noncompliance constitutes a violation of the permit. Compliance schedules were incorporated into the state Water Quality Standards in 1992 to ensure continued use in the permitting program, and can be found at WAC 173-210A-510(4).

The use and limitations of compliance schedules for NPDES permits in Washington are described at WAC 173-220-140. For purposes of Water Quality Standards, compliance schedules may be used only where there is a finding that a permittee cannot immediately comply with a new, or newly revised, water-quality based effluent limit (WQBEL). Compliance schedules lasting longer than one year must include interim milestones, along with dates for their achievement, with no more than one year between dates. Interim milestones might relate, for example, to purchase and installation of new equipment, modification of existing facilities, construction of new facilities, and/or development of new programs. Compliance schedules also must include specific numeric or narrative effluent limits that will be met during the compliance schedule period.

Compliance schedules must require a permittee to meet the applicable WQBEL "as soon as possible." The determination of what constitutes "as soon as possible" is made on a permit-by-permit basis considering the specific steps a permittee must take to achieve compliance. A compliance schedule typically is short-term in duration that includes a schedule of actions (investigations such as source identification studies, treatment feasibility studies) to meet the final effluent limitation. A compliance schedule differs from a variance in that a discharge may need more time to meet a final effluent limitation, but it has identified specific actions that will attain water quality effluent limits. In other words, the discharger knows they can achieve the Water Quality Standards but they need more time.

Current Washington State regulations limit compliance schedules to no more than ten years. However, Ecology was directed by the Legislature in 2009 to extend the maximum length of compliance schedules to more than 10 years when a compliance schedule is appropriate, the base requirements for compliance schedules are met (i.e., compliance "as soon as possible"), and a permittee is not able to meet its TMDL waste load allocations only by controlling and treating its own effluent. See RCW 90.48.605, at http://apps.leg.wa.gov/rcw/default.aspx?cite=90.48.605.

Compliance Schedule Alternative #1 – No Action Alternative: Do not make any changes to the existing Water Quality Standards as it relates to Compliance schedules.

No action. Make no changes to the existing Water Quality Standards

Compliance Schedule Alternative #2: Adopt a 20 year maximum time frame for compliance schedules and requirements to meet the Water Quality Standards in the shortest time possible.

Compliance Schedule Alternative #3: Adopt language that does not specify the amount of time provided for compliance schedules and rely on a permit by permit analysis to meet the Water Quality Standards in the shortest time possible.

This is the preferred alternative and the alternative presented in the September 30, 2014 preliminary draft rule.

For more information, see *Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment,* January 2015.

Comparison of compliance schedules

Compliance Schedules		
Usability Can the alternative be used effectively to protect water quality?		
Alternative 1 No Action	Alternative 2	Alternative 3 Preferred alternative
Moderate	Moderate	Moderate
Note: All three Alternatives require an assessment of meeting permit limits in the shortest practicable time. This analysis is needed to use Alternatives 1 and 2, and is an absolute necessity when using Alternative 3 (which has no maximum time-frame). This analysis is considered to be equal between the three alternatives, and they are all rated as "moderate" based on this.		

Compliance Schedules		
Level of Environmental Protection This characteristic is a best assessment of what level of protection the criteria would provide.		
Alternative 1 No Action	Alternative 2	Alternative 3 Preferred alternative
High	High	High
Note: All three alternatives provide a high degree of environmental protection because all three require limits to be met within the shortest practicable time. The allowance for longer compliance schedules in Alternatives 2 and 3 is likely to give most dischargers the time needed to meet most limits, which should reduce the number of possible requests to change the water quality standards (designated uses, variances, or site-specific criteria) that could occur if the "shortest practicable time" is longer than the allowed maximum time in of an alternative. Alternative 3 would allow for the most adaptability to permitting situations that require very long (> 20 year) control strategies (e.g., growing trees to provide shade to reduce temperatures in streams).		

General provision language for variances

Background: A variance is a temporary change to the Water Quality Standards for a single discharger, a group of dischargers, or stretch of waters. Variances establish a time-limited set of temporary requirements that apply instead of the otherwise applicable water quality standards and related water quality criteria. Variances may be used where attaining the designated use and criteria is not feasible immediately, but might be, or will be, feasible in the longer term. They can be targeted to specific pollutants, sources, and/or stretches of waters.

EPA has dictated that state variance procedures, as part of state Water Quality Standards, must be consistent with the substantive requirements of 40 CFR 131. EPA has approved state-adopted variances in the past and has indicated that it will continue to do so if:

- Each variance is included as part of the Water Quality Standards.
- The state demonstrates that meeting the standard is unattainable based on one or more of the grounds outlined in 40 CFR 13 1.10(g) for removing a designated use.
- The justification submitted by the state includes documentation that treatment more advanced than that required by sections 303(c)(2)(A) and (B) has been carefully considered, and that alternative effluent control strategies have been evaluated.
- The more stringent state criterion is maintained and is binding upon all other dischargers on the stream or stream segment.
- The discharger who is given a variance for one particular constituent is required to meet the applicable criteria for other constituents.
- The variance is granted for a specific period of time and must be re-justified upon expiration.
- The discharger either must meet the standard upon the expiration of this time period or must make a new demonstration of "unattainability".
- Reasonable progress is being made toward meeting the standards.
- The variance was subjected to public notice, opportunity for comment, and public hearing. The public notice should contain a clear description of the impact of the variance upon achieving Water Quality Standards in the affected stretch of waters.

The temporary requirements established through a variance are only effective for the life of the variance. Because a variance establishes a temporary set of requirements that apply instead of the otherwise applicable water quality criteria, EPA has specified that variances are appropriate only under the same circumstances required in federal rule to undertake a Use Attainability Analysis (UAA), used to change a designated use for a water body. Regulations found in 40 CFR 131.10(g) establish six circumstances under which a UAA, or a variance, might be appropriate. They are:

- Naturally occurring pollutant concentrations prevent attainment of the use.
- Natural, ephemeral, intermittent or low flow conditions or water levels prevent attainment of the use, unless these conditions may be compensated for by discharge of sufficient volume of effluent discharges without violating state water conservation requirements to enable uses to be met.
- Human caused conditions or sources of pollution prevent attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place.
- Dams, diversions or other types of hydrologic modifications preclude attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in attainment of the use.
- Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses.

- Controls more stringent than those required by Sections 301(b) and 306 of the CWA would result in substantial and widespread economic and social impact.

Recent EPA guidance (EPA, 2014) offered two examples of the circumstances under which variances may be particularly appropriate to consider:

1. When attaining the designated use and criteria is not feasible under current conditions (e.g., water quality-based controls required to meet the numeric nutrient criterion would result in substantial and widespread social and economic impact) but achieving the standards could be feasible in the future if circumstances related to the attainability determination change (e.g., development of less expensive pollution control technology or a change in local economic conditions).
2. When it is not known whether the designated use and criteria may ultimately be attainable, but feasible progress toward attaining the designated use and criteria can be made by implementing known controls and tracking environmental improvements (e.g., complex use attainability challenges involving legacy pollutants).

EPA has not established a specific time limit for variances. Proposed changes to the federal Water Quality Standards Rule, recently released by EPA in September 2013, include changes to address variances with a proposed timeframe not to exceed ten years. These federal rules have not been finalized and are still in draft.

Variances have not been issued in Washington to date but are described in WAC 173-201A-420. The current language states that a variance is subject to a public and intergovernmental involvement process and a variance does not go into effect until it is incorporated into WAC 173-201A and approved by EPA. The current duration of a variance is for up to five years and variances may be renewed after providing another opportunity for public and intergovernmental involvement and review.

Variance Alternative #1 – No Action Alternative: No action. Make no changes to the existing Water Quality Standards

Variance Alternative #2: Adopt a provision allowing for a 10 year variance time period in rule.

Variance Alternative #3: Adopt language that does not specify the amount of time that can be granted for variances and rely on a variance-specific analysis to meet the Water Quality Standards in the shortest time possible. Add language clarifying requirements.

This is the preferred alternative and the alternative presented in the September 30, 2014 preliminary draft rule.

For more information, see *Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment,* January 2015.

Comparison of Variance Alternatives

Variance Alternatives		
Usability Can the alternative be used effectively to protect water quality?		
Alternative 1 No Action	Alternative 2	Alternative 3 Preferred alternative
Low	Low	Low
Notes: For all alternatives a variance is a future formal rule-making change to the Water Quality Standards with requirements for EPA approval of the rule change before it can be used. The proposed rule language does not create variances, but gives extensive directions on what is required. Because of that the "effectiveness" rating is slanted at the likelihood of effectiveness in future use. Alternatives 1and 2 are limited by maximum time frames for a variance with the possibility of renewals. In both these cases renewals would be labor intensive because of rule-making requirements. Alternative 3 could be tailored to fit long term pollution control situations more easily than Alternatives 1 and 2. In all cases the predictability of a variance being successfully used/granted cannot be predicted because state rule changes would still be subject to EPA approval, which is uncertain. Because of this all three alternatives are rated as "low" because of the uncertainty of EPA approval of future variances.		

Variance Alternatives		
Level of Environmental Protection This characteristic is a best assessment of what level of protection the criteria would provide.		
Alternative 1 No Action	Alternative 2	Alternative 3 Preferred alternative
High	High	High
Notes: For all alternatives a variance is a future formal rule-making change to the Water Quality Standards with requirements for EPA approval of the rule change before it can be used. The proposed rule language does not create variances, but gives extensive directions on what is required. The time frame under each alternative would need to be tailored to meet the shortest possible time frame. In all three alternatives standards must be met, thus all are rated as "high" in environmental protection.		

Intake credits

Background: An Intake Credit is a procedure that allows permitting authorities to conclude that the return of unaltered intake water pollutants to the same body of water under identified circumstances does not cause, have the reasonable potential to cause, or contribute to an excursion above Water Quality Standards. Therefore, WQBELs for that pollutant can be issued if needed. Intake credits have been traditionally used by states to account for levels of pollutants that occur in facility intake waters from human actions or due to naturally occurring background levels where technology does not exist to treat the pollutants to established water quality standards.

The following conditions typically must be met for an intake credit to apply:

- The intake pollutant must not cause, or have the reasonable potential to cause, or contribute to levels above an applicable water quality standard.
- Intake water must come from the same body of water to which the discharge is made.
- The facility must not contribute any additional mass of the identified intake pollutant to its wastewater.
- The facility must not alter the identified intake pollutant chemically or physically in a manner that would cause adverse water quality impacts to occur that would not occur if the pollutants were left in-stream.
- The facility must not increase the identified intake pollutant concentration at the edge of the mixing zone or at the point of discharge if a mixing zone is not allowed, as compared to the pollutant concentration in the intake water, unless the increased concentration does not cause or contribute to an excursion above an applicable water quality standard.
- The timing and location of the discharge must not cause adverse water quality impacts to occur that would not occur if the identified intake pollutant were left in-stream.

Typically, states have used intake credits in conjunction with technology-based effluent limits, but EPA has recently approved the use of intake credits with water quality based effluent limits (WQBELs) in some states.

Intake credits do not alter the permitting authority obligations under 40 CFR 122.44(d)(vii)(B) to develop effluent limitations as part of a TMDL prepared by the state department and approved by EPA as outlined in 40 CFR 130.7. They may have a limited applicability due to the requirement that pollution essentially pass through the facility unaltered.

Intake Credit Alternative #1 – No Action Alternative: No action. Do not add any intake credit language to the Water Quality Standards.

Intake Credit Alternative #2: Add intake credit language to allow intake credits to be used in developing water quality based effluent limits for NPDES permits. Add specific restrictions on considerations of concentration and mass in the permitting process.

This is the preferred alternative and the alternative presented in the September 30, 2014 preliminary draft rule.

For more information, see *Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment,* January 2015.

Intake Credit Alternative #3: Add intake credit language to allow intake credits to be used in developing water quality based effluent limits for NPDES permits. Add specific restrictions of concentration only during the permitting process.

Comparison of Intake Credits

Intake Credit		
Usability **Can the alternative be used effectively to protect water quality?**		
Alternative 1 No Action	Alternative 2 Preferred alternative	Alternative 3
High	Moderate	Moderate
Notes: All alternatives can be used effectively. Alternatives 2 and 3 require additional analysis at permitting that would require use of models. . Alternative one would preclude use of this tool entirely, so is easiest to use.		

Intake Credit		
Level of Environmental Protection **This characteristic is a best assessment of what level of protection the criteria would provide.**		
Alternative 1 No Action	Alternative 2 Preferred alternative	Alternative 3
High	High - moderate	Moderate
Notes: The no action alternative results in situations where meeting a water quality-based effluent limit could require removal of pollutants by the discharger that come from upstream intake waters. This alternative could result in greatest reductions in pollutants discharged to waters and thus is ranked "high." Alternatives 2 and 3 do not require removal of upstream pollutants in this situation and simply require no additional increase in pollutant concentrations, and in the case of Alternative 2, no net addition of mass with permit limit calculation. Because mass is excluded from consideration in Alternative 3 this is less protective than Alternative 2.		

Affected Environment, Potential Impacts and Mitigation Measures

Affected environment

The purpose of the Water Quality Standards is to set criteria to be used to fully protect beneficial uses of all of Washington's rivers, streams, lakes, marine waters, and other waters of the state. The specific use of fishing and harvesting is the use that the Human Health Criteria are designed to protect. The beneficial uses that are specifically protected are listed below:

- Aquatic Life. The aquatic life beneficial use includes salmonids (salmon, trout, and char), other fish, macroinvertebrates, other animals, and plants. All life-stages of aquatic life, including spawning, rearing, and migrating, are protected. Salmonids, especially those that are threatened or endangered, usually receive the most attention. In many cases, they are also the most sensitive species.
- Water Contact. The water contact beneficial use is designed to protect those who work or play in Washington's waters. This includes swimming, wading, boating, fishing, and other activities.
- Agricultural, Domestic, and Industrial Water Supply. Water quality must be of high enough quality so water can be used for these activities.
- Commerce and Navigation. Water quality must be of high enough quality so water can be used for these activities.
- Wildlife. The wildlife use protects terrestrial plants and animals that rely on rivers, streams, lakes, and marine water for survival.
- Fishing and Harvesting. The fishing and harvesting use protects water quality at levels that allow for fishing, harvesting, and consumption of aquatic plants and animals (such as fish and shellfish).

The proposed changes to the Water Quality Standards could affect all of these uses. However the fishing and harvesting use is the use that the Human Health Criteria are specifically designed to protect.

Pollution that affects these uses comes from point sources (such as industrial facilities and waste water treatment plants) and non-point sources (such as stormwater runoff from urban and rural lands), as well as other sources such as direct atmospheric deposition.

Impacts

The proposed changes to the Water Quality Standards set specific criteria that if met will fully protect the recreational use of fishing. However the level of protection that will actually be gained by the criteria change is unclear. On paper the criteria will change, however how those criteria actually impact environmental outcomes is more challenging to determine.

Adopting Human Health Criteria

The structure of the standards connects waterbodies to their uses and criteria. If the restructuring of the standards is not done appropriately, the entire Water Quality Standards could be affected, and in the worse-case scenario, the protected uses might suffer.

In this case, the proposed rule-making and preferred alternative will not increase the risk of any negative effects from exposure to pollutants through fish and shellfish and water consumption for 95 of the 96 proposed new criteria. This is because the 95 pollutants without increased risk of additional negative effects all have proposed criteria that are equal to or of a lower (more protective) concentration than the current federal rule (NTR) that the state is required to use in regulation, thus no increases in risks beyond those currently incurred should occur. Overall, approximately 70 % of the criteria will go down in concentration (become more protective).

Arsenic

The 96th chemical being addressed is arsenic. The preferred alternative criteria concentration of 10 ug/L is larger than the current federal NTR value. However, the proposed criteria is identical to EPA's Safe Drinking Water Act MCL used for protection of public drinking water supplies across the nation, and has been adopted by other states as a HHC and subsequently approved by EPA. The proposed criteria are also accompanied by source control language requiring pollution prevention actions to reduce added arsenic that is found in discharges. Because of the specific source control language, this change is expected to result in reductions in arsenic discharges to surface waters that would not take place under the other two alternatives.

Implementation Tools

Use of the proposed implementation tools is not expected to cause negative impacts to the environment. Their ability to provide predictable time frames for regulatory requirements is expected to result in more effective pollution control programs with resultant decreases in discharges of pollutants to surface waters. The use of variances will require subsequent rule revisions that will need a separate SEPA analysis.

Mitigation measures

Mitigation measures should be identified that will reduce or eliminate the adverse environmental impacts of a proposal. Mitigation measure should be reasonable and capable of being accomplished. According to the SEPA rules (WAC 197-11-768), "mitigation" means:

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.

- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing, enhancing, or providing substitute resources or environments.
- Monitoring the impact and taking appropriate corrective measures.

The state does not expect there to be adverse impacts associated with this rule-change. However, the following mitigation measures are identified. The state should continue to do monitoring for toxics in our waters, move forward with developing water cleanup plans for waters that are identified as polluted, and work to encourage all permitted facilities to implement pollution prevention concepts.

The state recognizes that in order to address toxics comprehensively more needs to be done to address the sources of toxic pollution that are not controlled by permits. The state of Washington is working to move forward a more comprehensive toxic reduction package to address toxic chemicals that are not regulated by the CWA and NPDES permits. The state is proposing the following:

- Legislation to require industries to look for safer, alternative approaches when we identify a toxic chemical in commerce that threatens our health or environment.
- Find and eliminate specific sources of problem chemicals in polluted watersheds. Where pollution levels are elevated, attack pollution sources — permitted and unpermitted — in partnership with local, federal and tribal governments.
- Fund efforts to better understand sources of toxic pollution and new technologies to address them.
- Increase monitoring to better identify pollution sources and measure the effectiveness of cleanup actions.

Glossary and List of Acronyms

303(d)	Ecology's list of impaired waters that violate the Water Quality Standards.
APA	Administrative Procedures Act
BMP	Best Management Practices
CFR	Code of Federal Regulations
CWA	Clean Water Act
DEIS	Draft Environmental Impact Statement
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
NPDES	National Pollutant Discharge Elimination System Permitting Program
NTR	National Toxics Rule
RCW	Revised Code of Washington
SEPA	State Environmental Policy Act
TMDL	Total Maximum Daily Load, or Water Clean-Up Plan
ug/L	Micrograms per liter
WAC	Washington Administrative Code (The Water Quality Standards for Surface Waters of the State of Washington are in WAC 173-201A)

References

Ecology, *Water Quality Program Permit Writer's Manual*, Revised December 2011, Publication number 92-109.

Ecology, *Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment*, January 2015.

Ecology, *Preliminary Cost Benefit Analysis for Washington Water Quality Standards human health criteria and implementation tools,* January 2015.

EPA, 1992. U.S. Environmental Protection Agency. *Toxics Criteria for Those States not Complying with Clean Water Act.* section 303(c)(2)(B). 40 CFR Part 131.36. Also known as the National Toxics Rule.

EPA, 1999. U.S. Environmental Protection Agency. *Toxics Criteria for Those States Not Complying with Clean Water Act.* section 303(c)(2)(B), originally published in 1992, amended in 1999 for PCBs. http://www.ecfr.gov/cgi-bin/text-idx?SID=76816a2f92256bf94.

EPA, 2000. U.S. Environmental Protection Agency. *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000),* (EPA-822-B-00-004), also known as the "EPA 2000 guidance"

EPA, 2002. U.S. Environmental Protection Agency. *National Recommended Water Quality Criteria: 2002. Human Health Criteria Calculation Matrix.* EPA-822-R-02-012.

EPA, 2000. U.S. Environmental Protection Agency. *Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California; Rule. 40 CFR Part 131.38* FR Vol. 65, Number 97, Thursday, May 18, 2000.

Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.) (AKA: *The Clean Water Act*)

Revised Code of Washington (Chapter 90.48; Water Pollution Control)

A complete set of references for this rule effort can be found at ecology's rule website titled Draft Citation List for inclusion in Concise Explanatory Statement.

Appendix A

NPDES Permit process flow charts.

These NPDES Permit process flow charts were used at the September 16, 2013 Delegates Table discussion. Charts 1 and 5 are shown in Appendix A. You can find all the charts at the following web address:

http://www.ecy.wa.gov/programs/wq/swqs/HumanHealthFlowchtsforDelegates090613.pdf

Chart 1

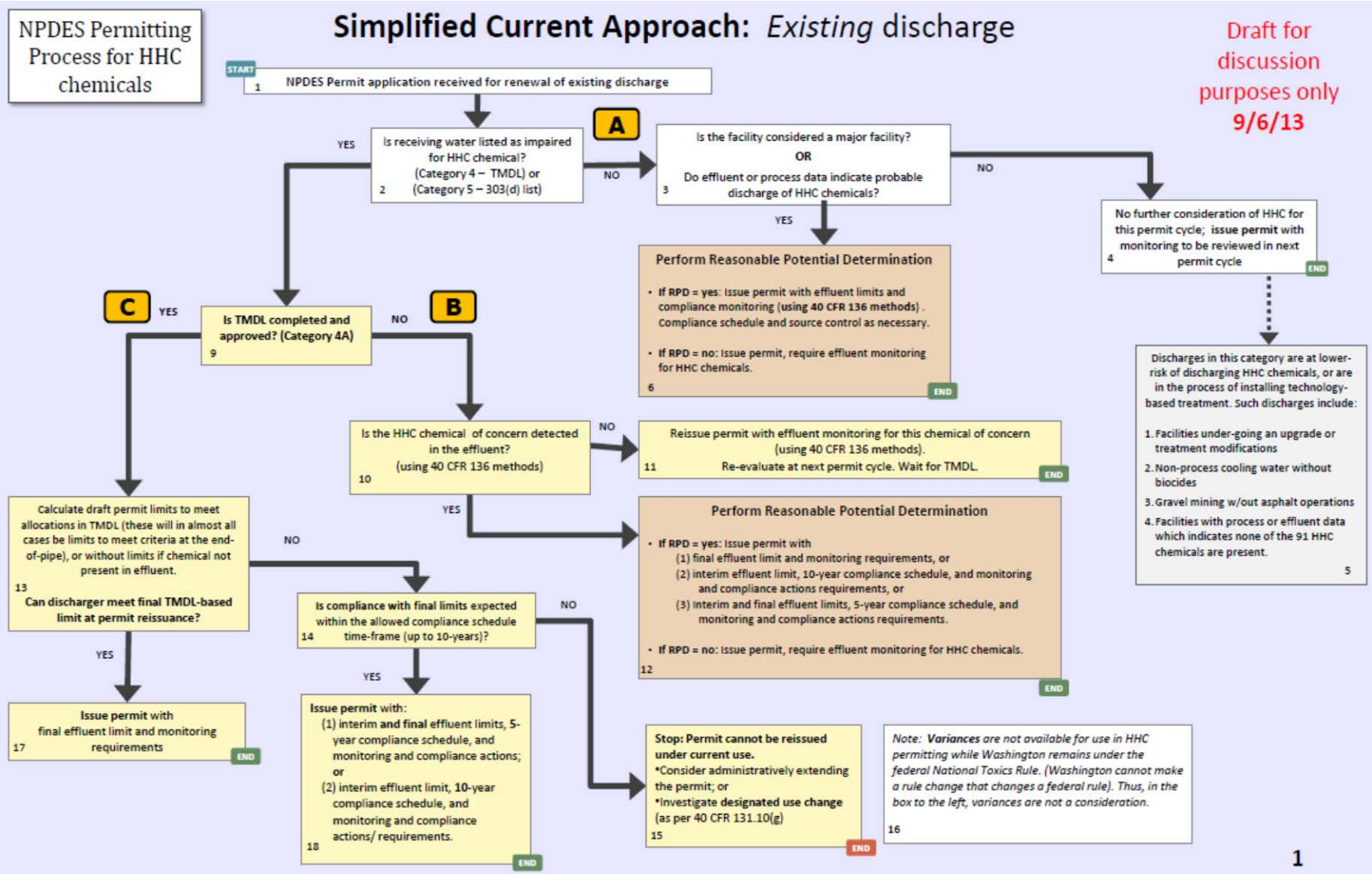
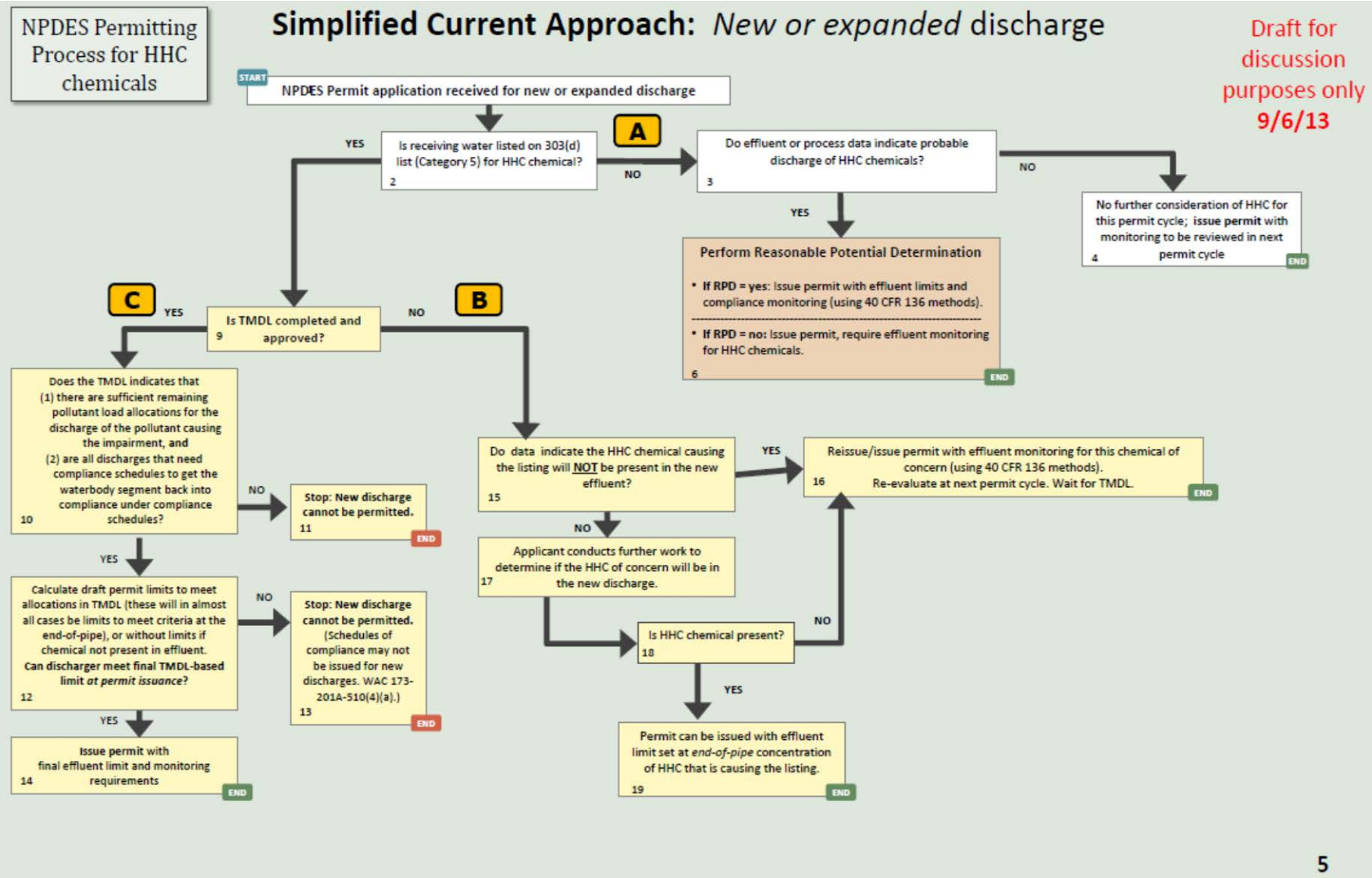

NPDES Permitting Process for HHC chemicals
Simplified Current Approach: Existing discharge
Draft for discussion purposes only 9/6/13
START
1 NPDES Permit application received for renewal of existing discharge
A
YES
2 Is receiving water listed as impaired for HHC chemical? (Category 4 – TMDL) or (Category 5 – 303(d) list)
NO
3 Is the facility considered a major facility? OR Do effluent or process data indicate probable discharge of HHC chemicals?
NO
4 No further consideration of HHC for this permit cycle; issue permit with monitoring to be reviewed in next permit cycle
END
YES
Perform Reasonable Potential Determination
• If RPD = yes: Issue permit with effluent limits and compliance monitoring (using 40 CFR 136 methods). Compliance schedule and source control as necessary.
• If RPD = no: Issue permit, require effluent monitoring for HHC chemicals.
6
END
Discharges in this category are at lower-risk of discharging HHC chemicals, or are in the process of installing technology-based treatment. Such discharges include:
1. Facilities under-going an upgrade or treatment modifications
2. Non-process cooling water without biocides
3. Gravel mining w/out asphalt operations
4. Facilities with process or effluent data which indicates none of the 91 HHC chemicals are present.
5
C
YES
9 Is TMDL completed and approved? (Category 4A)
NO
B
10 Is the HHC chemical of concern detected in the effluent? (using 40 CFR 136 methods)
NO
11 Reissue permit with effluent monitoring for this chemical of concern (using 40 CFR 136 methods). Re-evaluate at next permit cycle. Wait for TMDL.
END
YES
Perform Reasonable Potential Determination
• If RPD = yes: Issue permit with
(1) final effluent limit and monitoring requirements, or
(2) interim effluent limit, 10-year compliance schedule, and monitoring and compliance actions requirements, or
(3) interim and final effluent limits, 5-year compliance schedule, and monitoring and compliance actions requirements.
• If RPD = no: Issue permit, require effluent monitoring for HHC chemicals.
12
END
13 Calculate draft permit limits to meet allocations in TMDL (these will in almost all cases be limits to meet criteria at the end-of-pipe), or without limits if chemical not present in effluent. Can discharger meet final TMDL-based limit at permit reissuance?
NO
YES
17 Issue permit with final effluent limit and monitoring requirements
END
14 Is compliance with final limits expected within the allowed compliance schedule time-frame (up to 10-years)?
NO
YES
18 Issue permit with:
(1) interim and final effluent limits, 5-year compliance schedule, and monitoring and compliance actions; or
(2) interim effluent limit, 10-year compliance schedule, and monitoring and compliance actions/ requirements.
END
Stop: Permit cannot be reissued under current use.
•Consider administratively extending the permit; or
•Investigate designated use change (as per 40 CFR 131.10(g)
15
END
Note: Variances are not available for use in HHC permitting while Washington remains under the federal National Toxics Rule. (Washington cannot make a rule change that changes a federal rule). Thus, in the box to the left, variances are not a consideration.
16
1

Chart 5


NPDES Permitting Process for HHC chemicals
Simplified Current Approach: New or expanded discharge
Draft for discussion purposes only 9/6/13
START
NPDES Permit application received for new or expanded discharge
Is receiving water listed on 303(d) list (Category 5) for HHC chemical?
2
YES
NO
A
Do effluent or process data indicate probable discharge of HHC chemicals?
3
NO
YES
No further consideration of HHC for this permit cycle; issue permit with monitoring to be reviewed in next permit cycle
4
END
Perform Reasonable Potential Determination
If RPD = yes: Issue permit with effluent limits and compliance monitoring (using 40 CFR 136 methods).
If RPD = no: Issue permit, require effluent monitoring for HHC chemicals.
6
END
C
YES
Is TMDL completed and approved?
9
NO
B
Does the TMDL indicates that (1) there are sufficient remaining pollutant load allocations for the discharge of the pollutant causing the impairment, and (2) are all discharges that need compliance schedules to get the waterbody segment back into compliance under compliance schedules?
10
NO
Stop: New discharge cannot be permitted.
11
END
YES
Calculate draft permit limits to meet allocations in TMDL (these will in almost all cases be limits to meet criteria at the end-of-pipe), or without limits if chemical not present in effluent. Can discharger meet final TMDL-based limit at permit issuance?
12
NO
Stop: New discharge cannot be permitted. (Schedules of compliance may not be issued for new discharges. WAC 173-201A-510(4)(a).)
13
END
YES
Issue permit with final effluent limit and monitoring requirements
14
END
Do data indicate the HHC chemical causing the listing will NOT be present in the new effluent?
15
YES
Reissue/issue permit with effluent monitoring for this chemical of concern (using 40 CFR 136 methods). Re-evaluate at next permit cycle. Wait for TMDL.
16
END
NO
Applicant conducts further work to determine if the HHC of concern will be in the new discharge.
17
Is HHC chemical present?
18
NO
YES
Permit can be issued with effluent limit set at end-of-pipe concentration of HHC that is causing the listing.
19
END
5

Appendix B

Criteria values for each alternative and current detection limits

Freshwater Human Health Criteria (HHC) alternatives and corresponding methods and levels for analysis.

	Freshwater HHC (Consumption of water & organisms)				Analytical Methods and Quantitation Levels*	
Chemical Name	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**EPA or Standard Methods (SM) Method**	**Quantitation Level**
1,1,2,2-Tetrachloroethane	0.17	1.4	0.17	0.12	624	2
1,1,2-Trichloroethane	0.60	5.0	0.60	0.44	624	2
1,1-Dichloroethylene	0.057	1,300	0.057	230	624	2
1,2,4,5-Tetrachlorobenzene	NC	NC	NC	0.11	NL	NL
1,2,4-Trichlorobenzene	NC	36	36	6.4	625	0.6
1,2-Dichlorobenzene	2,700	614	614	110	624	7.6
1,2-Dichloroethane	0.38	4.0	0.38	0.35	624	2
1,2-Dichloropropane	NC	4.4	4.4	0.38	624	2
1,2-Diphenylhydrazine	0.040	0.16	0.040	0.014	1625B	20
1,2-Trans-Dichloroethylene	NC	703	703	120	624	2
1,3-Dichlorobenzene	400	91	91	80	624	7.6
1,3-Dichloropropene	10	10	10	0.30	624	2
1,4-Dichlorobenzene	400	91	91	16	624	17.6
2,3,7,8-TCDD (Dioxin)	0.000000013	0.000000064	0.000000013	0.00000000051	1613B	0.000005
2,4,5-TP	NC	NC	NC	10	NL	NL
2,4,5-Trichlorophenol	NC	NC	NC	330	1653	2.5
2,4,6-Trichlorophenol	2.1	2.6	2.1	0.23	625	4

(Cont'd). Freshwater Human Health Criteria (HHC) alternatives and corresponding methods and levels for analysis.

	Freshwater HHC (Consumption of water & organisms)				Analytical Methods and Quantitation Levels*	
Chemical Name	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**EPA or Standard Methods (SM) Method**	**Quantitation Level**
2,4-D	NC	NC	NC	10	NL	NL
2,4-Dichlorophenol	93	26	26	23	625	1
2,4-Dimethylphenol	NC	87	87	76	625	1
2,4-Dinitrophenol	70	71	70	62	625	2
2,4-Dinitrotoluene	0.11	1.0	0.11	0.084	609/625	0.4
2-Chloronaphthalene	NC	171	171	150	625	0.6
2-Chlorophenol	NC	16	16	14	625	2
2-Methyl-4,6-Dinitrophenol	13.4	11	11	9.2	625/1625B	2
3,3'-Dichlorobenzidine	0.040	0.031	0.031	0.0027	605/625	1
4,4'-DDD	0.00083	0.00036	0.00036	0.000031	608	0.05
4,4'-DDE	0.00059	0.00025	0.00025	0.000022	608	0.05
4,4'-DDT	0.00059	0.00025	0.00025	0.000022	608	0.05
Acenaphthene	NC	108	108	95	625	0.4
Acrolein	320	1.0	1.0	0.88	624	10
Acrylonitrile	0.059	0.20	0.059	0.018	624	2
Aldrin	0.00013	0.000057	0.000057	0.0000050	608	0.05
alpha-BHC	0.0039	0.0051	0.0039	0.00045	608	0.05
alpha-Endosulfan	0.93	9.7	0.93	8.5	608	0.05
Anthracene	9,600	3,310	3,310	2,900	625	0.6
Antimony	14	15	14	5.1	200.8	1
Arsenic	0.018	0.047	10	2.1	200.8	0.5
Asbestos	7,000,000 fbrs/L	7,000,000 fbrs/L	7,000,000 fbrs/L	7,000,000 fbrs/L	NL	NL
Barium	NC	NC	NC	1,000	200.8	2
Benzene	1.2	18	1.2	0.44	624	2

(Cont'd). Freshwater Human Health Criteria (HHC) alternatives and corresponding methods and levels for analysis.

	Freshwater HHC (Consumption of water & organisms)				Analytical Methods and Quantitation Levels*	
Chemical Name	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**EPA or Standard Methods (SM) Method**	**Quantitation Level**
Benzidine	0.00012	0.00020	0.00012	0.000018	625	24
Benzo(a)Anthracene	0.0028	0.015	0.0028	0.0013	625	0.6
Benzo(a)Pyrene	0.0028	0.015	0.0028	0.0013	610/625	1
Benzo(b)Fluoranthene	0.0028	0.015	0.0028	0.0013	610/625	1.6
Benzo(k)Fluoranthene	0.0028	0.015	0.0028	0.0013	610/625	1.6
beta-BHC	0.014	0.018	0.014	0.0016	608	0.05
beta-Endosulfan	0.93	9.7	0.93	8.5	608	0.05
Bis(2-Chloroethyl)Ether	0.031	0.23	0.031	0.020	611/625	1
Bis(2-Chloroisopropyl) Ether	1,400	1,300	1,300	1,200	625	0.6
Bis(2-Ethylhexyl) Phthalate	1.8	2.3	1.8	0.20	625	0.5
Bromoform	4.3	38	4.3	3.3	624	2
Butylbenzyl Phthalate	NC	215	215	190	625	0.6
Carbon Tetrachloride	0.25	1.2	0.25	0.10	624/601 or SM6230B	2
Chlordane	0.00057	0.00093	0.00057	0.000081	608	0.05
Chlorobenzene	680	421	421	74	624	2
Chlorodibromomethane	0.41	3.6	0.41	0.31	624	2
Chloroform	5.7	301	5.7	260	624 or SM6210B	2
Chloromethyl ether, bis	NC	NC	NC	0.000024	NL	NL
Chrysene	0.0028	0.015	0.0028	0.0013	610/625	0.6
Copper	NC	1,300	1,300	1,300	200.8	2
Cyanide	700	700	700	130	335.4	10
Dibenzo (a,h) Anthracene	0.0028	0.015	0.0028	0.0013	625	1.6
Dichlorobromomethane	0.27	4.9	0.27	0.42	624	2
Dieldrin	0.00014	0.000061	0.000061	0.0000053	608	0.05

(Cont'd). Freshwater Human Health Criteria (HHC) alternatives and corresponding methods and levels for analysis.

	Freshwater HHC (Consumption of water & organisms)				Analytical Methods and Quantitation Levels*	
Chemical Name	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**EPA or Standard Methods (SM) Method**	**Quantitation Level**
Diethyl Phthalate	23,000	4,300	4,300	3,800	625	7.6
Dimethyl Phthalate	313,000	96,000	96,000	84,000	625	6.4
Di-n-Butyl Phthalate	2,700	455	455	400	625	1
Dinitrophenols	NC	NC	NC	62	NL	NL
Endosulfan Sulfate	0.93	9.7	0.93	8.5	608	0.05
Endrin	0.76	0.034	0.034	0.024	608	0.05
Endrin Aldehyde	0.76	0.034	0.034	0.030	608	0.05
Ethylbenzene	3,100	934	934	160	624	2
Fluoranthene	300	16	16	14	625	0.6
Fluorene	1,300	441	441	390	625	0.6
gamma-BHC (Lindane)	0.019	1.0	0.019	0.17	608	0.05
Heptachlor	0.00021	0.000091	0.000091	0.0000079	608	0.05
Heptachlor Epoxide	0.00010	0.000045	0.000045	0.0000039	608	0.05
Hexachlorobenzene	0.00075	0.00033	0.00033	0.000029	612/625	0.6
Hexachlorobutadiene	0.44	4.1	0.44	0.36	625	1
Hexachlorocyclo-hexane, technical	NC	NC	NC	0.0014	NL	NL
Hexachloro-cyclopentadiene	240	174	174	30	1625B/625	1
Hexachloroethane	1.9	3.3	1.9	0.29	625	1
Indeno (1,2,3-cd) Pyrene	0.0028	0.015	0.0028	0.0013	610/625	1
Isophorone	8.4	304	8.4	27	625	1
Manganese	NC	NC	NC	NC	200.8	0.5
Methoxychlor	NC	NC	NC	100	NL	NL
Methyl Bromide	48	42	42	37	624/601	10
Methylene Chloride	4.7	49	4.7	4.3	624	10

(Cont'd). Freshwater Human Health Criteria (HHC) alternatives and corresponding methods and levels for analysis.

	Freshwater HHC (Consumption of water & organisms)				Analytical Methods and Quantitation Levels*	
Chemical Name	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**EPA or Standard Methods (SM) Method**	**Quantitation Level**
Methylmercury	NC	NC	NC	NC	NL	NL
Nickel	610	156	156	140	200.8	0.5
Nitrates	NC	NC	NC	10,000	NL	NL
Nitrobenzene	17	16	16	14	625	1
Nitrosamines	NC	NC	NC	0.00079	NL	NL
N-Nitrosodibutylamine	NC	NC	NC	0.0050	NL	NL
N-Nitrosodiethylamine	NC	NC	NC	0.00079	NL	NL
N-Nitrosodimethylamine	0.00069	0.0078	0.00069	0.00068	607/625	4
N-Nitrosodi-n-Propylamine	NC	0.052	0.052	0.0046	607/625	1
N-Nitrosodiphenylamine	5.0	6.3	5.0	0.55	625	1
N-Nitrosopyrrolidine	NC	NC	NC	0.016	NL	NL
Pentachlorobenzene	NC	NC	NC	0.15	NL	NL
Pentachlorophenol	0.28	1.7	0.28	0.15	625	1
Phenol	21,000	10,700	10,700	9,400	625	4
Polychlorinated Biphenyls (PCBs)	0.00017	0.000073	0.00017	0.0000064	608	0.5
Pyrene	960	331	331	290	625	0.6
Selenium	NC	141	141	120	200.8	1
Tetrachloroethylene	0.80	2.7	0.80	0.24	624	2
Thallium	1.7	0.24	0.24	0.043	200.8	0.36
Toluene	6,800	4,100	4,100	720	624	2
Toxaphene	0.00073	0.00032	0.00032	0.000028	608	0.5
Trichloroethylene	2.7	16	2.7	1.4	624	2
Vinyl Chloride	2.0	0.26	0.26	0.023	624/SM6200B	2
Zinc	NC	2,300	2,300	2,100	200.8	2.5

*From Attachment A – Effluent characterization for permit application.

(Available online at: http://www.ecy.wa.gov/programs/wq/permits/forms.html.)

HHC Alternative 1	Not proceed with any rule revisions and remain under the National Toxics Rule for human health criteria. This uses a fish consumption rate of 6.5 grams/day and a risk level of one in a million for the carcinogenic chemicals.
HHC Alternative 2	This uses a fish consumption rate of 175 grams/day and a risk level of one in 100,000 for the carcinogenic chemicals.
HHC Alternative 3	This is the preferred alternative and the alternative presented in the September 30, 2014 preliminary draft rule. This uses a fish consumption rate of 175 grams/day, a policy overlay that no calculated criteria will be less protective than the existing NTR and a decision to use a risk level of one in 100,000 for the carcinogenic chemicals.
HHC Alternative 4	Adopt criteria identical to the criteria adopted in Oregon State.

General Notes:

All criteria and analytical level values are expressed as µg/L unless noted otherwise

Red Font indicates Carcinogen

NC = No Criterion

NL = Not Listed

HHC Alternative 1 (NTR) calculated using a Body Weight (BW) of 70 kg; HHC Alternatives 2 & 3 use a BW of 80 kg.

HHC Alternatives 1, 2, & 3 calculated using a Drinking Water Intake (DI) of 2 L/day.

HHC Alternative 4 (Oregon Criteria) generally calculated using a FCR = 175 g/day, BW = 70kg, DI = 2 L/day, and Risk = 10^{-6}.
See Oregon Criteria (online at http://www.deq.state.or.us/wq/standards/toxics.htm) for additional details

Marine Human Health Criteria (HHC) Alternatives and Corresponding Methods and Levels for Analysis.

	Marine HHC (Consumption of organisms only)				Analytical Methods and Quantitation Levels*	
Chemical Name	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**EPA or Standard Methods (SM) Method**	**Quantitation Level**
1,1,2,2-Tetrachloroethane	11	4.6	4.6	0.40	624	2
1,1,2-Trichloroethane	42	18	18	1.6	624	2
1,1-Dichloroethylene	3.2	4,100	3.2	710	624	2
1,2,4,5-Tetrachlorobenzene	NC	NC	NC	0.11	NL	NL
1,2,4-Trichlorobenzene	NC	40	40	7.0	625	0.6
1,2-Dichlorobenzene	17,000	740	740	130	624	7.6
1,2-Dichloroethane	99	42	42	3.7	624	2
1,2-Dichloropropane	NC	17	17	1.5	624	2
1,2-Diphenylhydrazine	0.54	0.23	0.23	0.020	1625B	20
1,2-Trans-Dichloroethylene	NC	5,787	5,787	1,000	624	2
1,3-Dichlorobenzene	2,600	110	110	96	624	7.6
1,3-Dichloropropene	1,700	72	72	2.1	624	2
1,4-Dichlorobenzene	2,600	110	110	19	624	17.6
2,3,7,8-TCDD (Dioxin)	0.000000014	0.000000064	0.000000014	0.00000000051	1613B	0.000005
2,4,5-TP	NC	NC	NC	NC	NL	NL
2,4,5-Trichlorophenol	NC	NC	NC	360	1653	2.5
2,4,6-Trichlorophenol	6.5	2.8	2.8	0.24	625	4
2,4-D	NC	NC	NC	NC	NL	NL
2,4-Dichlorophenol	790	34	34	29	625	1
2,4-Dimethylphenol	NC	97	97	85	625	1
2,4-Dinitrophenol	14,000	610	610	530	625	2
2,4-Dinitrotoluene	9.1	3.9	3.9	0.34	609/625	0.4
2-Chloronaphthalene	NC	181	181	160	625	0.6

(Cont'd). Marine Human Health Criteria (HHC) Alternatives and Corresponding Methods and Levels for Analysis.

	Marine HHC (Consumption of organisms only)				Analytical Methods and Quantitation Levels*	
Chemical Name	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**EPA or Standard Methods (SM) Method**	**Quantitation Level**
2-Chlorophenol	NC	17	17	15	625	2
2-Methyl-4,6-Dinitrophenol	765	32	32	28	625/1625B	2
3,3'-Dichlorobenzidine	0.077	0.033	0.033	0.0028	605/625	1
4,4'-DDD	0.00084	0.00036	0.00036	0.000031	608	0.05
4,4'-DDE	0.00059	0.00025	0.00025	0.000022	608	0.05
4,4'-DDT	0.00059	0.00025	0.00025	0.000022	608	0.05
Acenaphthene	NC	113	113	99	625	0.4
Acrolein	780	1.1	1.1	0.93	624	10
Acrylonitrile	0.66	0.28	0.28	0.025	624	2
Aldrin	0.00014	0.000058	0.000058	0.0000050	608	0.05
alpha-BHC	0.013	0.0056	0.0056	0.00049	608	0.05
alpha-Endosulfan	2.0	10	2.0	8.9	608	0.05
Anthracene	110,000	4,571	4,571	4,000	625	0.6
Antimony	4,300	183	183	64	200.8	1
Arsenic	0.14	0.059	10	2.1	200.8	0.5
Asbestos	NC	NC	NC	NC	NL	NL
Barium	NC	NC	NC	NC	200.8	2
Benzene	71	59	59	1.4	624	2
Benzidine	0.00054	0.00023	0.00023	0.000020	625	24
Benzo(a)Anthracene	0.031	0.021	0.021	0.0018	625	0.6
Benzo(a)Pyrene	0.031	0.021	0.021	0.0018	610/625	1
Benzo(b)Fluoranthene	0.031	0.021	0.021	0.0018	610/625	1.6
Benzo(k)Fluoranthene	0.031	0.021	0.021	0.0018	610/625	1.6

(Cont'd). Marine Human Health Criteria (HHC) Alternatives and Corresponding Methods and Levels for Analysis.

	Marine HHC (Consumption of organisms only)				Analytical Methods and Quantitation Levels*	
Chemical Name	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**EPA or Standard Methods (SM) Method**	**Quantitation Level**
beta-BHC	0.046	0.020	0.020	0.0017	608	0.05
beta-Endosulfan	2.0	10	2.0	8.9	608	0.05
Bis(2-Chloroethyl)Ether	1.4	0.60	0.60	0.050	611/625	1
Bis(2-Chloroisopropyl) Ether	170,000	7,403	7,403	6,500	625	0.6
Bis(2-Ethylhexyl) Phthalate	5.9	2.5	2.5	0.22	625	0.5
Bromoform	360	154	154	14	624	2
Butylbenzyl Phthalate	NC	221	221	190	625	0.6
Carbon Tetrachloride	4.4	1.9	1.9	0.16	624/601 or SM6230B	2
Chlordane	0.00059	0.00093	0.00059	0.000081	608	0.05
Chlorobenzene	21,000	888	888	160	624	2
Chlorodibromomethane	34	15	15	1.3	624	2
Chloroform	470	1,200	470	1,100	624 or SM6210B	2
Chloromethyl ether, bis	NC	NC	NC	0.000029	NL	NL
Chrysene	0.031	0.021	0.021	0.0018	610/625	0.6
Copper	NC	NC	NC	NC	200.8	2
Cyanide	220,000	9,143	9,143	130	335.4	10
Dibenzo (a,h) Anthracene	0.031	0.021	0.021	0.0018	625	1.6
Dichlorobromomethane	22	20	20	1.7	624	2
Dieldrin	0.00014	0.000061	0.000061	0.0000054	608	0.05
Diethyl Phthalate	120,000	5,010	5,010	4,400	625	7.6
Dimethyl Phthalate	2,900,000	126,984	126,984	110,000	625	6.4
Di-n-Butyl Phthalate	12,000	514	514	450	625	1
Dinitrophenols	NC	NC	NC	530	NL	NL

(Cont'd). Marine Human Health Criteria (HHC) Alternatives and Corresponding Methods and Levels for Analysis.

	Marine HHC (Consumption of organisms only)				Analytical Methods and Quantitation Levels*	
Chemical Name	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**EPA or Standard Methods (SM) Method**	**Quantitation Level**
Endosulfan Sulfate	2.0	10	2.0	8.9	608	0.05
Endrin	0.81	0.035	0.035	0.024	608	0.05
Endrin Aldehyde	0.81	0.035	0.035	0.030	608	0.05
Ethylbenzene	29,000	1,219	1,219	210	624	2
Fluoranthene	370	16	16	14	625	0.6
Fluorene	14,000	610	610	530	625	0.6
gamma-BHC (Lindane)	0.063	1.1	0.063	0.18	608	0.05
Heptachlor	0.00021	0.000091	0.000091	0.0000079	608	0.05
Heptachlor Epoxide	0.00011	0.000045	0.000045	0.0000039	608	0.05
Hexachlorobenzene	0.00077	0.00033	0.00033	0.000029	612/625	0.6
Hexachlorobutadiene	50	21	21	1.8	625	1
Hexachlorocyclo-hexane, technical	NC	NC	NC	0.0015	NL	NL
Hexachloro-cyclopentadiene	17,000	632	632	110	1625B/625	1
Hexachloroethane	8.9	3.8	3.8	0.33	625	1
Indeno (1,2,3-cd) Pyrene	0.031	0.021	0.021	0.0018	610/625	1
Isophorone	600	1,100	600	96	625	1
Manganese	NC	NC	NC	100	200.8	0.5
Methoxychlor	NC	NC	NC	NC	NL	NL
Methyl Bromide	4,000	171	171	150	624/601	10
Methylene Chloride	1,600	677	677	59	624	10
Methylmercury	NC	NC	NC	0.040 mg/kg**	NL	NL
Nickel	4,600	195	195	170	200.8	0.5
Nitrates	NC	NC	NC	NC	NL	NL

(Cont'd). Marine Human Health Criteria (HHC) Alternatives and Corresponding Methods and Levels for Analysis.

	Marine HHC (Consumption of organisms only)				Analytical Methods and Quantitation Levels*	
Chemical Name	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**EPA or Standard Methods (SM) Method**	**Quantitation Level**
Nitrobenzene	1,900	79	79	69	625	1
Nitrosamines	NC	NC	NC	0.046	NL	NL
N-Nitrosodibutylamine	NC	NC	NC	0.022	NL	NL
N-Nitrosodiethylamine	NC	NC	NC	0.046	NL	NL
N-Nitrosodimethylamine	8.1	3.4	3.4	0.30	607/625	4
N-Nitrosodi-n-Propylamine	NC	0.58	0.58	0.051	607/625	1
N-Nitrosodiphenylamine	16	6.9	6.9	0.60	625	1
N-Nitrosopyrrolidine	NC	NC	NC	3.4	NL	NL
Pentachlorobenzene	NC	NC	NC	0.15	NL	NL
Pentachlorophenol	8.2	3.5	3.5	0.30	625	1
Phenol	4,600,000	97,959	97,959	86,000	625	4
Polychlorinated Biphenyls (PCBs)	0.00017	0.000073	0.00017	0.0000064	608	0.5
Pyrene	11,000	457	457	400	625	0.6
Selenium	NC	476	476	420	200.8	1
Tetrachloroethylene	8.85	3.8	3.8	0.33	624	2
Thallium	6.3	0.27	0.27	0.047	200.8	0.36
Toluene	200,000	8,545	8,545	1,500	624	2
Toxaphene	0.00075	0.00032	0.00032	0.000028	608	0.5
Trichloroethylene	81	34	34	3.0	624	2
Vinyl Chloride	525	2.8	2.8	0.24	624/SM6200B	2
Zinc	NC	2,918	2,918	2,600	200.8	2.5

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See Oregon Criteria (online at http://www.deq.state.or.us/wq/standards/toxics.htm) for additional details.

Footnotes:

**Fish tissue concentration