REGION 10 ADMINISTRATOR

SEATTLE, WA 98101

October 30, 2023

Randy Bates
Director, Division of Water
Alaska Department of Environmental Conservation
P.O. Box 111800
Juneau, Alaska 99811

Re: The EPA's Response to the Alaska Department of Environmental Conservation's Request for Information to Develop Human Health Criteria

Dear Mr. Bates:

Thank you for your letter, dated September 28, 2023, to Casey Sixkiller, Regional Administrator for the U.S. Environmental Protection Agency, restating the commitment by the Alaska Department of Environmental Conservation (DEC) to update the State's human health criteria (HHC) by the end of calendar year 2024. Mr. Sixkiller has asked that I respond to you on his behalf.

Your letter requested information regarding the U.S. Environmental Protection Agency's 2000 final document, *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health* as well as Idaho's and Florida's past efforts to pursue alternative approaches for deriving HHC. The EPA's responses to your inquiries are summarized in the enclosure to this letter.

We continue to support DEC's efforts to develop new and revised HHC and are looking forward to receiving DEC's draft HHC package for review in Fall 2023.

Again, thank you for contacting the EPA. If you have any questions, please do not hesitate to contact me at (206) 553-0279 or have your staff contact Hanh Shaw, Manager of the Standards, Assessment and Watershed Management Branch, at (206) 553-0171 or shaw.hanh@epa.gov.

Sincerely,

/s/ 10-30-23

Michael J. Szerlog
Acting Division Director
Water Division

ENCLOSURES

1. Enclosure to the EPA's response to the Alaska Department of Environmental Conservation's September 28, 2023 letter requesting information to inform the development of new and revised human health criteria
2. EPA comments on Idaho's Proposed Policy Decisions Related to Human Health Criteria for Toxics, May 29, 2015
3. EPA comments on Idaho's Revised Human Health Toxics Criteria, Proposed Rule, Docket No. 58-0102-1201, November 6, 2015
4. IDEQ Human Health Criteria Proposed Rule – Response to Comments, Docket Number 58-0102-1201

cc: Terri Lomax, Program Manager, Water Quality Program, DEC
Brock Tabor, Water Quality Standards, Water Quality Program, DEC

Enclosure 1: Enclosure to the EPA's response to the Alaska Department of Environmental Conservation's (DEC) September 28, 2023 letter requesting information to inform the development of new and revised human health criteria (HHC)

1. **DEC Request**: Additional information on the history of the HHC formula and relevance to current rulemaking efforts. While the EPA 2000 Methodology includes some historical information in section 1.3, DEC would appreciate having additional information on the validity of the formula, concerns raised during the development of the EPA 2000 Methodology, and whether EPA still considers this to be the most "scientifically-defensible" approach to developing water quality criteria protective of human health.

EPA Response: EPA develops national recommended HHC under Clean Water Act (CWA) section 304(a) using the Agency's 2000 *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health* ("2000 HHC Methodology"),[1] which superseded the Agency's 1980 *Guidelines and Methodology Used in the Preparation of Health Effect Assessment Chapters of the Consent Decree Water Criteria Documents* ("1980 HHC Methodology").[2] The 2000 HHC Methodology, the Agency's final, peer reviewed, publicly vetted guidance for developing national recommended HHC, was developed to reflect scientific advances in cancer and noncancer risk assessments, exposure assessments, and bioaccumulation since the 1980 HHC Methodology.[3] The 2000 HHC Methodology includes equations for deriving health-protective HHC with input parameters based on scientific analysis, science policy and risk management decisions. The deterministic risk assessment and risk management approaches incorporated into the 2000 HHC Methodology are consistent with approaches followed by other EPA programs, including the establishment of maximum contaminant level goals (MCLGs) for noncarcinogens and nonlinear carcinogens under the Safe Drinking Water Act. While EPA uses the 2000 HHC Methodology to develop its national recommended CWA section 304(a) criteria, EPA also encourages states and authorized tribes to use EPA's 2000 HHC Methodology to adjust those national recommended criteria to reflect local conditions and to develop their own scientifically sound and protective HHC.[4]

In 2015, EPA updated the national recommended CWA section 304(a) criteria for human health for 94 chemical pollutants to reflect the latest scientific information ("2015 HHC Updates"). In EPA's Response to Comments document associated with those recommendations, EPA explained that the Agency continues to use the 2000 HHC Methodology to develop its CWA section 304(a) recommendations for human health, saying:

> The 2000 Methodology was developed over more than eight years and included scientific review by EPA's Science Advisory Board (1993), a four-month public comment period (1998), a public meeting (1999), an external peer review workshop (1999), and multiple stakeholder review processes. For

[1] https://www.epa.gov/sites/default/files/2018-10/documents/methodology-wqc-protection-hh-2000.pdf
[2] 45 F.R. 79347
[3] https://www.epa.gov/wqc/fact-sheet-methodology-deriving-ambient-water-quality-criteria-protection-human-health-revised
[4] EPA's 2000 HHC Methodology, pp. 2-2, 2-13, 4-25.

these reasons, EPA reasonably chose to update the AWQC following this peer-reviewed, publicly vetted methodology.[5]

Beyond the information contained in the 2000 HHC Methodology itself, DEC can find more discussion on the derivation of the 2000 HHC Methodology and responses to comments in the Federal Register notice for the issuance of the 2000 HHC Methodology.[6]

2. **DEC Request**: Efforts by other states to develop an alternative approach(es) to establishing HHC that does not use the EPA 2000 Methodology.
    a. Please inform DEC about approaches that were proposed but not pursued via rulemaking and what proved to be the "fatal flaws." In plain language why did EPA think Florida and Idaho's efforts to develop probabilistic approaches were not consistent with the Clean Water Act in terms of protecting designated uses.
    b. Are there other instances where a state has proposed an alternative means of calculating HHC?

EPA Response: EPA's 2000 HHC Methodology describes a deterministic approach for deriving HHC, however a few states have expressed interest in exploring a probabilistic risk assessment (PRA) approach. A deterministic approach uses single values, or point estimates, as inputs to the exposure equation. As a result, the output of a deterministic approach is a point value for exposure. In comparison, a PRA uses distributions of data from which multiple points are selected as inputs to the exposure equation over the course of multiple simulations and outputs a distribution of potential exposure values.[7]

The response to comments provided in the Federal Register notice for the issuance of the 2000 HHC Methodology[8] addresses the use of PRAs:

> [P]robabilistic analyses are appropriate when they are validated techniques that are applied correctly and supported by adequate data. However, much of the time, the amount of data available to describe distributions of exposure from various known sources to the U.S. population—for use in setting nationwide criteria—is inadequate to support meaningful probabilistic analyses.

This is consistent with the Agency's position articulated in 1997:[9]

[5] www.epa.gov/sites/default/files/2015-10/documents/epa-response-to-public-comments-to-human-health-final-criteria.pdf

[6] https://www.federalregister.gov/documents/2000/11/03/00-27924/revisions-to-the-methodology-for-deriving-ambient-water-quality-criteria-for-the-protection-of-human

[7] https://www.epa.gov/expobox/exposure-assessment-tools-tiers-and-types-deterministic-and-probabilistic-assessments

[8] https://www.federalregister.gov/documents/2000/11/03/00-27924/revisions-to-the-methodology-for-deriving-ambient-water-quality-criteria-for-the-protection-of-human

[9] U.S. EPA. (1997b). Guiding Principles for Monte Carlo Analysis. (EPA/630/R-97/001). Washington, DC. https://www.epa.gov/risk/guiding-principles-monte-carlo-analysis

> [T]hat such probabilistic analysis techniques, as Monte Carlo Analysis, given adequate supporting data and credible assumptions, can be viable statistical tools for analyzing variability and uncertainty in risk assessments.

As referenced in DEC's letter, Florida and Idaho both considered developing HHC using a PRA approach. Since neither state finalized and submitted HHC using a PRA to EPA for review under CWA section 303(c), it would be inaccurate to suggest that EPA identified "fatal flaws" in either state's approach, or that EPA viewed those approaches as "not consistent with the Clean Water Act in terms of protecting designated uses." DEC may be aware that EPA provided reviews of Florida's and Idaho's proposals. The comment letters that EPA provided to Idaho are included with this response, along with the Idaho Department of Environmental Quality's (IDEQ) response to comments for the State's submitted HHC that were not based on the PRA approach. Generally, EPA was supportive of the State using local data for estimating body weight, water ingestion, etc. but recommended that the IDEQ revisit certain aspects of the distributions identified for the PRA (e.g., correlation between body weight and fish consumption, inclusion/exclusion of market and anadromous fish consumption data, etc.). EPA's comments also emphasized that the input variables should reflect clearly documented distributions of exposure (e.g., *Alaska Statewide and Regional Estimates of Consumption Rates in Rural Communities for Salmon, Halibut, Herring, Non-Marine fish, and Marine Invertebrates* (2019)).[10]

IDEQ's responses to comments explained that the State opted to switch from the PRA to the deterministic approach following the State's public comment period. IDEQ's responses to comments also indicated that the PRA approach produced similar HHC values as the deterministic approach:

> DEQ does not believe using this [deterministic] method in conjunction with the other inputs DEQ has chosen, will appreciably affect criteria.

EPA encourages DEC to reach out to IDEQ and the Florida Department of Environmental Protection to hear from the states directly regarding why they did not finalize and adopt HHC using a PRA approach. To date, no other states have proposed alternative approaches for developing HHC.

As noted in the 2000 HHC Methodology, EPA and state/tribal decision-makers retain the discretion to use alternative, scientifically defensible, methodologies that differ from EPA's recommended approach to develop HHC, where appropriate.[11] If DEC is interested in pursuing an alternative approach for developing HHC for the State of Alaska, EPA is available to assist DEC in ensuring that approach is valid, scientifically sound, and appropriately applied.

[10] The Mountain-Whisper-Light Statistics (Mar. 20, 2019). Alaska Statewide and Regional Estimates of Consumption Rates in Rural Communities for Salmon, Halibut, Herring, Non-Marine fish, and Marine Invertebrates.
[11] EPA's 2000 HHC Methodology, pp. 1-2.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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OFFICE OF
WATER AND WATERSHEDS

May 29, 2015

Don Essig
Idaho Department of Environmental Quality
1410 N. Hilton
Boise, Idaho 83706

RE: EPA comments on Idaho's Proposed Policy Decisions Related to Human Health Criteria for Toxics

Dear Don:

The EPA appreciates the opportunity to provide comments to the Idaho Department of Environmental Quality (DEQ) on the policy recommendations that DEQ will use to inform revisions to Idaho's human health ambient water quality criteria. In particular, the EPA appreciated DEQ's presentation at the April 21, 2015 negotiated rulemaking meeting, where you discussed these proposed policy decisions as well as several options DEQ is still contemplating. The EPA supports DEQ's ongoing efforts and recognizes the challenging work that DEQ has undertaken thus far in consideration of revisions to Idaho's human health criteria.

The enclosed detailed comments reflect many of the issues the EPA identified in our previous letters on each of the policy discussion papers developed by DEQ over the past year. Given that DEQ has further considered these important policy decisions and is now providing a recommended position, or in some cases consideration of several options, the EPA is providing more specific comments for your consideration. Please note that, in some instances, the EPA is providing more general comments at this time and is requesting additional information to better understand DEQ's proposal before providing more detailed comments.

In general, the EPA is encouraged that several of DEQ's proposed policy decisions reflect recommendations consistent with EPA's 2000 Human Health Methodology and more recent EPA policy documents. At the same time, the EPA is concerned about some of DEQ's proposed policy decisions and we have described those concerns and provide suggestions for addressing them in the enclosed comments. In addition, it is important to note some overarching themes that the EPA will consider when evaluating protective human health criteria:

- Tribal Reserved Rights: In addition to complying with the CWA and EPA's regulations, when setting criteria to adequately protect Idaho's designated uses, it is necessary to consider tribal reserved rights, including tribal treaty-reserved fishing rights (executive orders and federal statutes could also apply).

- Best available science: The EPA commends DEQ for its collaborative work to develop state-specific fish consumption survey data and tribal fish consumption survey data for

Idaho. The EPA is encouraged that Idaho is considering the tribal survey data along with the state-wide survey data, and appreciates Idaho's efforts to coordinate and collaborate with EPA and the tribes. Along with using local and regional FCR data, DEQ should use the best available science to select all the input parameters needed to derive its human health criteria. In many instances, the EPA's 2014 draft 304(a) recommended criteria represents the best available science. If the EPA's criteria recommendations become final before Idaho adopts a final human health criteria rule, the EPA recommends that the state use that information instead of the 2014 draft criteria information.

- Protection of Downstream Waters: It is important for Idaho to demonstrate how its revised human health water quality criteria will provide for the attainment and maintenance of the water quality of downstream waters, consistent with EPA's regulations at 40 CFR 131.10(b).

The EPA appreciates DEQ's efforts to revise Idaho's human health criteria for toxic pollutants and looks forward to continued conversations regarding these important decisions. In addition, EPA remains committed to supporting DEQ's work and is available to provide technical assistance as you develop a proposed rule. If you have any questions or would like to discuss these comments further, please contact me at (206) 553-1834 or Lon Kissinger at (206) 553-2115.

Sincerely,

Lisa Macchio
Water Quality Standards Coordinator

Enclosure

EPA's Comments on Idaho Department of Environmental Quality's (DEQ) Policy Recommendations Related to Revisions to Idaho's Human Health Criteria for Toxics
May 29, 2015

Derivation of FCR using consumers only

EPA supports DEQ's proposed policy decision to base its fish consumption rate (FCR) on consumers only and to exclude non-consumers in the derivation of a FCR for Idaho. This is consistent with EPA's recommendation to use consumer only data when available. In particular, EPA supports DEQ deriving FCRs from 24-hour recall survey results using a statistical modeling approach developed by the National Cancer Institute, the NCI method, to develop defensible consumer only FCRs for Idaho. This is consistent with EPA's approach to develop the FCR used to compute national human health ambient water quality criteria. If such modeling approaches are not used to derive FCRs from short term dietary recall data, biased FCRs would result.

Evaluate range of exposure/risk in both general and higher consuming subpopulations

EPA supports DEQ's proposed policy decision to evaluate the range of exposure/risk in both the general population and higher consuming populations. Human health criteria are designed to minimize the risk of adverse cancer and non-cancer effects occurring from lifetime exposure to pollutants through the ingestion of drinking water and consumption of fish/shellfish. When choosing exposure factor values to include in the derivation of a criterion for a given pollutant, EPA recommends considering values that are relevant to populations that are most susceptible to that pollutant. For example, highly exposed populations should be considered when setting criteria. To that end, EPA's methodology notes a preference for the use of local data to calculate human health criteria (e.g., locally derived FCRs, drinking water intake rates and body weights, and waterbody-specific bioaccumulation rates), over national default values, to better represent local conditions.[1]

Deterministic or Probabilistic

EPA needs additional detailed information to evaluate whether DEQ's proposal to employ probabilistic risk assessment (PRA) to develop human health criteria is scientifically defensible and protective. EPA recommends that DEQ present a draft proposal at the next rulemaking meeting that clearly defines desired outcomes for the PRA approach and how they will be met. For example, the EPA generally recommends that variables describing toxicity should not be distributed, as insufficient data generally exist to develop distributions for toxicity variables, and toxicity metrics are developed by consensus at the national level. Therefore, it is important for DEQ to clearly explain why it is choosing the PRA approach and how it will address the

[1] USEPA. 2000. Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA-822-B-00-004. http://www.epa.gov/waterscience/criteria/humanhealth/method/complete.pdf.

following types of issues, as these would be considerations in EPA's assessment of a PRA approach. EPA is available to provide more detailed comments once DEQ provides additional information on its proposal.

(1) The purpose and scope of the analysis should be clearly articulated. This should include derivation of human health criteria that are protective of higher fish consuming populations. The risk management decisions related to interpretation of output exposure or risk distributions should be specified (e.g., human health criteria shall be derived such that the 95th percentile of the risk distribution will equal 1 in 1,000,000).

(2) The methods used for the analysis (including all models and/or software used, all data upon which the assessment is based, and all assumptions that have a significant impact upon the results, for example correlation of variables) should be well documented, easily located, and reproducible. This documentation should include a discussion of the degree to which the data used are representative of the population under study, and possible sources of bias and uncertainty in both the input and output distributions. In particular, variability (the range of values a variable might assume) should be distinguished from uncertainty (lack of knowledge about a variable).

(3) DEQ also should calculate human health criteria using deterministic (e.g., point estimate) methods. Providing these values will allow comparisons between the probabilistic and deterministic approaches for developing human health criteria. When comparisons are made, it is important to explain the similarities and differences in the underlying data, assumptions, and models as well as the strengths and weaknesses of differing assumptions.

Exclusion of market fish

EPA is concerned with DEQ's proposed policy decision to exclude market fish from the FCR that it will use to derive revised human health criteria. As EPA stated in our June 2014 comment letter on this topic, a FCR that reflects the amount of fish Idahoans consume should not just include fish consumed from local waters. Therefore, EPA recommends that DEQ include market fish in the FCR used to derive human health criteria. This approach is consistent with a national water quality program principle that every state does its share to protect people who consume fish and shellfish that originate from multiple jurisdictions. In addition, the goal of water quality criteria for human health is to protect people from exposure to pollutants through fish and water over a lifetime, and the goal of a state's designated use should be that the waters are safe to fish in the context of the total consumption pattern of its residents.

Exclusion of anadromous fish

EPA is concerned with DEQ's proposed policy decision to exclude anadromous fish from the FCR, and recommends that DEQ include anadromous fish in the FCR used to derive HHC.

While EPA's 304(a) recommended criteria account for exposures to non-carcinogens and nonlinear carcinogens in anadromous fish using the RSC, EPA supports and recommends that states include anadromous fish in the FCR when there are available, scientifically sound regional and/or local data that suggest high consumption of anadromous fish. For example, because of the uncertainties in the sources of salmon contaminant body burdens (discussed in more detail below), the large amounts of salmon consumed by Native Americans, and the fact that market basket preferences of individuals may vary,[2] Oregon and Washington chose to include salmon in the FCR used to derive human health criteria. EPA approved Oregon's human health criteria in 2011. Similarly, EPA supported Washington's decision to derive human health criteria using a FCR that included anadromous fish consumption.[3] In light of this and the fact that Washington and Oregon are downstream from Idaho, implementation of human health water quality criteria throughout the Pacific Northwest would be facilitated by uniformly including salmon in the FCR for Idaho.

EPA also is concerned with DEQ's proposed policy decision to account for anadromous fish exposures using the RSC instead of the FCR because adjusting the RSC to reflect exposures to contaminants in anadromous fish is difficult to accomplish in a data driven way.

Because of uncertainty regarding where and how marine species acquire the bulk of their contaminant body burden, EPA also recommends that DEQ consider scientific studies in addition to the Hope 2012 study. For example, EPA believes that further characterization of salmon ocean habitat is warranted and some adult salmon may feed in, and acquire contaminants from, near coastal waters that are under the jurisdiction of the CWA. Also, the Hope paper's conclusions are limited by its focus on PCBs and not other toxics. Central to the modeling, is the assumption that contaminant uptake occurs largely through diet. While this is true for PCBs, depending on a chemical's lipophilicity, direct uptake from water may be a significant contributor to an organism's contaminant body burden (Qiao et al. 2001). In the case of adult salmon, direct uptake of chemicals from water is a possibility during their return migration through inland waters. The Hope paper also does not discuss different patterns of contaminant uptake associated with the complex life histories of other salmonids. In addition, the Hope paper

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[2]For example, a study on fish consumption habits of Asian Pacific Islanders demonstrated FCRs similar to Puget Sound Tribes but indicated that certain ethnic groups preferred to consume non-anadromous species.
Sechena R, Nakano C, Shiquan L, Polissar N, Lorenzana R, Truong S, Fenske R. 1999. Asian and Pacific Islander Seafood Consumption Study (EPA 910/R-99-003)
http://www.epa.gov/r10earth/pdf/asian_pacific_islander_seafood_consumption_1999.pdf

[3] Washington proposed draft HHC in January 2015 for public comment. The comment period closed on March 23, 2015, and Washington has not yet adopted final HHC and submitted them to EPA for CWA action. Therefore, EPA has not yet reviewed or acted upon Washington's HHC.

references EPA's policy of excluding salmon from the FCR used to assess site-specific health risks at Superfund sites in Puget Sound. However, it is important to note that EPA's Superfund policy generally applies to risk assessments for bioaccumulative pollutants in discrete geographic areas where cleanup is to occur, which does not raise the same scope of considerations or potential impacts as the development of state-wide water quality criteria. In summary, EPA recommends that DEQ consider that returning adult salmon may acquire contaminants directly from fresh water (Qiao et al. 2001).[4] DEQ may wish to consult with established experts (such as Weitkamp)[5] who have documented that certain adult salmon species from Idaho waters may reside in coastal waters of the U.S. (i.e., fall run chinook and coho salmon).

Risk Level

EPA supports DEQ's proposed policy decision to retain its 10^{-6} risk level to protect the populations in Idaho. However, EPA is concerned with DEQ's decision to protect high consuming populations, including tribes, at a 10^{-6} cancer risk level using the mean consumption rate of consumer only data. Instead, EPA recommends that DEQ consider the approach used by Oregon to protect high consuming populations at a 10^{-6} cancer risk level using the 95th percentile of consumer only data. This approach is more consistent with EPA's general recommendation that states and authorized tribes select a FCR that reflects consumption that is not suppressed when sufficient data are available.[6] Deriving criteria using an unsuppressed FCR furthers the restoration goals of the CWA, and ensures protection of human health as pollutant levels decrease, fish habitats are restored, and fish availability increases. Further, in cases where tribal treaty or other reserved fishing rights apply, selecting a FCR that reflects unsuppressed fish consumption may be necessary in order to satisfy such rights. Government-to-government consultation with affected tribes is important in deciding which fish consumption data should be used.

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[4]Qiao P, Gobas FAPC, Farrell AP. Relative Contributions of Aqueous and Dietary Uptake of Hydrophobic Chemicals to the Body Burden in Juvenile Rainbow Trout http://www.researchgate.net/profile/Frank_Gobas2/publication/12373146_Relative_contributions_of_aqueous_and_dietary_uptake_of_hydrophobic_chemicals_to_the_body_burden_in_juvenile_rainbow_trout/links/0fcfd5112a3b20b012000000.pdf

[5] http://www.nwfsc.noaa.gov/contact/display_staffprofile.cfm?staffid=189

[6] EPA. January 2013. *Human Health Ambient Water Quality Criteria and Fish Consumption Rates: Frequently Asked Questions*. http://water.epa.gov/scitech/swguidance/standards/criteria/health/methodology/upload/hhfaqs.pdf.

Relative Source Contribution (RSC)

EPA recommends that DEQ provide additional detailed information regarding its proposal to adjust the RSC based on changes in FCR, bioaccumulation, and water-plus-organism vs. organism only human health criteria. As previously noted, EPA is concerned because adjusting the RSC is difficult to accomplish in a data driven way. It is true that the relative dose fractions contributed by fish and water exposures relative to all other routes of exposure would be affected by consideration of the above factors. However, exposures not associated with fish and water ingestion are also chemical-specific and have not been presented in such a way as to support data driven modification of the RSC. To support this approach, DEQ would need to provide chemical-specific alternate route exposure to modify the RSC in a data driven way that is scientifically sound. DEQ also should consider the recommended adjusted RSCs that will be described in EPA's final updated 304(a) human health water quality criteria recommendations.

Bioaccumulation Factors (BAFs)

The EPA supports DEQ's proposed policy decision to use BAFs. This approach is consistent with the EPA's 2000 Human Health Methodology, which recommends use of BAFs when available, and reflects the latest scientific information on bioaccumulation. Unlike bioconcentration factors that only account for uptake from the water column, BAF's account for other exposure pathways. As DEQ is aware, the EPA is in the process of updating its national 304(a) recommended water quality criteria for the protection of human health and the proposed criteria updates include the use of BAFs specific to different trophic levels. During DEQ's presentation on April 21, 2015, DEQ recommended consideration of trophic level BAFs; more specifically, a trophic weighted BAF value based on information from DEQ's fish consumption survey. There are a number of issues DEQ may need to consider when weighting trophic level BAFs. For example, the data from a general population survey should be sufficiently robust to determine fish consumption by trophic level, and also representative of higher consumers, who may be consuming greater amounts of higher trophic level fish. For example, Columbia River Intertribal Fish Commission (CRITFC) survey respondents consume a much higher fraction of trophic level 4 fish than the general U.S. population (CRITFC 1994).[7] EPA is encouraged by DEQ's recommendation to derive criteria using BAFs and looks forward to reviewing additional details in order to evaluate DEQ's selected approach.

Body Weight and Drinking Water Intake Assumptions

EPA supports DEQ's proposed policy decision to apply a three step preference to estimate body weight assumptions consistent with EPA's guidance [i.e., 1) data from Idaho's fish consumption surveys, 2) data from the Idaho Department of Health and Welfare BRF State Survey, 3) EPA's 2011 Exposure Factors Handbook/NHANES]. If the approach to use local or regional data is not

[7]Columbia River Intertribal Fish Commission. 1994. A Fish Consumption Survey Of The Umatilla, Nez Perce, Yakama, and Warm Springs Tribes of the Columbia River Basin. Technical Report 94-3 https://www.deq.idaho.gov/media/895853-fish-consumption-survey-1994.pdf

sufficiently reliable, EPA encourages DEQ to consider the new information used to update EPA's national criteria recommendations including EPA's 2011 Exposure Factors Handbook. For example, EPA derived its 2014 draft 304(a) recommendations using an updated body weight assumption of 80 kg, the national mean based on a survey of the U.S. population and described in EPA's 2011 Exposure Factors Handbook.

EPA supports DEQ's proposed policy decision to use a drinking water intake assumption of 2.4 L/day. EPA derived its 2014 draft 304(a) recommendations using a drinking water intake rate of 3 L/day. This rate represented a consumer-only estimate of combined direct and indirect water ingestion for all sources of water at the 90th percentile for adults ages 21 and older. In response to public comments that focused on the most current national drinking water data, EPA intends to finalize the updated 304(a) criteria using a drinking water intake rate of 2.4 L/day, which represents the per capita estimate of combined direct and indirect community water ingestion at the 90th percentile for adults ages 21 and older.

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OFFICE OF
WATER AND WATERSHEDS

November 6, 2015

Don Essig
Idaho Department of Environmental Quality
1410 N. Hilton
Boise, Idaho 83706

RE: EPA Comments on Idaho's Revised Human Health Toxic Criteria, Proposed Rule, Docket No. 58-0102-1201

Dear Don:

The EPA appreciates the opportunity to provide comments to the Idaho Department of Environmental Quality (DEQ) on its proposed updated human health ambient water quality criteria, which were published for public comment on October 7, 2015. The enclosed comments reflect many of the issues the EPA identified in our previous comment letters to DEQ and, in some instances, provide additional clarification. The EPA continues to recognize the challenging work undertaken thus far in revising Idaho's human health criteria.

The EPA commends Idaho for using state of the art survey methodology to characterize current fish consumption rates for the general population and anglers in Idaho. Given the regulatory importance of these survey results, EPA strongly recommended that DEQ have the results peer reviewed by individuals with the necessary expertise, and address peer review concerns prior to fully incorporating this work into a regulatory context. EPA understands that DEQ has decided to conduct a peer review and is supportive of that effort.

The EPA also supports DEQ's decision to incorporate many of the EPA's latest scientific and policy recommendations consistent with the EPA's 2015 updates to its 304(a) national human health criteria recommendations. At the same time, the EPA remains concerned about some of DEQ's proposed decisions in deriving human health criteria. In particular, the EPA is concerned with DEQ's approach to calculating its fish consumption rate because DEQ has not adequately demonstrated how criteria derived using the proposed fish consumption rate would be scientifically defensible, would be protective of designated uses in Idaho (as informed by reserved rights of tribal consumers), and would ensure the attainment and maintenance of water quality standards in downstream waters in Oregon and Washington.

The EPA is available to further discuss our comments and we remain committed to providing assistance as DEQ develops the final rule. If you have any questions, please feel free to contact me or Lisa Macchio at (206) 553-1834.

Sincerely,

Angela Chung

Angela Chung, Manager
Water Quality Standards Unit

Enclosures

EPA Comments on Idaho Department of Environmental Quality's (DEQ)
October 7, 2015 Proposed Rule Revisions to Idaho's Human Health Criteria for Toxics
Docket No. 58-0102-1201
November 6, 2015

The Idaho Department of Environmental Quality (DEQ) provided proposed new and revised surface water quality standards (WQS) found at IDAPA 58-0102-1201 to the public for review and comment on October 7, 2015.[1] The EPA reviewed the state's proposed rule and associated documents and provides the following comments for DEQ's consideration. The comments are organized as follows:

A. Fish Consumption Rate (FCR)
    1. DEQ's Fish Consumption Survey Analysis and Results
    2. Exclusion of Market Fish (Other than Rainbow Trout)
    3. Exclusion of Anadromous Fish
    4. Tribal Reserved Fishing Rights
B. Other Input Variables
    1. Cancer Risk Level
    2. Relative Source Contribution (RSC)
    3. Bioaccumulation Factor (BAF)
    4. Body Weight and Drinking Water Intake
    5. Toxicity Factors: Reference Doses (RfDs) and Cancer Slope Factors (CSFs)
C. Pollutant Scope
D. Use of Probabilistic Risk Assessment
E. Downstream Waters Protection
F. Specific Comments on DEQ's Proposed Rule Language

Please note that the EPA's positions described in the comments below, regarding the state's proposed WQS, are preliminary in nature and do not constitute an approval or disapproval by the EPA under the Clean Water Act (CWA) Section 303(c). Approval and/or disapproval decisions will be made by the EPA following adoption of the new and revised standards by the state of Idaho and submittal of revisions to the EPA. In addition, the EPA's comments do not constitute, and are not intended to be, an Administrator determination under CWA Section 303(c)(4)(B).

A. Fish Consumption Rate (FCR)

As the EPA has long acknowledged, it remains our practice to encourage states and authorized tribes to make appropriate adjustments to reflect local conditions affecting fish consumption.[2] Thus far, Idaho has not yet presented the EPA with a rationale that is adequate to establish that Idaho's proposed FCR is appropriate and will lead to criteria sufficient to protect Idaho's CWA Section 101(a)(2) uses (e.g., Primary and Secondary Contact Recreation, IDAPA 58.01.02.100.02(a)&(b)), as required under 40 CFR 131.11. While reserving final judgment on

[1] DEQ, *Water Quality Docket No. 58-0102-1201 - Proposed Rule,* http://www.deq.idaho.gov/58-0102-1201.
[2] USEPA. 2000. Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA-822-B-00-004. http://www.epa.gov/waterscience/criteria/humanhealth/method/complete.pdf.

this issue until we receive Idaho's final submission and supporting rationale, we emphasize that Idaho's approach currently appears to be inconsistent with the CWA and its implementing regulations. We outline our concerns in more detail below, and recommend that Idaho modify its approach consistent with the comments below.

1. DEQ's Fish Consumption Survey Analysis and Results

The EPA contracted with Westat, a well-known statistical consulting firm, to review DEQ's fish consumption survey results as reported in the Fish Consumption Survey report prepared by Northwest Research Group.[3] Westat identified a number of issues that DEQ should review (see attached memoranda from Westat), and EPA is available to discuss this information further. For example, Westat determined that the frequency of fish consumption declined over the seven day recall period. DEQ did not account for this trend, which could result in an underestimation of fish consumption. As previously noted, it is important for DEQ's fish consumption survey results to be peer reviewed by individuals with the necessary expertise. The Westat review provides information that DEQ should consider along with the results of its peer review. In particular, it is important that the National Cancer Institute (NCI) analysis, which involves many assumptions and employs statistical methodology not generally accessible to the lay person, be adequately reviewed. In addition, it is important that DEQ's final peer review findings be readily available and distributed to support the credibility of DEQ's survey results.

2. Market Fish (Other than Rainbow Trout)

CWA Section 303(c)(2)(A) requires that WQS protect "public health or welfare, enhance the quality of water and serve the purposes of [the Act]." CWA Section 101(a)(2) establishes as a national goal "water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water [wherever attainable]." The EPA has previously interpreted the "fishable" language in Section 101(a)(2) to refer not only to protecting water quality so the fish and shellfish thrive, but also so that when caught they can be safely eaten by humans. Thus, in order to be consistent with Section 101(a)(2), the applicable criteria for such "fishable" designated uses must not only protect the aquatic organisms themselves but also protect human health through consumption of fish and shellfish.[4]

The EPA's recommended 304(a) water quality criteria to protect human health (and the EPA's accompanying risk assessment methodologies) reflect this longstanding conclusion about the CWA: consumers of fish and shellfish are to be assured that if criteria are met in a waterbody designated with the uses specified in Section 101(a) of the CWA, then that means they can safely eat fish and shellfish drawn from that waterbody.[5] Thus, the EPA has consistently implemented the CWA to ensure that the total rate of consumption of fish and shellfish from inland, estuarine, and near-coastal waters reflects the consumption rates that are characteristic of the population of concern. In other words, the EPA expects that the standards will be set such that residents can safely consume from local waters the amount of fish they would normally consume from all

[3] Northwest Research Group, Idaho Fish Consumption Survey. August 25, 2015.

[4] EPA's interpretation of the CWA is consistent with years of past practice. As evidence, see memorandum from Geoffrey H. Grubbs and Robert H. Wayland (October 2000) posted at http://water.epa.gov/scitech/swguidance/standards/upload/2000_10_31_standards_shellfish.pdf

[5] See discussion in *Revisions to the Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health*, 65 Fed. Reg. 66465 (2000).

inland and near shore waters. The EPA recognizes that consumers of fish and shellfish might not be limiting their consumption of fish and shellfish to those that were sourced from their own state's fishable waters. However, the relevant objective is to assure that they can do so without concern for their health.

Idaho's approach is to exclude from the FCR the fraction of the consumption of freshwater and estuarine fish and shellfish that is currently associated with fish originating from waters outside of Idaho.[6] Idaho justifies its approach on the grounds that Idaho lacks regulatory authority over fish caught outside of its borders. Based on the information and rationale EPA has received from Idaho to date, we note the following reasons why Idaho's justification for this approach is not scientifically sound:

- The purpose of including consumption from waters outside of Idaho's borders in the FCR is not to support any purported regulation of such waters by Idaho. Rather, the purpose of including this fish consumption in the FCR is so that a determination that a particular Idaho water body is "fishable" will result in adequate health protection for Idahoans should they consume, from local waters, the amount of fish they would normally consume from all inland and near shore waters.
- The approach of excluding "market fish" appears to assume that there is no exposure to pollutants from fish that were sourced outside of Idaho. This is because the full allowance for acceptable pollutant levels is given exclusively to local state waters. Consider if every state took this approach. For a non-carcinogenic pollutant with a specified Reference Dose, the criteria development equation would allocate this full dose to fish originating from the individual state. If a person then consumes overall 25 grams/day (g/day) of fish, comprised of 5 g/day each from 5 different states (and each state set a state-specific consumption rate of 5 g/day), then the consumer could potentially receive five times the acceptable pollutant dose.

3. Anadromous Fish

The EPA recognizes that Idaho has included steelhead, an anadromous species, in the calculation of its FCR. However, the EPA continues to have concerns with DEQ's proposed policy decision to exclude all other anadromous fish from the FCR, and recommends that DEQ either include all other anadromous fish in the FCR or provide additional demonstration of how criteria derived using a lower FCR that excludes anadromous fish will protect downstream shared waters in the Columbia River basin and protect the tribal populations exercising their treaty-reserved rights (see comments below regarding consideration of tribal reserved fishing rights).[7]

While the EPA's 304(a) recommended criteria account for exposures to non-carcinogens and nonlinear carcinogens in anadromous fish using the relative source contribution (RSC), the EPA supports and recommends that states include anadromous fish in the FCR when there is credible and compelling evidence of significant consumption of anadromous fish. For example, Oregon and Washington chose to include salmon in the FCR used to derive human health criteria due to,

[6] Idaho makes one exception to this rule, with rainbow trout, on the grounds that the majority of the rainbow trout in the market comes from Idaho aquaculture facilities.

[7] EPA reference to anadromous fish in this letter refers to all other anadromous fish except steelhead.

amongst other reasons, the large amounts of salmon consumed by tribes, the variation in individual market basket preferences (i.e., the types of fish that people purchase and consume), and uncertainties in the sources of salmon contaminant body burdens from inland and near shore waters (e.g., salmon residing in Puget Sound). The EPA approved Oregon's human health criteria in 2011. Similarly, the EPA supports Washington's decision to develop human health criteria using a FCR that includes anadromous fish consumption.

The EPA also has reviewed recent work related to salmon contaminant acquisition from near coastal waters of the Pacific Northwest and recommends that DEQ also consider this available information. For example, the research conducted by Sandra O'Neill, James West, David Herman, and Gina Yitalo provides evidence that certain Pacific Northwest salmon species, most notably chinook and coho, acquire organic pollutants from near coastal marine waters. [8] O'Neill et al. assayed salmon and herring for several classes of persistent organic pollutants (POPs). The POPs of interest included polybrominated diphenyl ethers (PBDEs), polychlorinated biphenyls (PCBs), hexachlorobenzene (HCB), and the insecticide DDT. An analysis of these POPs in herring populations identified unique regionally-specific patterns of these chemicals or "fingerprints," thus showing herring are acquiring contaminants from waters under CWA jurisdiction. Chinook salmon harvested from specific locations were found to have the same contaminant "fingerprints" as those exhibited by co-located herring samples, suggesting that they are feeding on herring in near coastal waters. This work provides evidence that certain chinook salmon species are acquiring contaminants from near coastal waters of Washington and Oregon, as well as California and British Columbia. Similar but more limited data by O'Neill et al. indicate that coho salmon, which reside in coastal waters and have feeding preferences similar to chinook salmon, are also acquiring contaminants from waters under CWA jurisdiction.

In addition, EPA has communicated with Laurie Weitkamp and Peter Lawson from NOAA,[9] who have stated that chinook (and likely coho) salmon from Idaho reside in near coastal waters off the Oregon coast. Myers at al. 1998, analyzing coated wire tag recovery, has concluded that Snake River Chinook salmon have a coastal residence pattern.[10] O'Neill et al.'s work shows that resident chinook salmon from these waters have regional contaminant fingerprints specific to this area. Given the contaminant fingerprint correlation between herring and coastal resident salmon at all locations where both species were analyzed, it is very likely that coastal salmon originating in Idaho waters are acquiring contaminants from coastal waters under CWA jurisdiction.

EPA recognizes that salmon acquire most of their body weight and, therefore, most of their body burden of highly bioaccumulative contaminants during open-ocean feeding. However, it is

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[8] Ms. O'Neill and Mr. West are both with the Washington Department of Fish and Wildlife.

[9] L. Weitkamp,personal communication 5/19/2015. P. Lawson personal communication via phone, May, 2015.Dr. Laurie Weitkamp has extensively examined recovery of coated wire tags (CWTs) from adult salmon harvested in marine waters. CWTs, inserted into juvenile salmon in hatcheries, allow researchers to determine the relationship between spawning locations and ocean ranges of various salmon species. Dr. Peter Lawson has done genetic testing of adult salmon in marine waters. By matching unique DNA patterns of juvenile and adult salmonids, researchers can determine where adult salmon came from.

[10] Myers K.W., K.Y. Aydin, R.V. Walker, S. Fowler, M.L. Dahlberg. 1996. Known Ocean Ranges of Stocks of Pacific Salmon and Steelhead, as Shown by Tagging Experiments, 1956-1995. Submitted to the North Pacific Anadromous Fish Commission. Fisheries Research Institute. University of Washington School of Fisheries.

possible that salmon may acquire less bioaccumulative contaminants directly from water during their return spawning migration as adults.[11] EPA consulted with Frank Gobas, a well-known expert in bioaccumulation and bioconcentration in aquatic food webs, to evaluate this issue and prepare an analysis. [12] The analysis first involved the development of contaminant concentrations in salmon tissue that were associated with either a cancer risk of 1 in 1,000,000 or a non-cancer hazard quotient of 1. These risk-based concentrations assumed a fish consumption rate of 175 grams per day by an 80 kilogram person. Next, bioconcentration modeling was performed to determine the water concentration that results in a salmon tissue concentration associated with the aforementioned risk-levels. [13] The model includes quantitative structure activity relationship biotransformation of chemicals and the impacts of changing lipid content associated with migration energy expenditure. [14,15] The model also accounts for the time dependent nature of chemical uptake. This modeling utilized a range of migration times for spawning Idaho chinook and sockeye salmon associated with several harvest locations within Idaho. The longer the migration time, the greater the opportunity for contaminants to bioconcentrate. Finally, ratios of Idaho's proposed water quality criteria to modeled water concentrations were computed. The results showed, for example, toxicity ratios of 10 or greater for 13 chemicals with non-carcinogenic toxicity. In other words, for 13 non-carcinogenic chemicals, Idaho's proposed criteria could result in hazard quotients of 10 or more for populations consuming Idaho returning salmon at a rate of 175 grams per day or more. This far exceeds EPA's recommendation of limiting risks to non-carcinogens to a hazard quotient of 1 or less. Therefore, DEQ should consider these results. EPA has enclosed the analysis for your review and consideration (see attached spreadsheets).

Idaho cites work by Hope 2012, suggesting that salmon do not acquire contaminants from waters under CWA jurisdiction, to justify excluding anadromous species from the FCR used to develop DEQ's proposed criteria. [16] The Hope study's conclusions are limited by its focus on PCBs and not on other toxics, and the study does not consider salmon acquisition of contaminants from near coastal waters as demonstrated by O'Neill et al. Central to the modeling is the assumption that contaminant uptake occurs largely through diet. While this is true for PCBs, depending on a chemical's lipophilicity, direct uptake from water may be a significant contributor to an organism's contaminant body burden.[17] The Gobas work on contaminant bioconcentration in migrating adult Idaho salmon, described above, provides evidence that adult Idaho salmon may acquire contaminants directly from the water column through their gills, in addition to dietary

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[11] Less bioaccumulative contaminants refer to contaminants with log octanol-water partition coefficients (log Kow) between two and four.

[12] Dr. Gobas is with Simon Fraser University in Vancouver BC.

[13] Lo et a. 2015, Environ Toxicol Chem. 2015 Oct;34(10):2282-94

[14] US EPA EPI SUITE v. 4.11

[15] Debruyn et al. 2004, Environ Sci Technol. 2004 Dec 1;38(23):6217-24

[16] Hope, B.K. 2012. "Acquisition of Polychlorinated Biphenyls (PCBs) by Pacific Chinook Salmon: An Exploration of Various Exposure Scenarios." Integrated Environmental Assessment and Management 8:553–562. Cited by DEQ in: Considerations in Deciding Which Fish to Include in Idaho's Fish Consumption Rate Policy Summary, State of Idaho Department of Environmental Quality.

[17] Qiao, P., A.P.C. Gobas, and A.P. Farell. 2000. "Relative Contributions of Aqueous and Dietary Uptake of Hydrophobic Chemicals to the Body Burden in Juvenile Rainbow Trout." Archives of Environmental Contamination and Toxicology 39:369–377.

uptake. Finally, the Hope study also does not discuss different patterns of contaminant uptake associated with the complex life histories of other salmonids, such as steelhead.

In conclusion, DEQ should consider the above-referenced scientific information when making its final decision on whether to include anadromous salmonids, other than steelhead, in calculating the FCR. The EPA remains concerned that Idaho's decision to exclude most anadromous salmonids results in human health criteria that are not adequate to protect Idaho's primary and secondary contact recreation uses.[18]

4. Tribal Reserved Fishing Rights

Per EPA's regulations at § 131.11(a), water quality criteria must contain sufficient parameters or constituents to protect the designated use, and for waters with multiple use designations, the criteria must support the most sensitive use. In determining whether WQS comply with the CWA and EPA's regulations, when setting criteria to support the most sensitive fishing designated use in Idaho, it is necessary to consider other applicable laws, including federal treaties. In Idaho, certain tribes hold reserved rights to take fish for subsistence purposes, including treaty-reserved rights to fish at all usual and accustomed fishing grounds and stations and in unoccupied lands of the United States, which in combination appear to cover the majority of waters under state jurisdiction.

Many areas where reserved rights are exercised cannot be directly protected or regulated by the tribal governments and, therefore, the responsibility falls to the state and federal governments to ensure their protection.[19] In order to effectuate and harmonize these reserved rights with the CWA, such rights appropriately must be considered when determining which criteria are necessary to adequately protect Idaho's waters used for consumption of fish (designated as Primary or Secondary Contact Recreation, IDAPA 58.01.02.100.02(a)&(b)).

Protecting Idaho's fishing designated uses necessitates protecting the population exercising those uses. Where a population exercising such uses has a legally protected right to do so under federal law such as a treaty, the criteria protecting such uses must be consistent with such right. Thus, in order to protect the applicable fishing designated uses in areas where such rights apply, as informed by the treaty-reserved right to continue legally protected culturally important subsistence fishing practices, the state must consider the tribal population exercising their reserved fishing rights in Idaho as the target general population for the purposes of deriving criteria that will protect the subsistence fishing use and allow the tribes to harvest and consume fish consistent with their reserved rights.

The data used to determine the FCR are critical to deriving criteria that will protect the subsistence fishing use. The data used to determine a FCR must reasonably represent tribal subsistence consumers' practices that reflect consumption unsuppressed by fish availability or

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[18] As DEQ has acknowledged, "if anadromous species data are omitted from the data set, it is possible that the resulting criteria may not be adequately protective of Idahoans who eat salmon, steelhead, or other anadromous fish." *Idaho Fish Consumption Rate and Human Health Water Quality Criteria; Discussion Paper #5: Anadromous Fish*, pg. 4, available at http://www.deq.idaho.gov/media/1117748/58-0102-1201-discussion-paper5.pdf.

[19] Note that for formal and informal reservation lands, eligible tribes can obtain treatment in a similar manner as a state (TAS) status and set their own WQS under the CWA, including human health criteria.

concerns about the safety of available fish. Deriving criteria using an unsuppressed FCR furthers the restoration goals of the CWA, and ensures protection of human health as pollutant levels decrease, fish habitats are restored, and fish availability increases. If sufficient data regarding unsuppressed fish consumption levels are unavailable, consultation with tribes is important in deciding which fish consumption data should be used.

With these principles in mind, the EPA has concerns with whether DEQ's decision to calculate the FCR based only on current consumption of Idaho fish, and to use a mean FCR for high consuming populations, will adequately protect the treaty-reserved subsistence fishing use. First, in calculating the FCR, DEQ has not considered suppression, specifically suppressed consumption amongst tribal populations in Idaho with reserved rights to fish for their subsistence. Current average FCRs for the Nez Perce and Shoshone Bannock tribes are below heritage rates documented for both of these tribes, as well as heritage rates for the Kootenai and Coeur d'Alene tribes, suggesting that current tribal consumption rates could be suppressed.[20] Second, given that tribal consumption rates are likely suppressed, DEQ has not provided adequate justification for how a rate based on the mean FCR for the tribal target general population will adequately protect tribal fish consumers exercising their treaty-reserved rights, including those whose consumption is not suppressed. Finally, as discussed in greater detail above, the omission of anadromous species from the FCR may result in criteria that are not adequately protective of Idaho's designated uses as informed by the reserved fishing rights of tribal consumers.[21] Based on local conditions in Idaho, it is particularly appropriate to include anadromous species in the FCR, because it is well documented that a large proportion of fish consumption for the tribal target population to be protected consists of anadromous species, such as salmon.[22]

Accordingly, EPA recommends that DEQ select a FCR that reflects the tribal subsistence consumers' unsuppressed fish consumption, including consumption of anadromous fish. If such data are unavailable at this time, the EPA recommends using an upper percentile of consumer-only data to account for uncertainty in the unsuppressed consumption rates of tribal consumers within the state and to help ensure that the resulting criteria protect the tribal target general

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[20] Polissar, N.L, Al Salisbury, C. Ridolfi, K. Callahan, M. Neradilek, D.S. Hippe, *A Fish Consumption Survey of the Nez Perce Tribe Volumes I-III.* Seattle, WA: The Mountain-Whisper-Light Statistics (2015); Polissar, N.L, Al Salisbury, C. Ridolfi, K. Callahan, M. Neradilek, D.S. Hippe, *A Fish Consumption Survey of the Shoshone-Bannock Tribes Volumes I-III.* Seattle, WA: The Mountain-Whisper-Light Statistics (2015); Ridolfi Inc., *Heritage Fish Consumption Rates of the Kootenai Tribe* (November 17, 2014); Ridolfi Inc., *Heritage Fish Consumption Rates of the Coeur d'Alene Tribe* (July 19, 2015).

[21] As DEQ has acknowledged, "if anadromous species data are omitted from the data set, it is possible that the resulting criteria may not be adequately protective of Idahoans who eat salmon, steelhead, or other anadromous fish" and "the complexity of Pacific Northwest fish consumption and its high inclusion of these fish species in the diets of all means that ignoring anadromous fish would be less protective of those within Idaho who enjoy consuming these types of fish." *Idaho Fish Consumption Rate and Human Health Water Quality Criteria; Discussion Paper #5: Anadromous Fish*, pg. 4 & 5, available at http://www.deq.idaho.gov/media/1117748/58-0102-1201-discussion-paper5.pdf.

[22] "Including marine fish in the fish consumption rate may be particularly appropriate if a large proportion of fish consumption for the population to be protected consists of marine fish (such as salmon) and this exposure is clearly documented." USEPA, *Human Health Ambient Water Quality Criteria and Fish Consumption Rates: Frequently Asked Questions*, pg 5, *available at* http://water.epa.gov/scitech/swguidance/standards/criteria/health/methodology/upload/hhfaqs.pdf.

population exercising their treaty-reserved rights. Additionally, government-to-government communications with affected tribes could inform, among other things, which fish consumption data should be used by DEQ.

B. Idaho's Other Proposed Human Health Criteria Inputs

1. Cancer Risk Level

The EPA supports DEQ's proposed policy decision to retain its 10^{-6} cancer risk level to derive human health criteria.

2. Relative Source Contribution (RSC)

In June 2015, the EPA published final updated ambient water quality criteria recommendations for the protection of human health for 94 chemical pollutants.[23] These updated recommendations reflect the latest scientific information and EPA policies, including updated body weight, drinking water consumption rate, FCR, bioaccumulation factors, health toxicity values, and relative source contributions (RSCs). The EPA supports DEQ's proposed approach to use RSC values specified in EPA's 2015 final 304(a) human health criteria recommendations.

3. Bioaccumulation Factors (BAFs)

As stated in DEQ's Technical Support Document (TSD) for the human health criteria, DEQ created an Idaho-specific BAF weighting equation using Idaho fish consumption survey data and stated that the approach they used was similar to the framework that EPA used to derive the BAF weighting in the EPA's 2015 final human health criteria recommendations.[24] According to the TSD, DEQ used food frequency data collected for the Idaho general population and dietary recall data for the tribal population. From these data, DEQ developed a trophic level weighted BAF using the following equation: $(FCR_{TL2} \times BAF_{TL2} + FCR_{TL3} \times BAF_{TL3} + FCR_{TL4} \times BAF_{TL4}) / (FCR_{TL2} + FCR_{TL3} + FCR_{TL4})$. This approach is appropriate and addresses the EPA's previous concern that Idaho tribal populations consume larger amounts of high trophic level fish relative to the U.S. general population. However, the EPA recommends that DEQ provide more information on the derivation of the trophic level specific FCRs used to compute weighted BAFs.

4. Body Weight and Drinking Water Intake

As discussed in the TSD, body weight estimates used in the calculation of Idaho's proposed human health criteria are based on use of a body weight distribution DEQ developed from the general population data from DEQ's fish consumption survey. Using this data, a logarithmic distribution was developed for body weight for calculation of Probabilistic Risk Assessment (PRA)-based proposed human health criteria.[25] EPA is supportive of DEQ's approach to using

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[23] Final Updated Ambient Water Quality Criteria for the Protection of Human Health, (80 FR 36986, June 29, 2015). See also: USEPA, 2015. Final 2015 Updated National Recommended Human Health Criteria. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. http://water.epa.gov/scitech/swguidance/standards/criteria/current/hhfinal.cfm.

[24] Idaho Department of Environmental Quality. *Idaho Human Health Criteria, Technical Support Document.* October 2015.

[25] Ibid

the Idaho local data for estimating body weight and concurs that the body weight distribution was appropriately derived.

As discussed in the TSD, DEQ developed drinking water intake estimates for the PRA-based calculation of the proposed human health criteria based on the National Health and Nutrition Examination Survey (NHANES) 2003-2006 data as presented in the EPA's Exposure Factors Handbook. A distribution was fit to the body-weight normalized drinking water intake values to ensure an appropriate correlation with body weight. This distribution was then used in the PRA approach and applied to both Idaho general and tribal populations.[26] The EPA selected the 90th percentile of this distribution (2.4 liters/day) to derive the EPA's 2015 final 304(a) human health criteria recommendations. Although DEQ's approach to estimating drinking water intake differs from the EPA's, DEQ's drinking water rate distribution has been appropriately derived.

In addition, the correlation between drinking water ingestion rate and body weight was adequately addressed in DEQ's PRA analysis. However, DEQ should re-evaluate the correlation between body weight and fish consumption rate using regression on log transformed fish consumption and body weight distributions (See enclosed Westat memoranda).

5. Toxicity Factors (Reference Doses (RfDs) and Cancer Slope Factors (CSFs))

The EPA supports DEQ's proposal to use RfDs and CSFs consistent with the EPA's 2015 final 304(a) human health criteria recommendations or, in some cases, toxicity factors based on the latest science.

C. Idaho's Proposed Pollutant Scope

The EPA is supportive of DEQ taking this opportunity to revise most of its currently applicable human health criteria and to include additional human health criteria for pollutants with EPA 304(a) criteria recommendations that Idaho had not previously adopted. DEQ is proposing to update or add criteria for 104 chemicals. As previously noted, the EPA published updated final 304(a) recommended human health criteria for 94 pollutants in June 2015.

D. Idaho's Use of Probabilistic Risk Assessment (PRA) to Derive Human Health Criteria

The EPA continues to question the fish consumption distribution that DEQ used in its PRA analysis (see the EPA's comments above regarding inclusion of market and anadromous fish in developing a FCR). Use of a FCR distribution that does not include consumption of market and anadromous fish will result in PRA-based criteria that will produce fish- and water-based contaminant exposures that exceed acceptable levels.

Additionally, DEQ's PRA for high fish consuming populations are derived using the assumption that, at the selected criteria, the mean of the hazard quotient distribution will equal one, and the mean of the risk distribution will equal 1 x 10^{-6}. EPA remains concerned with this approach. This approach will allow for a large fraction of high fish consumers, including tribes with reserved fishing rights (see above discussion on tribal reserved fishing rights), to have exposures

[26] Ibid

that either exceed an acceptable dose (i.e., the reference dose) for noncarcinogens or exceed a dose associated with a risk of 1 x 10^{-6} for carcinogens.

Another concern is development of an appropriate tribal fish consumption distribution for PRA. The National Cancer Institute (NCI) method cannot be used to characterize consumption of a particular grouping of fish (e.g., fish caught in Idaho waters) if the data necessary for the method are not available. Idaho has used tribal Food Frequency Questionnaire (FFQ) and NCI data in an attempt to develop "NCI-like" estimates of average tribal consumption of fish caught in Idaho waters. As previously noted, DEQ should include market fish, including anadromous species, in the FCR used to set Idaho's AWQC. The EPA also has methodological concerns about using FFQ and NCI data to derive "NCI-like" FCR statistics based on Westat's review of the PRA approach (see attached Westat memoranda). Thus, the EPA recommends that the NCI group 2 (i.e., anadromous, near coastal and inland fish and shellfish) FCR data for the Nez Perce Tribe be used to develop statistics representing current fish consumption.

E. Idaho's Proposed Approach to Downstream Protection

The EPA is encouraged by DEQ's inclusion of a downstream protection narrative criterion in the proposed rule, following the language in EPA's "*Templates for Narrative Downstream Protection Criteria in State Water Quality Standards*" (EPA publication No. 820-F-14-002). However, the EPA's *Protection of Downstream Waters in Water Quality Standards: Frequently Asked Questions* suggests that states consider a more tailored and specific narrative criterion and/or a numeric criterion in certain situations, such as when more stringent numeric criteria are in place downstream and/or environmental justice issues are relevant.[27] As mentioned above, most of Idaho's waters are in the Columbia River basin and are, therefore, upstream of Washington's and Oregon's portion of the Columbia River. The EPA strongly encourages DEQ to adopt numeric human health criteria (either in addition to or instead of a narrative criterion) that ensure the attainment and maintenance of downstream human health water quality criteria, or to provide additional rationale detailing how use of a narrative downstream protection criterion in combination with Idaho's numeric human health criteria will ensure the attainment and maintenance of downstream human health criteria, consistent with the EPA's regulations at 40 CFR 131.10(b).

F. Other Specific Comments on Idaho's Preliminary Rule Language

Section 010. Definitions.

46. Harmonic Mean. EPA supports DEQ's proposed revisions to this definition. However, EPA continues to suggest DEQ consider including the following equation in the definition for harmonic mean, as it provides additional clarity:

$$Q(harmonic) = n/\sum_{i=1}^{n}\frac{1}{Qi}$$

[27] EPA. June 2014. *Protection of Downstream Waters in Water Quality Standards: Frequently Asked Questions.* http://water.epa.gov/scitech/swguidance/standards/library/upload/downstream-faqs.pdf

Section 210. Numeric Criteria for Toxic Substances for Waters Designated for Aquatic Life, Recreation, or Domestic Water Supply Use.

210.01.a. Criteria for Toxic Substances. EPA supports DEQ's proposed revisions to the application of the human health criteria for toxics for the protection of consumption of water and organisms such that these criteria apply only to primary and secondary contact recreation uses and no longer apply to aquatic life uses. Given that the provision in Idaho's water quality standards at Section 100.02 a. and b. states in part that secondary contact recreation may include activities such as fishing, the application of the water and organisms human health toxic criteria to only recreation uses and not aquatic life is appropriate.

With respect to DEQ's proposed revision to the headings in the toxics criteria table, specifically for the human health criteria, EPA recommends DEQ retain the word "organisms" and not replace it with the word "fish." "Organisms" more closely represents the concept that consumption is meant to encompass more than just fish but rather fish, shellfish, and other aquatic life.

210.03. Applicability. DEQ has proposed clarifying language regarding mixing zones as well as revising the low flow design conditions applicable to human health criteria. Consistent with the 2000 Human Health Methodology, DEQ has proposed to revise its regulations to require the harmonic mean flow be used to implement both carcinogen and noncarcinogen human health criteria.[28] EPA supports this proposed revision.

210.03.d.ii. This provision provides a frequency and duration for human health criteria that are not to be exceeded based on an annual harmonic mean. EPA understands DEQ is attempting to clarify the frequency and duration for the state's human health criteria and is supportive of that effort. EPA's 304(a) recommendations for human health criteria are based on long-term average exposure over a lifetime (70 years). Idaho's proposed duration of one year is protective because it represents long-term or chronic exposure but within a reasonable timescale for the purposes of regularly assessing attainment of the criteria. However, the harmonic mean is an inappropriate measure of central tendency in this context, because it is likely to under-represent the presence of pollutants in ambient water. Harmonic means are an appropriate measure of central tendency when evaluating rates with varying denominators, such as flows or speeds. However, for measures of varying mass per volume, such as concentrations of contaminants in ambient water, the arithmetic (for skewed datasets) or the geometric mean is the more appropriate measure of central tendency. EPA recommends that DEQ delete reference to the harmonic mean and, instead, insert arithmetic mean.

210.05.a.iii. The proposed revisions update the reference from EPA's ACQUIRE database to ECOTOX database. EPA supports this revision.

210.05.b.ii. The EPA is concerned that this provision lacks specificity with regard to a fish consumption rate and the target population to be protected that will be used to derive numeric human health criteria in the future, when numeric criteria are not identified in the toxics table. It

[28] FR Vol 65 No. 214. Pg. 66450. Revisions to the Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000).

would seem reasonable to specify an appropriate fish consumption rate as well as the target population and percentile of the target population that would be used to estimate a fish consumption rate consistent with how Idaho's numeric criteria in the table at Section 210 were derived. For example, the language in b.ii. refers to using a fish consumption rate that is representative of the population to be protected. The EPA suggests DEQ include specific language identifying the population to be protected consistent with EPA's previous comments.

284.04.b and c. DEQ combined the wording in 04.b. and c. and deleted any redundant language. These revisions are not substantive as they do not change where the criteria apply. The EPA supports the proposed revisions regarding the application of the site-specific criteria for the South Fork Coeur d'Alene River subbasin.

400.06 Intake Credits for Water Quality Based Effluent Limitations. This provision refers to the Idaho Pollutant Discharge Elimination System Program (IPDES) rules and is not a water quality standard. However, in EPA's October 2, 2015 letter from Michael Lidgard to Paula Wilson, EPA provided comments on IDAPA 58.01.25 regarding the proposed intake credit rule language as proposed in the IPDES rules. The EPA is continuing to coordinate with DEQ's IPDES program and has recommended that, if DEQ intends to adopt an intake credit provision into the IPDES rules, it be consistent with the Great Lakes Initiative (GLI). Another option is for DEQ to consider Oregon's intake credit provision rule language, as that language is most similar to the GLI and was approved by EPA.

Westat | An Employee-Owned Research Corporation

Memo

Date: October 19, 2015

To: Greg Frey, SRA

From: John Rogers, Rebecca Birch, and David Marker

Subject: Review of Idaho Fish Survey

Westat was requested by SRA and EPA to review three documents and a translation procedure, all related to the findings from the Idaho Fish Survey. Our comments are as follows.

1. Overall comments:

In our comments, "fish" refers to fish and shellfish.

It is not very unclear how many days of dietary recall data were collected. First, the daily dietary recall questions were only answered if question FFQ3 [did you eat fish in the last 7 days] is Yes. So someone who ate fish only on day 8 would be excluded from the dietary recall questions. It appears that 8 days of daily recall were reported for those who ate fish yesterday but only 7 days for those who did not eat fish yesterday. If FCR24_1 [did you eat fish yesterday] is Yes, the questionnaire collects data about yesterday's fish consumption. Then the instructions for questions FCR7D_1_A through FCR7D_3_B distinguish between "excluding yesterday how many meals did you eat ... that included fish or seafood in the past 7 days" [looks like 8 days total] if fish was eaten yesterday versus "... in the past 7 days how many meals did you eat ..." and "Not including today, what was the most recent day of the week when you consumed ..." if fish was not eaten yesterday [looks like 7 days total].

Given that the dietary recall data were collected only if the respondent said they ate fish in the past seven days, we think the fish consumption in the seven days prior to the call should be used when aggregating dietary recall data across multiple days, not 8 days.

The definition of consumption events is unclear. If two different types of fish are consumed at a meal, the FFQ seems to count this as one consumption event. Is this one or two consumption events in the dietary recall? Is every snack a consumption event regardless of size or how many types of fish were consumed?

Frequency of fish consumption was assessed using the FFQ and the multiple days of dietary recall data. The report says "the total number of consumption events estimated using the dietary recall questions is significantly lower than the total number of consumption events estimated using the food frequency questions" (page 81) but provides no data for comparison to quantify what

"significantly lower" means. At the same time the report notes that the reported frequency of fish consumption drops as the days between the consumption event and the survey contact increases (page 75). Might this indication of recall bias explain some of the difference?

The report notes that there are differences between the portion size estimates from the FFQ and the average portion size estimates from the dietary recall. Interpretation of that difference is complicated by: 1) the skewed distribution of the amounts from the daily recalls; 2) how the respondent estimates long-term portion size; and 3) differences in what a portion means between the FFQ and dietary recall. If the respondent provides an estimate of the median portion size (as opposed to the mean), the difference between the log-transformed portion sizes may be less significant, and more normally distributed.

It is not clear how a "complete" survey was defined. Also the survey report gives weighted sample sizes (is this weighted population estimate scaled down to the sample size?). We would like to see unweighted sample sizes. Table 1 (page 10) in the IMS analysis report provides unweighted sample sizes. However, it is still unclear concerning the number of subjects that were consumers versus non-consumers.

In theory, usual fish intake can be estimated from 24-hour recalls or multiple-day recalls (in this case 7 or 8 day recalls). However, if the best estimate of usual fish intake is based on 24-hour recalls, then the decrease in the reported frequency of fish consumption with increasing length of the recall period (days between the consumption event and the survey contact) indicates that the estimate based on multiple-day recalls will be biased low. Correcting this bias requires making some assumptions (such as logit(probability of fish consumption) and log(amount consumed per day) changes linearly with the length of the recall period). With a reasonable assumption, this bias can be corrected by

1) fitting a more complicated version of the NCI model that includes an adjustment;
2) scaling the estimated usual fish consumption from the NCI model up to adjust for the bias (applying a multiplicative factor, perhaps (probability of fish consumption on Day 1)/(Probability of fish consumption on any day in the recall period)); or,
3) using only the first (yesterday) day of dietary recall to estimate usual fish consumption.

Using just the 24-hour recall, if separate models are fit for anglers and non-anglers, the NCI model may not converge due to few respondents with two recalls, both with fish consumption. Scaling the output when predicting data from several days may be the easiest option.

The NCI macro uses the NLMIXED procedure. The weights in the NLMIXED procedure are defined using the REPLICATE statement. The documentation for the REPLICATE statement states that "Only the last observation of the REPLICATE variable for each subject is used". Thus, the same weight is used for each recall within a person. The best weight to use is the weight for the respondent (used for the first recall). As a result, 1) the analysis file for the NI method should have the weight for the first recall on both the records for the first and second recall; and 2) the weight for the second recall defined by NRG is not used in the analysis.

In the IMS report, Table 1 (page 10) shows the sample sizes for anglers and non-anglers and the number of respondents used in the NCI model. It is not completely clear why some cases were not included in the NCI model. Does the line labeled "Annual Fish Consumption Unavailable" correspond to those that did not eat fish in the last year (non-consumers)? There are 243 cases

labeled "Recall Data Unavailable (i.e. Missing)". What does this mean? There were 660 respondents that were dropped because various covariates were missing. Without knowing specifics about the missing values, perhaps imputed values could be used or missing values can be treated as a separate category of the categorical variables? How does the distribution of the demographic variables for those in the NCI model compare to the distribution for all fish consumers?

2. Idaho Fish Consumption Survey

SUBMITTED TO: Idaho Department of Environmental Quality
SUBMITTED BY: Northwest Research Group, LLC www.nwresearchgroup.com
DATE SUBMITTED: Final: August 25, 2015

We are interested in identifying any survey design factors that might introduce any uncertainty or bias/loss of accuracy in results of the fish consumption survey. In addition to whatever the reviewers identify as a potential issue, we would specifically like comments on the topics listed below.

2.1 Representativeness of sample using a telephone interview.

The methodology to collect data using a telephone interview using two frames (cell and landline) seems appropriate. According to the 2012 National Health Interview Survey only 2.7 percent of adults in Idaho are without a cell or land line phone. Those people will not be represented. While there may be some reason to think they have different fish consumption levels than others with otherwise similar demographics (since they are by definition living somewhat removed from society lives), there impact on overall estimates are likely to be small.

2.2 Methodology used to select land line and cell phone numbers and representativeness of sample

The methodology to select land line and cell numbers appears to be appropriate. The resulting samples of telephone numbers should be representative of the cell phone or landline populations. See item 2.11.

2.3 Stratification of sample based on Idaho health districts.

The stratification approach looks appropriate, trying to enforce geographic and gender representativeness in the sample minimizes variation in the weights.

2.4 Representation of anglers and non-anglers and weighting

They decided to use only the telephone landline and cell lists for sampling and classifying the anglers based on reported possession of a fishing license. This approach appears to be reasonable. The number of anglers estimated from the survey (33%) differs somewhat from the number estimated by IDFW (26%). It is possible that anglers were more likely to respond to a survey on fish consumption then non-anglers. At the same time, the list from IDFW has some uncertainty in that two lists of different sizes were provided.

2.5 Quotas for age, gender, and income and relation to representativeness of the sample

In general, enforcing the quotas helps to reduce the required effects of weighting. However, quota sampling has been discouraged for decades in government surveys because it can introduce biases that are not necessarily accounted for through the weighting process. In particular, it results in over-representing those who are easier to reach by telephone. Of particular interest in a fish consumption survey, those who spend a greater amount of time away from home (including fishing) are harder to reach, and thus are underrepresented in a quota sample. If they are reachable by cell phone this form of bias may be reduced, but it is hard to know for sure.

2.6 Consideration of race and representativeness of the survey sample

The racial breakdown of the population is only reported as White Alone versus Non-White (roughly 5%). Race was not used for weighting. Since quotas were not used for race, the sample may not be representative of the population racial distribution. A weighting adjustment based on race would improve the representativeness of the weighted sample with respect to race. See item 2.11.

The proportion of whites in the sample is higher than in the State of Idaho. Nationally, whites consume less fish than non-whites (EPA, 2014). If the weighting were to include race it might improve the accuracy of the estimates.

2.7 Impact of not being able to interview 5% of contacted households because of language issues.

Obviously, this subpopulation will not be represented in the survey results. To the extent that this subpopulation is similar to others with similar demographics, a weighting adjustment based on demographics might make the weighted sample more representative.

They report that early analysis indicated no significant differences in consumption rates between English speaking Hispanic and non-Hispanic respondents. However, this does not mean that there will be no difference between English speaking and non-English speaking respondents. They are assuming that English speaking Hispanics are more similar to non-English speaking Hispanics than they are to non-Hispanics in dietary behavior, which may or may not be true.

In particular, if the non-English speakers are Native Americans, their lack of English could be hypothesized to be correlated with following more traditional lifestyles, ones that involve consumption of much greater amounts of fish. In such a case their exclusion will underestimate the true fish consumption in Idaho.

2.8 Quantifying portion size:
2.8.1 Use of common objects to describe portion size

If the common object is familiar to the study population, it is likely easier for respondents to report their portion size in relation to the object than to estimate weight (grams or ounces) or volume (cups or tablespoons), unless they cooked it themselves. They did qualitative research among the population of interest to assist them in selecting common objects to be used as portion size references.

2.8.2 Asking respondents to quantify portion size in ounces

It is likely difficult for respondents to provide the amount of fish they consumed in ounces, unless they prepared the fish. However, they tested the use of portion size estimation aids (PSEA) to assess if using PSEAs would improve reporting of fish consumed in ounces. They report that the results showed saying the PSEA was equivalent to a specific number of ounces and asking respondents to then provide their consumption in ounces provided accurate estimates. This is the methodology they used. It seems reasonable and best available without pre-mailing (or directing to a website) portion size pictures like what are used in the ASA24.

2.8.3 Use of a deck of cards as the portion size estimation model

According to their research, most people thought about a deck of cards or palm of hand when estimating portion sizes and there was no difference in accuracy between these two PSEAs. They chose to go with a deck of cards. This choice seems reasonable given the research findings and that hand sizes vary by age and gender and other factors.

2.9 Use of an 8 day recall period, (SEE: p 24, item 6 describing recall issues for longer periods from qualitative research).

The use of a single versus multiple-day dietary recall for assessing usual fish consumption depends on a combination of bias and precision. The decrease in the reported frequency of fish consumption with increasing length of the recall period (page 75) will contribute to increased bias as the number of recall days increases. The bias can be corrected in various ways (an adjustment factor, modifying the NCI model, or using only the first day of dietary recall). The increasing imprecision of the respondent recall as the length of the recall period increases affects the precision of the estimates; but the NCI method can still be used to calculate those estimates if proper adjustments are made. As a result, increasing the recall period has diminishing benefit. We recommend either adjusting the estimates for bias associated with the longer recall period or calculating the usual fish consumption from only the first recall day. Disregarding this length bias, as was apparently done, can produce inaccurate estimates.

Assuming that respondents had a difficult time recalling fish consumption events beyond a few days (like they report), an 8 day recall period probably underestimates usual fish consumption due to the likely lowered estimated probability of consumption (for those that were reported no consumption and may have forgotten a fish consumption event).

2.10 Impact of response rate on survey results

Non-response contributes to possible bias and decreased precision of the survey estimates. NRG appeared to make reasonable efforts to increase or maintain response rates while collecting the data. Without independent estimates of fish consumption for the non-respondents it is not possible to truly assess the bias. A non-response adjustment to the weights can help to minimize the bias. An analysis of frequency and amount of fish consumption as a function of the effort used to collect the data (such as number of contacts to get a completed survey response) can be used to approximate the possible bias due to non-response. The non-response adjustment (post stratification) provides minimal adjustment for non-response. We recommend additional adjustments of the weights to account for different non-response rates for different demographic groups. NRG provided some adjustment of the weights for health region and gender; however did not provide more extensive adjustments for non-response (particularly with respect to an apparent imbalance in income) citing concerns for possible large weights in some health districts. While it is true that such adjustments may increase the variance, they will reduce the bias. In general this trade-off is worthwhile when the response rates are not high. We recommend additional non-response weight adjustments.

2.11 Weighting of results based on land vs. cell phones

The general approach to weighting the combined cell and landline samples, as represented by BW_1, is reasonable. However some details of the implementation are unclear or appear incorrect, in particular:

1) On page 35 they define CP as the number of cell phones but it appears to really be whether or not they have a cell phone used for making or receiving phone calls (this is ok, but should be corrected in the documentation)
2) On page 35, the numbers for the universe counts (ULL and UCP) seem very implausible....they must be larger. If these are in error, then obviously the weights are wrong.
3) On page 35, the formula for BW_1 is wrong (we assume it is just a typo, since the -1 should be an exponent)
4) They did not collect the number of adults in the household and therefore made a "fix" based on the number in the household; that is a potential source of bias
5) The question they used to determine phone service (TEL on page 104) is not a standard one and might lead to some errors. For example, the cell phone is based on personal use and the landline is household availability and the two are confused in this question.
6) The purpose and implementation of the adjustment in BW_2 on page 36 is unclear. Is the adjustment (BW_2) applied to all respondents in a health district or only the cell-phone-only respondents? It is not clear what some of the numbers in Table 12 are or where they came from. They appear to be household numbers; however the adjustment should be for adults; this may be a potential source of bias. Based on the numbers in the last three columns of Table 12, it looks like the purpose of BW_2 is to get the percentage of cell-only households in the sample to equal the corresponding percentage in the population; however, it is not clear how the equations for BW_2 and BWFinal achieve that for the "Non Wire-less Only" respondents.

2.12 Implementation of post stratification weighting

The post stratification provides some adjustment for non-response. However, it excluded adjustments by income level, household composition, and education.

2.13 Weighting for re-contact interviews

The weighting for the re-contact interviews provides a simple adjustment for non-response. If these weights were important, we would recommend a more complicated adjustment. However, since the NCI model only uses one weight per respondent (preferably the weight for the first recall, not a separate weight for each recall), the calculation of an adjusted weight for each recall is not required when using the NCI method for analysis.

2.14 Imputation used to populate missing values

The imputation used to populate missing values is not explained in detail. The discussion on page 42 says the values were imputed based on characteristics of their neighbors but provides no description of how "neighbors" are defined. It is not clear what values were or were not imputed. It is also not clear how the imputed values were used. Were they used to create Table 15? Were they used for weighting? The second bullet on page 42 seems to imply the imputed values were not used in the analysis file.

2.15 Data processing and calculations

We found no problems with what was presented. However, the description does not say how the 7 or 8 day fish consumption (average or sum?) was calculated from the daily values (only the calculation for daily values for yesterday is presented, we assume the other days consumption was calculated in a similar manner). We recommend the fish consumption be calculated for 7 and not 8 days, as noted in the overall comments.

2.16 Bootstrapping approach used to develop confidence limits

The Bootstrapping approach apparently does not incorporate the weights. As a result, for evaluating population differences, the confidence intervals may be smaller than appropriate. It is not clear how the confidence intervals were used. The word "significant" is used in several places. It is not clear if it refers to statistical significance.

2.17 Discussion Section

2.17.1 Addressing non-response bias

They say 25 percent is "significantly higher than the average response rate." Twenty-five percent is not unreasonable for a telephone survey these days, but it still leaves room for significant nonresponse bias if the respondents are not like the nonrespondents. It is difficult to know if the 75 percent that did not respond are systematically different in their fish consumption behaviors. This is of particular concern given that they used a quota sample rather than a traditional random sample. This might contribute to the over-representation of higher income individuals and anglers

– these groups may be more interested in the survey topic thus more likely to respond. Could non-response be adjusted for with weighting factors?

2.17.2 Impact of over-representation of higher income individuals and anglers

They mention that more complicated weights could be applied to adjust for these differences, but that could result in large weights within individual health districts. They could assess the impact of the over-representation by applying the weights, running the analysis, and comparing the results.

In general it is always true that weighting adjustments will reduce precision (larger standard errors for sampling), but the trade-off is that it will hopefully reduce bias. This is important because the confidence intervals, or tests of hypotheses, will only have the claimed level of accuracy (e.g. 95 percent) if the bias is trivial. If there are large biases all of these intervals will be incorrect. That is why we do typically adjust for known under-represented groups. In some cases it may be worthwhile to trim a few excessively large weights. This process is expected to produce smaller overall mean squared errors, and more appropriately-sized confidence intervals.

2.18 Review of the questionnaire and identification of any issues in accurately recording fish consumption. Of particular interest is review of the methodology for inquiry into consumption over the past 7 days.

As noted in the general comments above, clarification of when there is data for 7 days versus 8 days is needed. Also, given the decrease in the proportion of respondents reporting fish consumption with increasing length of the recall period, estimates based on multiple-day recalls are likely to be biased low without an appropriate adjustment.

3. NCI Method Estimates of Usual Intake Distributions for Fish Consumption in Idaho

This report was prepared under DEQ Contract K079 with Information Management Services, Inc.: Dennis W. Buckman, PhD, Ruth Parsons, BA, Lisa Kahle, BA, September 9, 2015.

We are interested in any NCI data analysis factors that might introduce uncertainty or bias/loss of accuracy in NCI results. We are particularly interested in whether or not the data analysis approach is sufficiently described. In addition to whatever the reviewers identify as potential issues, we would like comments on the topics listed below:

3.1 How well are the selection and impact of covariate choices documented?

The covariates used in the NCI model are listed in the report (page 11). No justification for using these covariates is provided. In addition to these covariates, three other variables that are apparently available are: gender, household composition (single versus multi-person, see page 40 of the survey report), and amount consumed from the FFQ. An easy approach to selecting covariates is to include all available covariates. Alternatively a combination of a weighted logistic regression (using the SAS SURVEYLOGISTIC procedure with the BRR weights created for calculating confidence intervals for usual fish consumption) predicting the probability of fish

consumption in a recall, and a weighted linear regression predicting log-transformed (or Box-Cox transformed) amount of fish consumed (using the SAS SURVEYREG procedure), can be used to assess which predictors or interactions of predictors are statistically significant when predicting the outcome. For the NCI model, we recommend including the same predictors for both the probability and amount models, including predictors that are significant when predicting either probability of consumption or transformed amount. In general it is important to include predictors that are clearly significant ($p<.01$). Predictors that are believed to be related to fish consumption but not significant should also be included. We believe the amount consumed from the FFQ should be an important predictor of amount consumed in the NCI model. For continuous predictors (body weight, age, and amount consumed from the FFQ) the weighted regression models can be used to assess how the variables might be transformed and whether the relationships are linear.

3.2 Are there any issues associated with use of 8 days of dietary recall information rather than the last 24 hours?

Yes. At a minimum, compared to using only the last 24 hours, the estimates are biased without an adjustment for the decreasing frequency of reported fish consumption as the length of the recall period increases. See the general comments above.

3.3 Is the combination and weighting of general and angler populations done appropriately?

The details of how the NCI macros were applied to the data files are not completely clear. For each type of fish consumption, we suspect the NCI method was applied to the data from the angler and non-angler subpopulations in separate runs, that all runs used the survey weights, and the summary statistics calculated from the simulated usual intake values for each respondent (from the DISTRIB macro) were calculated using the survey weight associated with the first recall for each respondent. The summary statistics can be calculated after combining the output files from the runs of the DISTRIB macro. If these procedures were used, we believe the calculations were done appropriately.

3.4 How, and how well, is it documented that the results meet assumptions of the NCI model (e.g. transformed positive fish consumption rates are normally distributed)?

The report provides no information on the values of Box-Cox transformation parameter (lambda), whether the transformed consumption amounts are normally distributed (a normal quantile plot of the transformed consumption amounts (not the plot from the NCI Box-Cox macro that was used) would help), whether there are any outliers, and the estimates of the variance components from the NCI model fit (between person for the probability model and the within and between person components for the amount model). This information would help assess the model fit and why the NCI macro had problems estimating lambda and the correlation parameter. In our experience, setting lambda instead of fitting lambda in the model and ignoring the correlation parameter has little effect on the results when calculating usual intake of fish. Given the relatively large number of respondents with two recalls with reported fish consumption we are surprised that lambda and the correlation parameter could not be fit using the MIXTRAN macro; at the same time, we have no reason to question this result.

4. Development of Human Health Water Quality Criteria for the State of Idaho (Draft), Windward Environmental, September 15, 2015

We are interested in whether or not the probabilistic analysis is adequately described. Further, we are interested in any methodological issues that were inappropriately or incompletely addressed in the PRA. In addition to anything that the reviewers might provide, we are interested in the following topics:

4.1 Selection of input distributions, in particular development of a Nez Perce fish consumption rate distribution.

The distribution fit to the percentiles of body weight appears to provide a good fit to the data. The distribution fit to the percentiles of drinking water intake per body weight appears to provide a reasonable fit to the data. Given the limited data for fish consumption for the Nez Pierce tribe, interpolating while setting the lower 5 percent to the 5th percentile and setting a maximum value and interpolation for percentiles above the 95th percentile appears reasonable.

One might question how the maximum value was obtained. Based on the footnote on page 12 of the Windward report, the maximum was based on what might be the maximum simulated value from the NCI DRISTRIB macro for the Idaho general population (1,261 g/day) multiplied by 0.242. If we have understood the calculations, this approach appears somewhat arbitrary because 1) the maximum value depends on how many simulated values DISTRIB creates, and 2) the adjustment factor of 0.242 seems to be based on calculations that are unrelated to the relationship between the maximum of the two distributions. A possible alternative is to calculate the 95th and 99.9th percentile for the general Idaho population and assume the ratio of those percentiles is the same for the general Idaho populations and the Nez Pierce population.

4.2 Correlation

4.2.1 Between body weight and drinking water ingestion rate

Assuming the drinking water ingestion rate per body weight is independent of the body weight appears to be a reasonable assumption. If needed, analysis of NHANES data could be used to test the assumptions. Thus simulating body weight and independently simulating drinking ingestion rate per body weight appears to be reasonable.

4.2.2 Between body weight and fish consumption rate

We expect the fish consumption rate to increase with increasing body weight. The assumed distribution for the body weight appears to be a lognormal distribution. The distribution of fish consumption rate can often be reasonably approximated by a lognormal distribution. Thus, when assessing correlation, we strongly recommend plotting and calculating the correlation between the log-transformed body weight and the log-transformed FCR. The statistical assessment of correlation (here using regression) assumes the prediction errors are normally distributed with roughly constant variance. That assumption is clearly not true for the data plotted in Figure 2-3 of the Windward report. We expect a plot using the log-transformed values will have an approximate bivariate normal distribution.

5. Translation of NPT consumption of 'Group 2' fish to equivalent consumption of 'Idaho Fish'

We are interested in whether or not the approach is adequately documented and whether or not there are any issues with this analytical approach. In particular, we are interested in how IDEQ has processed weighting factors in deriving consumption rates of fish caught in Idaho.

In general the re-grouping of fish seems appropriate given the available data. We have three concerns:

1. The explanation of how the prorating was done is hard to follow. The prorating of event salmon (salmon + steelhead): If a participant reported 10 oz. of salmon at events and 6 oz. of chinook and 4 oz. of steelhead at nonevents, then they were assigned 4 oz. for event steelhead. Is this how it was done?

2. Why was Coho left out of the prorating? Is it sometimes confused with steelhead?

3. The fraction of salmon + steelhead that is chinook is apparently calculated separately for each respondent. Where does the 81.3% come from? This is apparently the weighted mean percent of chinook (out of salmon+chinook+ coho+steelhead) across all participants that reported nonevent salmon, chinook, coho, and steelhead, is that correct? Although the fraction you are interested in can be calculated for each respondent, the resulting fractions can be imprecise, resulting in biased overall estimates. As an alternative, we recommend calculating the ratio of the weighted mean chinook non-event consumption to the weighted mean salmon+chinook+ coho+steelhead non-event consumption and using one ratio for all respondents. If there is concern that the ratio may differ among respondents, the ratio can be calculated separately for different demographic groups.

The application of the weights seems appropriate. The resulting fraction of the Group 2 that was assigned as Idaho fish (0.242) was then multiplied by the results that were obtained from the NCI Method for the original Group 2.

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Memo

Date: October 26, 2015

To: Greg Frey, SRA, and Lon Kissinger, EPA

From: John Rogers

Subject: To-do list for improving the estimates of Idaho fish consumption

At the request of SRA, Westat provides the following recommended to-do list for predicting fish consumption from the ID survey. Note that these recommendations are based on our understanding of the data and the calculations used previously. The recommendations may need to be adjusted for unanticipated characteristics of the data. The to-do list refers to comments in our October 19, 2015 memo.

The to-do list:

Revise the survey weights:

- Recalculate the base weights, noting the comments in item 2.11.
- Review the imputation of the missing demographic variables. This needs to be described better.
- Adjust the base weights for non-response using raking. The variables used for raking would include those in Table 15 in the NRG report. This will create respondent weights adjusted for imbalance due to the sampling process and non-response, W_i. If a few weights are particularly large relative to most weights, those weights might be trimmed. The weights for other cases would be increased so that the sum of the weights is unchanged.
- Set the weight for the second recall to equal the weight for the first recall.

Revise the calculations to calculate fish consumption over 7 days.

- For each respondent and recall, calculate the quantity of fish consumed in each day of the recall ("yesterday" and the prior 7 days) as documented on page 116 of the NRG report, call this A_{ird}, i references the respondent (1 to N), r references the recall (1 or 2), and d references the day (1 to 8). Then calculate the average daily consumption over the first 7 days for each respondent and recall: $A_{ir(7)} = \frac{\sum_{d=1}^{7} A_{ird}}{7}$.

- Using only the first recall for each subject ($r = 1$), calculate the weighted mean of the fish consumption on the first day and the fish consumption across the first 7 days (the sums are over all completed recalls):

$$\bar{A}_1 = \frac{\sum_{i=1}^{N} A_{i11} W_i}{\sum_{i=1}^{N} W_i}$$

$$\bar{A}_{(7)} = \frac{\sum_{i=1}^{N} A_{i1(7)} W_i}{\sum_{i=1}^{N} W_i}$$

  Note: this is a slightly different formula than outlined in the comments.

- Calculate the ratio for adjusting the NCI estimate of usual fish consumption to estimate usual fish consumption adjusted for decreased recall over time.

$$R = \frac{\bar{A}_1}{\bar{A}_{(7)}}$$

Fitting the NCI model

- Decide what cases to include in the NCI model. Is there a reasonable way to include cases with missing demographic variables, such as treating the missing values as a separate category or using imputed demographic variables?

- Create BRR replicate weights for calculating variances.

- Decide what predictors to use:

  - Use the SAS SURVEYLOGISTIC procedure to identify significant predictors of reported fish consumption (Yes versus No) using the BRR weights. First identify significant main effects. Second identify significant two-way interactions of the significant main effects. Candidate predictors would be demographic variables (including body weight) and FFQ variables (frequency of fist consumption, amount consumed). It is worth considering transforming or categorizing the FFQ variables to handle non-linear relationships. Although it can be done different ways, we suggest 1) including main effects that are significant at the 5% level; 2) including interactions of the main effects that are significant at the 1% level; and 3) including any other main effects believed to be associated with fish consumption.

  - Use the SAS SURVEYREG procedure to identify significant predictors of log-transformed (or Box-Cox transformed) reported amount of fish consumed using the BRR weights, using the steps above.

- In the NCI model, we suggest using the same covariates for the probability and amount models.

- Fit the NCI model to $A_{ir(7)}$. If necessary, determine the Box-Cox transformation parameter (Lambda) before fitting the NCI model. If the correlated model cannot be fit,

using the uncorrelated model is OK. Report the Lambda and the magnitude of the variance components from the NCI model when using the full sample weight.

- Multiply the usual fish consumption from the NCI DISTRIB macro by the ratio R from above to provide an unbiased estimate of usual fish consumption.

Do the calculations for the PRA:

- Revise the adjustment for estimating the top 5% of the Nez Pierce distribution, see comment 4.1.

- Consider a correlation between log-transformed body weight and log-transformed usual fish consumption. Alternatively, if the body weight is a significant predictor of usual fish consumption (in the probability and particularly the amount model), the distribution of fish consumption should be a function of body weight.

- Calculate the weighted fraction of chinook across all respondents when adjusting for different fish species categories (Group 2 versus ID fish). See comment 5, item 3.

Clarify various items, see comments, in particular:

- The process for developing imputed values when data were missing

- Weighting of angler and general populations in developing overall results

- Discussion in the NCI analysis report as to how well model assumptions are met

Review of DEQ Approach for Developing an NCI-Like Distribution of Idaho Caught Fish, 11/5/15

EPA requested Westat review DEQ's approach for developing an "NCI-like" fish consumption rate (FCR) distribution for fish from Idaho waters. This memo summarizes conversations between Lon Kissinger EPA Region 10 and Westat statistician Dr. John Rogers.

DEQ developed a Nez Perce distribution of consumption of Idaho caught fish by scaling the NCI-derived distribution for consumption of Category 2 fish, multiplying the percentiles by 0.242 to calculate the percentiles of the distribution of Nez Perce Idaho fish consumption. The scaling factor, 0.242, was the ratio of the average consumption of Idaho caught fish to the average consumption of Category 2 fish. Both of these averages were obtained from the Nez Perce FFQ survey. The resulting scaled or transformed NCI-distribution is referred to here as the "NCI-like" distribution.

After discussions with Westat regarding the relationship between the NCI-derived distributions for different types of fish, we suggest that further analysis be done on the approach used to develop a Nez Perce "NCI-like" distribution of Idaho caught fish. It appears that the current procedure is likely to underestimate the upper percentiles of the Idaho fish consumption distribution.

Given that FCR distributions are reasonably log normally distributed, there is likely a linear relationship between log transformed percentiles of the distribution of Idaho caught fish consumption and the distribution of Group 2 fish consumption (for which we have the NCI estimate of the distribution).

Let P_I represent percentiles of the distribution of Idaho caught fish consumption that are to be estimated. Let $P_{G2,NCI}$ represent percentiles of the distribution of Group 2 fish consumption estimated using the NCI method. Then assume:

$$Ln(P_i) = ln(S) + F*Ln(P_{G2,NCI}), \text{ or equivalently } P_i = S * (P_{G2,NCI})^F.$$

The problem is how to estimate S, a scaling factor, and F, a slope roughly equal to the ratio of the standard deviation of $Ln(P_i)$ to the standard deviation of $(lnP_{G2,NCI})$.

Using results from NHANES data previously analyzed for EPA Headquarters, Westat did a quick analysis comparing the NCI-derived distributions of fish consumption for different types of fish. Let R equal the ratio of the mean fish consumption for the fish type used as the dependent distribution to the mean fish consumption for the fish type used as an independent distribution. When predicting the distribution of a less consumed fish type from the distribution of a more consumed fish type (i.e., $R < 1$), it appears the F should be greater than 1.0 with higher slopes as R decreases.

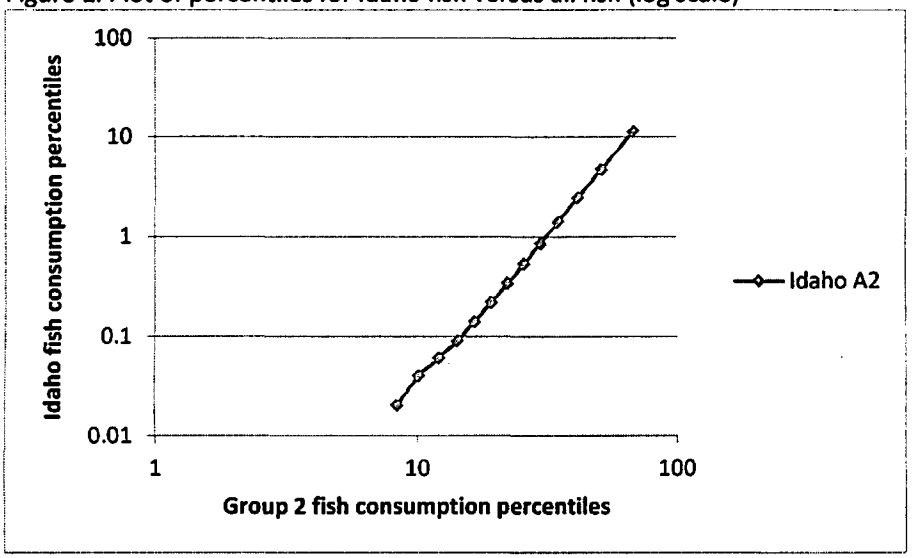
As an example of the calculations, Table 1 has the 35^{th} through 95^{th} percentiles of the consumption distributions for all fish and for Idaho caught fish from the Idaho state survey (see: NCI Method Estimates of Usual Intake Distributions for Fish Consumption in Idaho, Tables A1 and A2, using All Subjects). Lower percentiles were not included because the estimates were reported as "<.01" or were particularly imprecise.

Table 1 Percentiles of fish consumption for all subjects

Percentile	All Fish Table A1	Idaho fish Table A2
35	8.31	0.02
40	10.09	0.04
45	12.06	0.06
50	14.25	0.09
55	16.61	0.14
60	19.27	0.22
65	22.29	0.34
70	25.71	0.53
75	29.74	0.84
80	34.85	1.38
85	41.44	2.42
90	51.11	4.66
95	67.66	11.24

Figure 1 shows a plot of the percentiles of Idaho fish consumption as a function of the percentiles of all fish consumption, using log scales. As can be seen, the log-transformed percentiles fall on a roughly straight line.

Figure 1. Plot of percentiles for Idaho fish versus all fish (log scale)



Fitting a linear regression to predict the log-transformed percentiles for Idaho fish consumption from the log-transformed percentiles of all fish consumption gives a slope of F = 3.00. Although this analysis used selected percentiles, using all percentiles between the 1st and 99th percentiles and using more precision is recommended.

Different slopes will be obtained using different data or different subsets of the data (such as anglers only). For all subjects in the Idaho state survey the ratio of the means (R) is .106, smaller than the ratio

of 0.242 estimated for the Nez Perce from the FFQ. Although one could use F = 3.00 for the Nez Perce, since F appears to increase as R decreases and R for the Idaho state data is less than for the Nez Perce, an appropriate slope for predicting Nez Perce Idaho fish consumption from Group 2 fish consumption may be less than 3.00. Some judgment is required to set the value of F. Considerations might include:

- calculations using Idaho data (as above),
- calculations using NHANES data, or possibly
- calculations using FFQ data (note that the precision and bias of FFQ data are uncertain and lower percentiles of FFQ estimated Idaho fish consumption are zero; it is not possible to calculate the log of zero).

Once F is set, calculate R, in the case of the Nez Perce based on the FFQ data. R is the ratio of the reported means of Idaho fish consumption and Group 2 fish consumption:

$$R = \text{Mean}(I_{FFQ}) / \text{Mean}(G2_{FFQ}) = 0.242$$

Also calculate the mean of $P_{G2,NCI}$ and $(P_{G2,NCI})^F$ across all percentiles (excluding the 0^{th} and 100^{th} percentile). These means are calculated using the percentiles from the DISTRIB macro because those are the data that are available.

The calculations assume the ratio of the mean Idaho fish consumption to the mean Group 2 fish consumption is the same for the FFQ data as for the NCI or "NCI-like" data, i.e.,:

$$\text{Mean}(I_{FFQ})/\text{Mean}(G2_{FFQ})=\text{Mean}(P_i)/\text{Mean}(P_{G2,NCI})$$

Since $\text{Mean}(P_i) = S^* \text{Mean}((P_{G2,NCI})^F)$, solving for S gives:

$$S = R * \text{Mean}(P_{G2,NCI}) / \text{Mean}((P_{G2,NCI})^F)$$

Finally, calculate the "NCI-like" distribution:

$$P_i = S * (P_{G2,NCI})^F$$

The mean of P_i across all percentiles (excluding the 0^{th} and 100^{th} percentile) should be equal to $\text{Mean}(I_{FFQ})$. Note that if F = 1.0, then S = R and the scaled NCI distribution is the same as calculated previously by Idaho DEQ. Using a slope (F) greater than 1.0 spreads out the distribution, particularly the upper tail, compared to using F = 1.

We expect the approach outlined above, using an estimated value of the slope F, will provide a better estimate of Nez Perce Idaho caught fish consumption distribution than assuming F equals 1.0.

Docket Number: 58-0102-1201
Effective Date: 2016 Sine die
Rules Title: Water Quality Standards
Agency Contact and Phone: Barry Burnell, 373-0194

Descriptive Summary of Rule as Initially proposed: On May 10, 2012, the United States Environmental Protection Agency (EPA) disapproved the July 7, 2006 Idaho DEQ water quality standard rule submittal. The disapproval affects 167 of Idaho's revised human health criteria for 88 toxic pollutants. In addition to incorporating newer toxicity information, DEQ's 2006 rule changed the fish consumption basis for determining the toxic standard from 6.5 g/day to 17.5 g/day, based on EPA's nationally recommended fish consumption rate. EPA disapproved the proposed criteria because EPA believes that the resulting criteria do not protect Idaho's designated uses. As a result, EPA was unable to determine that the 17.5 g/day fish consumption rate was consistent with 40 CFR 131.11(a). EPA identified several sources of information on local and regional fish consumption, which they claim that Idaho did not consider before using the national default fish consumption rate. According to EPA, the information that EPA reviewed suggests that fish consumption among some Idaho population groups is greater than 17.5 g/day.

Over the span from October 2012 to August 2015, DEQ met with interested parties in eighteen negotiated meetings. DEQ planned a statewide Idaho fish consumption survey then executed a yearlong survey and, while the survey was underway, discussed the various policy decisions involved in derivation of criteria protective of human health. At the same time as Idaho's fish consumption survey was being conducted, the Nez Perce Tribe and Shoshone-Bannock Tribes were conducting similar surveys to inform DEQ's knowledge of the potential magnitude of exposure to toxic substances through consumption of fish with the help of EPA and the intent that this information would also inform DEQ's revision of human health criteria. In May 2014 EPA proposed updates to its national 304(a) criteria, recommendations to states and tribes, for protection of human health. These updates were based on a new national fish consumption rate of 22 g/day, as well as new information on body-weight, drinking water intake, chemical toxicity, bioaccumulation of toxins in fish tissue, and the relative magnitude of contribution to exposure to toxins from various sources other than fish and water. EPA's proposal was finalized on June 29, 2015, providing new or updated criteria for 94 chemicals, some not currently present in Idaho's rules.

EPA's national action expanded what DEQ considered in its rulemaking. In addition to recent information on fish consumption in Idaho, these criteria changes also incorporate new information on body-weight, drinking water intake, toxicity, bioaccumulation, and relative source contribution. DEQ is also updating more criteria than just those EPA acted on in 2012.

The current rule proposal is to update Idaho's human health criteria for 104 toxic substances (10 of which are new), plus an additional fish-plus-water criterion for copper based on the drinking water maximum contaminant level (MCL). There are 208 revised or new criteria, consisting of 94 revised and 10 new criteria based on exposure to toxic substances from the consumption of fish and ingestion of water plus an additional fish-plus-water criterion for copper, and 94 revised and 10 new criteria based on exposure to toxic substances from the consumption of fish alone. In addition, although new input values were used, the values for the antimony fish only criterion and the bromoform fish-plus-water criterion did not change; these are counted as revised criteria. With this proposal, Idaho will have updated all of its human health criteria except those for arsenic, methylmercury, and asbestos.

Public Notice
Hearings: [ ]Yes [X] No
Locations and Dates: N/A
Written Comment Deadline: 9/4/15

Negotiated Rule Making: [X] Yes [ ] No
The text of the proposed rule has been drafted based on discussions held and concerns raised during negotiations conducted pursuant to Idaho Code § 67-5220 and IDAPA 58.01.23.810-815. The Notice of Negotiated Rulemaking was published in the September 2012 Idaho Administrative Bulletin, Vol. 12-9. Eighteen meetings were held between October 2012 and August 2015. A preliminary draft rule was made available for public review in August 2015. Members of the public participated in this negotiated rulemaking process by attending the meetings and by submitting written comments. A record of the negotiated rule drafts, written comments, documents distributed during the negotiated rulemaking process, and the negotiated rulemaking summary is available at www.deq.idaho.gov/58-0102-1201.

Costs to the Agency: None anticipated.

Costs to the Regulated Community: Dischargers of NPDES regulated pollutants may have stricter limits with which to comply.

Relevant Statutes: Sections 39-105, 39-107, and 39-3601 *et seq.*, Idaho Code

Idaho Code § 39-107D Statement: The standards included in this rule are not broader in scope, nor more stringent, than federal regulations and do not regulate an activity not regulated by the federal government.

Fiscal Impact Statement: The following is a specific description, if applicable, of any negative fiscal impact on the state general fund greater than ten thousand dollars ($10,000) during the fiscal year: Not applicable.

DEQ recommends that the Board adopt the rule, as presented in the final proposal, as a pending rule with the final effective date coinciding with the adjournment *sine die* of the Second Regular Session of the Sixty-third Idaho Legislature. The rule is subject to review by the Legislature before becoming final and effective.

Temporary Rule	[ ] Necessary to protect public health, safety or welfare [ ] Compliance with deadlines in amendments to governing law or federal programs [ ] Conferring a benefit

Docket Number: 58-0102-1201

Response to Comments Attached

Section	Section Title	Summary of Rule Changes Based on Public Comment
010.	**Definitions.**	This section has not been changed.
070.	**Application of Standards.**	This section has not been changed.
210.	**Numeric Criteria for Toxic Substances for Waters Designated for Aquatic Life, Recreation, or Domestic Water Supply Use**	This section has been changed.
284.	**South Fork Coeur d'Alene Subbasin, Subsection 110.09, HUC 17010302, Aquatic Life Criteria for Cadmium, Lead and Zinc.**	This section has not been changed.
400.	**Rules Governing Point Source Discharges.**	This section has not been changed.

Commenter 1 – Darcy James
Commenter 2 – Columbia River Intertribal Fish Commission
Commenter 3 – National Association of Clean Water Agencies
Commenter 4 – Northwest Pulp & Paper Association
Commenter 5 – Northwest Food Processors Association
Commenter 6 – Association of Idaho Cities
Commenter 7 – Idahoans for Sensible Water Regulation
Commenter 8 – Idaho Farm Bureau Federation
Commenter 9 – Idaho Council on Industry & Environment
Commenter 10 – Nez Perce Tribe
Commenter 11 – J.R. Simplot Company
Commenter 12 – American Forest & Paper Association
Commenter 13 – Spokane Riverkeeper
Commenter 14 – Coeur d'Alene Tribe
Commenter 15 – Shoshone-Bannock Tribes
Commenter 16 – Confederated Tribes of the Umatilla Indian Reservation
Commenter 17 – Federal Water Quality Coalition
Commenter 18 – Pentachlorophenol Task Force
Commenter 19 – Idaho Conservation League
Commenter 20 – EPA Reg 10 Regional Tribal Operations Committee
Commenter 21 – Environmental Protection Agency Region 10
Commenter 22 – Idaho Association of Commerce & Industry
Commenter 23 – Clearwater Paper
Commenter 24 – Upper Snake River Tribes
Commenter 25 – 76 Citizen Letters

Rule Section / Topic(s)	Commenter	Comment	Response
Survey design, target population	1	I am troubled that the survey of fish consumption was taken on "a random sample of Idahoans" without apparent consideration of tribal members for whom Idaho fish are a staple. We must protect their treaty rights to fish at "all the usual and accustomed places" without being poisoned. Water in our streams must be pure enough to be a fit food source for those who depend on the fish, not for the average occasional consumer. This will bring collateral health benefits to the rest of us, who fish, wade, and float on the rivers. Being in business or owning property should not convey a right to pollute water that everyone uses.	Random sampling of a population is a standard statistical method to assure a representative sample. Tribal members were considered, both through inclusion in Idaho's survey and through separate tribal fish consumption survey's. The criteria proposed provide a high level of protection even for those whose fish consumption is well above average.
	21	The EPA contracted with Westat, a well-known statistical consulting firm, to review DEQ's fish consumption survey results as reported in the Fish Consumption Survey report prepared by Northwest Research Group. Westat identified a number of issues that DEQ should review (see attached memoranda from Westat), and EPA is available to discuss this information further. For example, Westat determined that the frequency of fish consumption declined over the seven day recall period. DEQ did not account for this trend, which could result in an underestimation of fish consumption. As previously noted, it is important for DEQ's fish consumption survey results to be peer reviewed by individuals with the necessary expertise. The Westat review provides information that DEQ should consider along with the results of its peer review. In particular, it is important that the National Cancer Institute (NCI) analysis, which involves many assumptions and employs statistical methodology not generally accessible to the lay person, be adequately reviewed. In addition, it is important that DEQ's final peer review findings be readily available and distributed to support the credibility of DEQ's survey results.	We have passed Westat's comments on to our contractor's for their response along with the comments from the ongoing peer review we arranged. We will post the peer review comments and response as soon as they are ready. We understand that the NCI method involves sophisticated statistical analysis and have the utmost confidence that Information Management Services performed the analysis correctly.
	22	Also, unlike Oregon, Washington or Alaska, Idaho conducted a state-wide fish consumption survey. Oregon established a state-wide FCR based on a subpopulation study of four Native American tribes published by the Columbia River Inter-Tribal Fish Commission (CRITFC).15 This study has a number of uncertainties which include the origin and species of consumed fish (locally harvested or commercial) and the type of local harvested (anadromous, non-anadromous) fish. Furthermore, the raw data from the study have never been available for public review. Though EPA has implied that studies such as CRITFIC (1994) provide information that can be used to	We concur that recent fish consumption surveys conducted by Idaho and EPA on behalf of Idaho tribes provide the best information available of which to base a regulatory fish consumption rate to be used in deriving human health criteria.

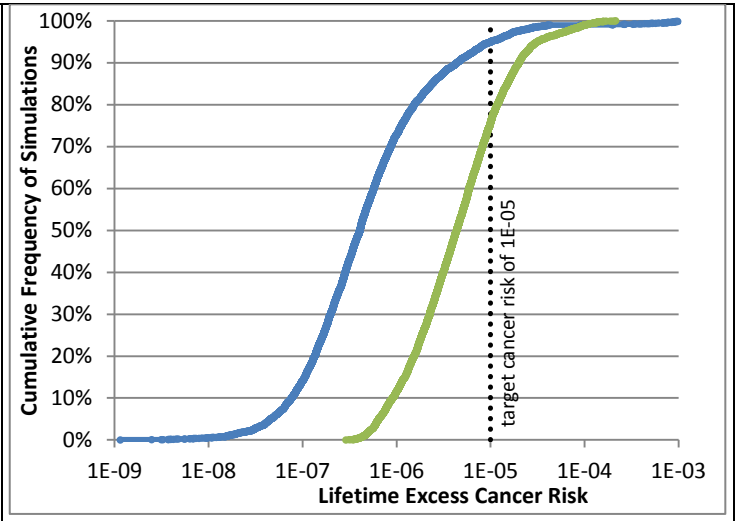
		establish a FCR for the State of Idaho, such a study does not represent the Idaho population, geography, and fish availability. The survey conducted by the state of Idaho provides a scientifically sound basis for FCR for Idaho residents.	
	24	Target Population – Although we have requested that Indian tribes be considered part of the general population, IDEQ continues to subjugate them to a lesser status.	Idaho has considered three high end consuming groups ***within*** the general population: Idaho resident anglers, the Nez Perce Tribe and the Shoshone-Bannock Tribes. Our survey of the general population included members of Idaho's Indian tribes. Moreover, our proposed criteria are based on Nez Perce Tribal exposure to contaminants in fish and water. We are disheartened that you view our consideration as subjugation.
level of protection / allowable risk	2	Written comments delivered to DEQ from tribes were unambiguous - if Idaho's water quality standards are not specifically calculated to protect the health of the majority of tribal members, the standards have the potential to limit the amount of fish that may safely be eaten by tribes. Despite knowing this, DEQ has proposed water quality standards for Idaho's waters that were calculated using substantially reduced levels of protection for tribal people as compared to the general population.	The proposed human health criteria are calculated to provide a high level of protection to the majority of tribal members. It is not possible to equalize the level of protection for tribal people as compared to the general population – for any given criterion or contaminant level respective risks will differ by differences in fish consumption.
	4	NWPPA would like to emphasize Clearwater Paper's comments on risk policy and reiterate that we also believe the Department should reassess their risk policy choices on carcinogens and non-carcinogens based on the recommendations of Clearwater.	DEQ has carefully considered comments received regarding risk policy decisions and has modified the risk level applied, but at the same time, has incorporated other more conservatives inputs to ensure the resulting criteria continue to be protective within the range that EPA provides is acceptable. Please see response to comments below regarding this issue.
	5	As a part of this rulemaking, DEQ has made decisions about the level of protection for different segments of the population. DEQ is currently proposing to apply the 1x10-6 risk management goal to the 95th percentile of the general population. The State's currently proposed risk management goal results in the average Idahoan having an excess lifetime cancer risk of about 1x10-7. These risk management decisions can greatly influence criteria values. NWFPA is concerned that the level of protection should assure preserving designated uses and ensure risk thresholds that allow for balance. Therefore, we encourage the DEQ to look at how the allowable risk decisions affect the calculated criteria value: more stringent risk management benchmarks lead to more stringent criteria. Depending upon the calculation methodology and allowable risk decisions, calculated values may result in criteria that are not achievable and would result in significant financial resources to try to achieve such values. It should be noted that these unrealistic risk thresholds will result in significant expenditures to meet criteria that, at best, will provide negligible improvements for human or ecological health. These costs do not just impact the regulated community, but will impact all Idaho businesses and residents. Idaho state law requires divisions of government, including DEQ, to estimate and evaluate economic costs and benefits of proposed rules. NWFPA would encourage DEQ to look at their risk policy decisions in balance with health values and economic costs of the resulting criteria. We would recommend that this sort of analysis should be performed at both the proposed target risk value and with a target risk value of 1x10-5 , to better examine the difference in benefits versus costs.	While there is direct relation between level of protection and criteria values there are other factors that also have such a direct influence on the criteria – i.e. toxicity, bioaccumulation rate, relative source contribution, and fish consumption rate. DEQ has determined to use a 10^{-5} cancer risk level, but has also determined to use the Nez Perce mean fish consumption rate of group 2 fish, which includes all near coastal, estuarine, freshwater and anadromous fish. This increases the fish consumption rate used to calculate criteria from 16.1 to 66.5 g/day. While including salmon and other anadromous fish, DEQ continues to generally use a RSC of .2, thus double counting some marine fish, and is using the 2015 EPA recommended toxicity values, bioaccumulation rates and other input values, such as water intake. In addition, DEQ has shifted from the use of a probabilistic risk assessment method of calculating criteria to a deterministic method. The deterministic method compounds the conservative nature of the input values. DEQ believes that the resulting criteria are protective of both the higher fish consuming population and the general population of Idaho. DEQ's approach to determining the human health criteria, including the choice of a 10^{-5} cancer risk level, is consistent with EPA national guidance. EPA has emphasized that the choice of a cancer risk rate and the percentage of the population to protect are risk management policy decisions for States to make. EPA believes that both 10^{-5} and 10^{-6} risk levels are acceptable for the general population as long as the risk level for higher exposed populations does not exceed 10^{-4}. EPA also provides that States may choose to use either high-end values or average values for an identified population. For EPA's 304(a) recommended criteria, EPA uses the 90^{th}% of the general population fish

			consumption, while using the average fish consumption for more highly exposed populations. DEQ's approach is very consistent. DEQ has used a 10^{-5} risk level for the Nez Perce Tribe, which results in a lower risk range for the general population. Also, similar to EPA's approach nationwide, DEQ has used the mean of the tribal fish consumption. In addition, while EPA excludes salmon as a marine fish in its 304(a) criteria development, *DEQ has included salmon* in its fish consumption rate. Also, while EPA directs States to alter the RSC in the event a State chooses to include salmon or other marine species, DEQ has determined to retain the very conservative default RSC recommended by EPA. Finally, DEQ has used all the latest EPA recommended toxicity values, bioaccumulation rates and other inputs. In sum, DEQ's approach is both consistent with EPA's national guidance, and in some respects, reflects a more conservative approach then EPA has recommended. We are aware of the fact that some criteria may not be immediately or easily achievable, and thus have allowed for implementation tools, including the new tool of intake credits to ease the transition. We also know that few discharges in Idaho currently have permit limits based on achieving human health toxics criteria. Though this can certainly change, we do not expect it to change soon or quickly. The Idaho Administrative Procedures Act, Idaho Code sections 67-5221 and 67-5224, require State agencies include in the notice of proposed rulemaking and in the notice of the adoption of a pending rule a description, if applicable, of any negative fiscal impact on the State general fund greater than $10,000 during the fiscal year when the rule will become effective. It should be noted, however, that the absence or accuracy of this fiscal statement does not affect the validity or enforceability of the rule. DEQ complied with these provisions in its notice of proposed rulemaking, and will do so in its notice of the adoption of a pending rule. DEQ believes there will be no impact on the general fund in excess of $10,000.
	6	The proposed state science updates, risk management, and policy decision as a package are consistent with the EPA methods and guidance for derivation of human health criteria and new updated EPA science and policy. While individual science or policy choices may cause individual stakeholders participating in the rulemaking concern for being over or under protective, the proposed policy choices in aggregate, are clearly well within and consistent with EPA science, guidance, state's policy choices and therefore fully comply with CWA obligations for state development of human health water quality standards.	We agree; thank you for stating so.
	7	The members of ISWR do have a strong concern with DEQ setting a risk standard at one in one million (10^{-6}). The state does have the discretion under the Federal Guidance to set a risk factor in the range of 10^{-4} to 10^{-6}. ISWR recommends a factor of 10^{-5}. There is no significant difference in protection of the public health by utilizing the less conservative standard, while there is significant difference in the cost of compliance by both industry and the tax paying public. The Idaho Legislature has supported the idea that IDEQ should consider a range of risks in other environmental programs. *See* Idaho Code § 39-7210 (Idaho Land Remediation Act).	Please see response to commenter number 5 above.
	8	Our members do not support the policy decision DEQ has made to set the risk standard at 10-6. The state does have the discretion under EPA's Clean Water Act Guidance to set a risk factor in the range of 10-4 to	Please see response immediately above.

		10-6. While the risk factor choice DEQ has made is within the allowable range, our members do not believe the miniscule additional protection from risk associated with the 10-6 risk factor provide additional benefits anywhere close to the significant additional costs that will be borne by industry, municipalities and ultimately the taxpayers and citizens of Idaho. It is our understanding that a reduction in the risk factor from 10-6 to 10-5 would be similar to the risk associated with every Idaho citizen driving an additional 11 miles per year. This tiny, incremental amount of associated risk however, stands to save our state economy an estimated $14 billion or more, which will have far more devastating consequences directly on our citizens and economy through a loss of jobs, higher prices for goods, and higher costs of water treatment. As an example, we have been told that the average water bill in Boise City would need to increase by at least $79 per month to pay for the required new treatment works to reach the nearly impossibly high new standards as proposed by DEQ. That is more than double the current rates and would be a significant burden on all families; but especially on fixed-income seniors who would accrue virtually no benefit from the greater expense. Our members do not believe the significant financial burdens are worth the tiny incremental reduction in risk. Furthermore, this higher standard does not meet the state's long-held view that costs and benefits must be carefully weighed when proposing new rules.	
	10	The Nez Perce Tribe has consistently emphasized throughout IDEQ's negotiated rulemaking process that any water quality standards that are developed - and ultimately approved by EPA - must be protective of fish consumption levels and needs of our tribal members given the United States' treaty and trust obligations to the Nez Perce Tribe. The Nez Perce Tribe is disappointed to find that Idaho's proposed water quality standards are orders of magnitude less protective than those of all other states in the Columbia River basin region, and are not protective of the fish consumption levels and needs of our members thereby resulting in unacceptable health risks to our members who rely heavily on fish.	We believe our combination of risk management choices is protective of even those that consume high quantities of fish. In addition, DEQ has determined to include the tribal consumption of salmon, near coastal, estuarine and freshwater fish See also response below to commenter 2 under topic of "Tribal treaty right and designated uses"
	11	One of the key factors in calculating HHWQC is a policy decision for the Department in setting a human health risk target. Inherent in discussing risk is the recognition that risk varies across all Idahoans and that this has implications for what target risk goals can be achieved. EPA recognizes this variation in potential risk and provides guidance on how to address it: "With AWQC derived for carcinogens based on a linear low-dose extrapolation, the Agency will publish recommended criteria values at a 10^{-6} risk level. States and authorized Tribes can always choose a more stringent risk level, such as 10^{-7}. USEPA also believes that criteria based on a 10^{-5} risk level are acceptable for the general population as long as States and authorized Tribes ensure that the risk to more highly exposed subgroups (sport fishers or subsistence fishers) does not exceed the 10^{-4} level." The Department should utilize the flexibility provided in EPA guidance to allow for a range of risks. This is especially important in that certain chemicals, which are highly bioaccumulative and may have a low toxicity threshold, could have a very low calculated HHWQC depending on the risk target selected by the Department. Such criteria may not be achievable. Thus, the Department needs to carefully consider the target risk factor so that human health protection is provided without excessive conservatism (i.e., unrealistic risk scenarios) that would result in criteria that are not achievable without considerable expenditures of resources. Therefore, we urge the Department to consider a one in 10^{-5} risk target for both Idaho and tribal populations.	The policy decision on acceptable risk is definitely a key factor, but by no means the only factor that can greatly affect calculated criteria. DEQ has determined to use the flexibility allowed by EPA and use a 10^{-5} risk level, while also using other more conservative input factors. Please see response to commenter 5 above in this section on "level of protection / allowable risk."

	12	AF&PA also supports IDEQ's risk management decision to use a mean fish consumption rate to represent the higher-consuming populations. We are concerned, however, about two critical aspects of the IDEQ methodology. First, IDEQ is developing its state-wide standards on the basis of the fish consumption rate for one higher-consuming population – the Nez Perce Tribe. We believe that using this higher fish consumption rate for a particular population to derive state-wide criteria is not appropriate as it leads to even greater "compounded conservatism" and results in criteria that are unnecessarily stringent to protect human health. We also do not support IDEQ's choice to apply an incremental cancer risk level of 1x10-6 in deriving its criteria, especially when coupled with the other conservative assumptions used to derive the criteria. While we recognize that under Federal guidance, the State has the discretion to make that choice, we note that under that guidance, IDEQ could also use a risk level of 1x10-5. Setting human health water quality criteria in Idaho based on a theoretical excess lifetime cancer risk level of 1x10-6 is a poor public policy choice. This policy would reduce potential cancer incidence by a fraction of a cancer case per year compared to criteria set at 1x10-5 (see below). But, such a policy also imposes costs on cities, counties, rate payers and industry of potentially several billion dollars, harming the economy of the state. In addition, as noted above, these risk calculations contain needlessly conservative assumptions such as that people drink 2.4 liters (about 2.5 quarts) of untreated surface water. This policy choice actually harms public health because it diverts resources from reducing other risks that are much more significant. Comments submitted by the Idaho Association of Commerce and Industry (IACI) on August 21, 2015, citing material previously submitted by ARCADIS, demonstrate that there is no measurable difference in the number of excess cancers expected for Idaho residents under criteria based on 1x10-5 versus 1x10-6. Specifically, deriving criteria based on a 1x10-5 allowable excess lifetime cancer risk management goal for the population size of Idaho in 2012 would be expected to lead to an increase of 0.23 cancers per year among average Idahoans-- from 2570.00 to 2570.23 cancers per year in Idaho in 2012. Using a 1x10-6 excess lifetime cancer risk, the increase in annual cancer incidence would be 0.023 cancers—or going from 2570.00 to 2570.023 cancers per year. The difference in the number of excess cancers resulting from the application of criteria based on the different risk levels is so small it is not measureable, and would be lost in the year-to-year variation in cancer incidence. Yet, as noted, it could cost several billion dollars, harming local governments and industry in the state	In accordance with EPA's 2000 human health criteria methodology, DEQ has chosen a 10^{-5} cancer risk level, but also feels that it is appropriate to look at the tribal consumption of salmon, freshwater and estuarine species. The use of the 10^{-5} risk for the higher consuming tribes will result in a more protective risk level for the general population, but that will be the case no matter what approach DEQ uses—risk will always be uneven across populations that have different consumption patterns.
	13	The proposed standards are calculated to protect only 50% of tribal fish consumers, as opposed to the 95th percentile for the general population. A water quality standard must protect all consumers and cannot disproportionately impact a discrete and vulnerable community (such as tribal communities). That is an issue of environmental justice that will not pass any legal muster.	The criteria proposed will protect the designated recreational use that includes fishing for the population of Idaho, and at very low level of risk – high degree of protection. Different portions of the population and each individual therein will necessarily have different risk, but this is by virtue of differing fish consumption habits, not the criteria. Unequal risk in this situation is due to unequal exposure, not unequal or unfair application of water quality criteria. This reality of differing risk due to differing fish consumption cannot be changed through criteria, would exist absent criteria. It is not injustice. The mean consumption rate for the Nez Perce tribe corresponds is closer to the70th %tile, not the 50th.
	14	DEQ has proposed water quality standards for Idaho's waters that were calculated using substantially reduced levels of protection for tribal people as compared to the general population. Idaho's choice to limit the protection levels for tribal populations in Idaho threatens our tribal waters and the current and future ability of tribal members to safely practice a subsistence lifestyle. DEQ's proposed standards are also weaker than those proposed by all other states and tribal governments in	As explained immediately above and in response to commenter 2 in this section, we are being protective and it is not possible to equalize risks. If you actually compare criteria, not fish consumption rates, you will find that DEQ's proposed standards are not weaker than those adopted or proposed by all other states and tribal governments in the region.

		the region.	
	15	IDEQ's choice to set a less protective, acceptable cancer risk level and hazard quotient for tribes by subcategorizes tribes from the general population and utilizing the mean consumption rate at cancer risk level of 10^{-6} amounts to an unacceptable health risk to Tribal members.	Idaho's risk management choice recognizes the inherent differences in risk among segments of the general population and goes above EPA's national guidance on the matter that speaks to an allowable incremental cancer risk level of 10^{-4} : *"EPA also believes that criteria based on a 10-5 risk level are acceptable for the general population as long as States and authorized Tribes ensure that the risk to more highly exposed subgroups (sportfishers or subsistence fishers) does not exceed the 10-4 level."* EPA goes on to say in chapter 2 of their 2000 human health methodology: *"EPA believes that both 10-6 and 10-5 may be acceptable for the general population and that highly exposed populations should not exceed a 10-4 risk level. States or Tribes that have adopted standards based on criteria at the 10-5 risk level can continue to do so, if the highly exposed groups would at least be protected at the 10-4 risk level. However, EPA is not automatically assuming that 10-5 will protect "the highest consumers" at the 10-4 risk level. Nor is EPA advocating that States and Tribes automatically set criteria based on assumptions for highly exposed population groups at the 10-4 risk level. The Agency is simply endeavoring to add that a specific determination should be made to ensure that highly exposed groups do not exceed a 10-4 risk level. EPA understands that fish consumption rates vary considerably, especially among subsistence populations, and it is such great variation among these population groups that may make either 10-6 or 10-5 protective of those groups at a 10-4 risk level."* Idaho has looked at Idaho specific data for both the general population and three more highly exposed subgroups of the general population. With our proposal an individual would have to eat more than 665 g/day of fish from Idaho's waters *every day for 70 years* to exceed a cancer risk level of 10^{-4}.
	16	In calculating water quality criteria, Idaho has chosen to set the cancer and non-cancer protection levels for the general population at the 95th percentile, but for tribal populations the levels would only be for the mean. This is discriminatory, would result in disproportionate and disparate risk to tribal members, and would provide unequal protection as a direct product of state action. Idaho's standards must eventually be submitted to and accepted by the U.S. Environmental Protection Agency (EPA), but it is highly questionable (to say the least) whether standards based on this obvious differential treatment will obtain the necessary approval. The CTUIR DNR would encourage EPA to reject such standards.	It is impossible to equalize risks among populations or all people in a population. Please see response immediately above. The inherent difference in risk distribution is illustrated in the graph below comparing the risk distribution for two populations:

			 Changing water quality criteria (if it changes fish quality) will shift these curves left or right, but it will do nothing to close the gap between them.
	17	First, IDEQ has taken the fish consumption rate for one higher consuming population – the Nez Perce Tribe – and applied that rate to develop state-wide standards. For fish-only criteria, that Tribe's rate drives all of the derived levels, since it is substantially above both the general population exposure level and the exposure levels for other high-consuming populations. We believe that using this higher fish consumption rate for a particular population to derive state-wide criteria is not appropriate. We are also concerned with IDEQ's choice to apply an incremental cancer risk level of 10-6 in deriving its criteria. While we recognize that under Federal guidance, the State has the discretion to make that choice, we note that under that guidance, IDEQ could also use a risk level of 10-5. We see no basis for applying 10-6 instead of 10-5, when there is no significant difference in risk posed to the public, and the difference in compliance costs to regulated parties – and to the public that must eventually bear those costs - could be very significant. Finally, we encourage IDEQ to use the best available science for determining Relative Source Contribution (RSC) values, rather than simply relying on EPA's recommended values.	Although the Nez Perce Tribe's fish consumption ended up driving our proposed criteria that was not a predetermined outcome, but rather a consequence of considering higher end consumers per EPA guidance. DEQ used the group 2 fish for the Nez Perce tribe. There was no comparable fish group in Idaho's general population survey results. The survey did record all fish. While this includes a broader range of fish than the group 2 fish, it is the most comparable fish grouping. The mean tribal fish consumption rate is comparable to the 95% of the general population consumption of all fish. This is consistent with, while more conservative than, EPA's national guidance in which they used the 90% of the general population's consumption of freshwater + estuarine fish while using the average consumption for higher consuming populations. DEQ has determined to use a 10^{-5} risk level. See response to commenter 5 in the section "level of protection/allowable risk."
	19	Our most significant point of objection here is the final Fish Consumption number that DEQ has chosen to integrate into its standards. The number that is being used is not protective of human health. As a result, this proposed rule incorporates water quality standards for numerous pollutants that are not sufficiently protective. This is especially true with regard to how these rules will affect the health of Tribal Members. It is totally unacceptable to intentionally develop standards that are protective for 95% of Idaho's white population and only protective for the mean of Tribal members. While there might be some means to rationalize this with statistics, it is immoral and wrong for the State of Idaho to develop standards that fail to provide Tribal members with the same level of protection as is provided for Idaho's larger white population.	The protectiveness on the proposal should be determined by the resultant criteria, not any particular component of the criteria calculation. As noted above, it is not possible to equalize risk, provide the same level of protection to all. In addition, DEQ is adopting state wide criteria. Inherent in the development of criteria for all Idaho residents is the unavoidable fact that some individuals or groups of individuals will be affected differently by the criteria. EPA's 304(a) recommended criteria are based upon the 90th percentile

		We urge you to revisit this decision. … We are concerned that certain high consuming subpopulations will be placed at an unacceptable risk if DEQ provides 10-6 level of protection only to the mean of the overall subpopulation. We advocate that DEQ instead provides this level of protection to the 95th percentile of the high consumer subpopulation. Failure to do so creates environmental justice issues as it exposes Tribal members and all fishing/angling Idahoans to elevated levels of risk. These high consuming members of the public are specifically the people that need to be protected – they are the people eating larger quantities of fish.	consumption rate for the general population, while the default fish consumption rates used for higher consuming populations reflect the average consumption rate. Our proposal is well within EPA's guidance in its level of protection afforded high end consumers. Please see responses above, particularly to commenters 2, 13, & 15.
	20	The proposed standards are fundamentally flawed in two significant ways. First, the proposed water quality standards were calculated using substantially reduced levels of protection for tribal people as compared to the general population. The RTOC believes the utilization of the mean consumption figure for tribal populations fails to protect the health of a great number of Idaho residents and those who fish in Idaho. Moreover, the decision to protect the average person, as opposed to most of the vulnerable population, is a significant environmental justice matter – one that makes this proposal significantly flawed and beyond the possibility of EPA approval. According to EPA, environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental and commercial operations or policies. This proposal is anything by "fair treatment" because a disproportionate burden of the impact of toxic pollution will fall upon tribal communities. … Given these concerns, the RTOC would urge IDEQ to "go back the drawing board" and look to the process utilized in the State of Oregon, which adopted a rate of 175 grams per day of fish consumption. We believe that the Oregon rate is appropriately protective of subsistence use of fish in our Region and should be considered in any effort to review Idaho's consumption rate. In short, we believe that IDEQ should adopt a rate that is protective of human health. If IDEQ is unable to fully consider the impacts of toxics on tribal health, we would urge IDEQ to allow EPA to step in and to promulgate standards that are protective of the health of all fish consumers in the State.	Basing the criteria for carcinogens on a 10^{-5} incremental risk level is a very high level of protection that goes above what EPA guidance suggests is acceptable. More importantly there is no "disproportionate share of the negative environmental consequences resulting from" these criteria. The criteria are applied equally across the landscape regardless of who uses the water. While there are differences in risk, these are due to immutable differences in consumption habits; consumption habit differences that are unrelated to water quality criteria, existed prior to water quality criteria, and would persist at lower (or higher) criteria, or even absent criteria. We firmly believe that the criteria we proposed are protective of all in Idaho, even high end consumers. We urge you to evaluate our proposal on the whole, not just by its fish consumption rate.
	21	The EPA supports DEQ's proposed policy decision to retain its 10-6 cancer risk level to derive human health criteria.	
	22	As a part of setting human health water quality criteria, DEQ also has policy decisions to make, especially in regards to selecting a risk target. The selection of a risk target significantly influences the final calculated human heath water quality criteria. There are a number of aspects of selecting the risk target, such as ensuring the criteria are protective of Idaho residents (including subpopulations that have high fish consumption rates), consideration of conservatism that is inherent in risk calculations, how the resulting calculated criteria compare to background and ubiquitous chemicals (such as PCBs) and the feasibility of achieving the criteria. EPA guidance provides latitude to DEQ in selecting risk targets. IACI recommends that a risk factor of one to 10^{-5} for both the Idaho and tribal populations provides the "balance" among these different aspects for determining human health water quality criteria.	Please see response to commenter 5 above in this section on "level of protection / allowable risk."

		… EPA chose to use the one-in-one million (10^{-6}) risk level as the default value when calculating HHWQC because it believes this risk level "reflects an appropriate risk for the general population." However, EPA also notes that risk levels of 10^{-5} for the general population and 10^{-4} for highly exposed populations are acceptable. A target risk level of 10^{-4} is sometimes interpreted as meaning that highly exposed populations are not as well protected. However, as discussed in a paper by Kocher, "if only a small population would be at greatest risk, the expected number of excess cancers corresponding to individual risks at the de minimis level of 10^{-4} would still be (essentially) zero." Given that the 10^{-4} risk level has been identified as an acceptable/de minimis risk level for highly exposed populations, it may be useful to consider exactly what that risk level represents in terms of fish consumption rates. If the default fish consumption rate is 17.5 g/day represents a 10^{-6} target risk level, then a highly exposed population that eats as much as 1,750 g/day will still be protected at a 10^{-4} risk level.	
	23	We urge IDEQ to reassess its proposed risk policy choices on carcinogens and non-carcinogens. Based on material previously submitted by ARCADIS, a nationally recognized environmental consulting firm, there is no measurable difference in the number of excess cancers expected for Idaho residents under criteria based on a 10^{-5} versus 10^{-6} excess lifetime cancer risk (ELCR). Specifically, deriving criteria based on a 10^{-5} (instead of 10^{-6}) allowable ELCR management goal for the population size of Idaho would be expected to lead to an increase of 0.23 cancers in total per year—from 2570.00 to 2570.23 (based on the 2012 Idaho population). If a $1x10^{-6}$ ELCR were used, the increase would be 0.023—from 2570.00 to 2570.023 (based on the 2012 Idaho population). The difference in the number of excess cancers resulting from the application of criteria based on the different risk levels is so small that it is basically immeasurable and statistically without meaning because of the year-to-year variation in cancer incidence. Moreover, as noted in the IACI comments, these calculations do not reflect that IDEQ is currently proposing to apply the 1x10-6 risk management goal to the 95th percentile of the general population, an <u>even more</u> stringent benchmark than used in the above example and much more stringent than the EPA's national risk policy guidance. Clearwater Paper urges IDEQ to modify the ELCR used in selecting carcinogenic HHWQC's to the more stringent of 1 in a 100,000 at the 95th risk percentile of either the general population or the tribal risk distributions <u>assuming</u> the very important statistical correction discussed below (and in Attachment A) is adopted by IDEQ. With this adjustment, spurious 303(d) listings will be avoided and only those water bodies posing elevated and unacceptable risk would be listed thereby avoiding unneeded TMDL's and unwarranted NPDES allocations that provide no measureable improvement in public health. To provide some perspective, the added risk from the proposed risk policy change is the equivalent of the average Idahoan *driving an additional 11 miles a year*. Noted below is a discussion of the cost implication of the proposed standard—**<u>$16 billion</u>** over the next 25 years for municipal and industrial dischargers in Idaho, with no guarantee of even achieving the de minimis benefit represented by the proposed HHWQC based on an ELCR of 10^{-6} (when compared to 10^{-5}). … Because the appropriate level of risk is a matter of policy, IDEQ and the Idaho Legislature represent the appropriate bodies to establish the state's policy on risk.	Because acceptable risk is a matter of public policy, we concur that such decisions are appropriately made locally, and note that EPA has said so as well: *"EPA believes that ambient water quality criteria inherently require several risk management decisions that are, in many cases, better made at the State, Tribal, or regional level."* EPA, 2000 Please see response to commenter 5 above in this section on "level of protection / allowable risk."
	24	The lack of acknowledgement for the future health of tribal members exhibited by IDEQ in proposing to only protect them at the mean consumption rate at a cancer risk level of 10^{-6} is without merit. The policy position that Idaho has taken to set a less protective, acceptable cancer risk level and hazard quotient for tribal	We are sorry that you so misunderstand the range of risk that we cannot alter through water quality criteria, and our effort to reasonably protect all.

		people is troubling and counter to federal laws and mandates that were developed with the sole purpose of preventing exactly this type of disparate impact. That a state agency would be so influenced by outside forces that care little to nothing about human health and water quality that it would propose standards that specifically protects one sector of the general population less than another is really disgraceful! … Our position has not changed. USRT and its member tribes believe that criteria should be derived by that portion of the general population (our definition of the general population includes tribal members, as should IDEQ's) who eats the most fish (including anadromous/market fish) and thus is exposed to the most risk.	Please see our response to commenters 2, 13, 15 and 20. Please also see our response to you above under topic heading 'Survey design, target population.' As we have noted in our response to the above comments, DEQ's policy choices are entirely consistent with federal law and guidance.
	25	IDEQ has proposed an incremental cancer risk at a level that will protect 95% of the "general" population but only 50% of high fish-consuming Idaho residents. The draft rule perpetuates an ongoing environmental injustice by subjecting tribal people to disproportionately higher risks simply from exercising our rights to harvest First Foods and practice our religion and culture.	As discussed throughout the rulemaking process and above, there is no way to equalize risk- higher fish consumption rates will always carry a greater exposure to fish-borne contaminants. Furthermore, criteria cannot change these inherent differences in risk. Please see our response to commenters
Included fish	2	Idaho's proposed water quality standards were derived following a state policy decision that excludes market fish and anadromous fish except for steelhead from its analysis of general and tribal fish consumption. Excluding anadromous fish from the state's fish consumption rate has had the effect of significantly decreasing the protectiveness of the state's water quality standards. This exclusion ignores the fact that treaties with the federal government have guaranteed the right of tribal members "to take fish" and does not limit in any way the particular mix or species of fish. Tribal people are free to determine what species they wish to harvest and consume and the state must not undermine this treaty-protected right.	DEQ has chosen to use a fish consumption rate that includes salmon to develop the human health criteria. This decision is not based upon tribal treaty fishing rights. Please see response to commenter 5 below.
	5	The exclusion of salmon, other marine fish and market fish is justified for a number of reasons. Several research studies have shown that anadromous fish acquire the majority of the contaminant burden in marine waters, providing good science to support the exclusion of salmon from the fish consumption rate. Arguments have been made for consistency with other Northwest states. However, Idaho water quality rules can't regulate estuarine and marine waters, and where most market fish come from; thus Idaho regulations can't influence concentrations of chemicals present in such waters. As an inland or non-coastal state, Idaho is significantly different from the other Northwest states. The exclusion of salmon clearly recognizes the best science on sources of contaminants for salmon and the inland nature of our state and waters. In Idaho, the inclusion of salmon will not improve public health by decreasing risks associated with chemicals in anadromous fish. In addition, Idahoans could be faced with substantially increased compliance costs that would not result in improved public health benefits.	DEQ has chosen to use a fish consumption rate that includes salmon and all freshwater and estuarine fish no matter the source to develop the criteria. DEQ made this choice in order to be consistent with EPA guidance and for the other reasons set out below. EPA expects standards to be set to enable residents to safely consume from local waters the amount of fish they would normally consume from all fresh and estuarine waters. Therefore, DEQ felt it was important to include more than just local freshwater fish as it had originally proposed. In addition, in its national guidance, EPA allows States the choice to include salmon and other marine fish. While EPA excluded almost all salmon from the fish consumption rate used to develop its 304(a) recommended criteria, EPA has emphasized the need to use local rather than national information, if local data is available. EPA has raised questions concerning whether salmon that are consumed in Idaho pick up some pollutant load from regional waters within the jurisdiction of the CWA, and even in Idaho waters. EPA has provided DEQ very little information regarding the recent research and modeling that it asserts shows the source of pollutants in Idaho salmon.[1] Nevertheless, DEQ believes it is appropriate to include salmon, like DEQ did with respect to steelhead, because of the uncertainties regarding the source of pollutants. In addition, using a broader more inclusive range of fish and thus a

			higher consumption rate, along with other conservative factors, while using a higher risk level, helps to ensure that DEQ's criteria remain protective. In other words, DEQ believes it has chosen an appropriate balance of more conservative and less conservative factors that it believes results in human health criteria that are protective of human health and while reasonably achievable. [1]While DEQ is using the group 2 fish, DEQ is concerned about the accuracy of the modeling performed by Gobas because Gobas used incorrect criteria in the modeling exercise
	7,8	1. **Market Fish:** ISWR fully supports IDEQ's determination that the only market fish to have any rational connection to Idaho water quality would be the Rainbow Trout. The members of ISWR strongly feel that the inclusions of any market fish not found in Idaho's waters would yield a standard that would be difficult for municipalities and industries to meet and would have no impact on the toxics found in those fish. 2. **Anadromous Fish:** ISWR supports IDEQ's decision to exclude anadromous fish in setting the HHWQC standards. Anadromous fish present in Idaho's waters can potentially collect only a negligible amount of contaminants (if any) from their time in Idaho waters, so to include their consumption in a risk assessment associated with setting criteria for Idaho waters would be inaccurate, overly conservative and not consistent with the state's goal of using best available science in rule makings.	Please see response directly above.
	9	There was a great deal of discussion about anadromous fish and Idaho's fresh water species. We support DEQ's decision to base the update of the rules on consumption of Idaho's fresh water species since our rules would have no impact on fish which spend most of their life cycle in the waters of other states and the ocean. The same logic applies to Idaho fish versus market fish.	While we agree that the effect of Idaho's water quality criteria on fish that grow up outside Idaho waters is limited, Idaho does contribute pollutants to downstream waters and thus has some effect. By including these other fish we recognize a shared responsibility among all states in the nation. In addition, please see response to comment above.
	11	A foundational assumption in this rulemaking is that Idaho water quality standards influence the contaminant levels in fish and water. When considering the different sources of fish consumed by Idaho residents, such questions arise such as to where do these different sources of fish acquire contaminants and can Idaho water quality rules change the levels of contaminants in these fish? The Department, for the purpose of the FCR study, decided that the fish included in the survey need to be fish, in which the contaminant levels can be influenced by Idaho quality criteria. This definition of "Idaho fish" excludes marine fish, most market fish (except rainbow trout), and salmon.' Though salmon spend a part of their life history in Idaho water's, studies have definitely shown that greater than 95% of the contaminants accumulated by salmon occur in marine water. Since the purpose of the establishing a fish consumption rate for Idaho residents is to help determine appropriate water quality criteria for Idaho waters, such regulations will have no effect on the levels of contaminants acquired by such fish as salmon. Simplot believes that the Department has appropriately selected the fish species to be included to determine fish consumption rates for Idaho residents.	Please see also responses to other commenters in this section.
	13	Second, the rate excludes anadromous fish, including salmon, because the State does not believe it can impact waters outside of Idaho. This ignores the fact that Idaho water and its pollution contributes to water quality in the Snake and Columbia Rivers outside of the state. It also ignores Idaho's legal obligation to avoid causing and contributing to water quality issues downstream. 40 C.F.R. § 122.4. Turning a blind eye to anadromous fish ignores these facts and leaves one of Idaho's most treasured natural resources – salmon – without protection that they deserve.	DEQ has chosen to use a fish consumption rate that includes salmon in calculating the human health criteria. DEQ is not, however, including salmon in order to protect salmon as the commenter asserts. The criteria at issue are human health criteria; they are not developed to protect aquatic life. DEQ has separate aquatic life criteria for toxic pollutants. The proposed criteria are about protecting human health; there are separate aquatic life criteria set to protect fish, including salmon.

	16	The CTUIR DNR disagrees with your decision to exclude market fish and anadromous fish (except for steelhead) from your analysis of general and tribal fish consumption. This fails to accurately reflect the reality of fish consumption patterns and will substantially decrease the degree of protection afforded by the state's water quality standards.	DEQ has chosen to use a fish consumption rate that includes salmon and all freshwater and estuarine fish in the consumption rate used to calculate the criteria. The reasons for this decision are set forth in response to commenter 5 above.
	19	Market Fish We disagree with DEQ's decision to exclude the consumption of market fish when calculating Idaho's fish consumption rate and urge the Department to reconsider this matter and include market fish. The consumption of Idaho fish must be considered within the context of the actual (surveyed) eating patterns of Idahoans. If Idahoans are consuming market fish, and thus being exposed to contaminants in these fish, Idaho water quality standards must be set such that the consumption of Idaho fish does not add to a consumer's pollutant burden in a way that results in physical harm to the consumer. Idaho consumers should not have to choose between eating market fish and eating Idaho fish; Idaho's standards should be set in such that a consumer can consume fish from both sources and do so at the levels that they are accustom to. In order to do so safely, Idaho standards should be set in a manner that accounts for the consumption of both local and market fish. Anadromous Fish We disagree with DEQ's decision to exclude the consumption of anadromous fish when calculating Idaho's fish consumption rate and urge the Department to reconsider this matter and include anadromous fish. Our decision to support the inclusion of anadromous fish in the calculation of Idaho's fish consumption rate is based in part on the fact that various species of anadromous fish spend varying lengths of time in Idaho waters and/or in waters that could be affected by Idaho water quality standards. The duration of such residency of anadromous fish varies from one to three years and there is scant scientific evidence to determine what proportion of a fish's pollutant burden comes from its time in Idaho or in downstream waters affected by Idaho water quality standards. As such, it does not seem to be defensible to lump all anadromous fish together and exclude them from inclusion.	DEQ has chosen to use a fish consumption rate that includes all freshwater and estuarine fish consumption. Please see response to commenter 5 in the above section.
	20	Second, the proposal is fundamentally flawed because it excludes market fish and anadromous fish, except for steelhead, from its analysis of general and tribal fish consumption. Excluding anadromous fish, such as salmon, from the consumption rate significantly decreases the protection afforded to human health by the standard. This also ignores the subsistence use of salmon and other anadromous fish that is a legally-protected right of many Tribes both in Idaho and outside of the State, who have treaty rights to fish within state boundaries.	Pease see response to commenter 5 above.
	21	**Market Fish (Other than Rainbow Trout)** Idaho's approach is to exclude from the FCR the fraction of the consumption of freshwater and estuarine fish and shellfish that is currently associated with fish originating from waters outside of Idaho. Idaho justifies its approach on the grounds that Idaho lacks regulatory authority over fish caught outside of its borders. Based on the information and rationale EPA has received from Idaho to date, we note the following reasons why Idaho's justification for this approach is not scientifically sound: • The purpose of including consumption from waters outside of Idaho's borders in the FCR is not to support any purported regulation of such waters by Idaho. Rather, the purpose of including this fish consumption in	DEQ has chosen to use a fish consumption rate that included freshwater and estuarine fish, consistent with EPA national guidance. See response to commenter 5 in the above section.

		the FCR is so that a determination that a particular Idaho water body is "fishable" will result in adequate health protection for Idahoans should they consume, from local waters, the amount of fish they would normally consume from all inland and near shore waters. • The approach of excluding "market fish" appears to assume that there is no exposure to pollutants from fish that were sourced outside of Idaho. This is because the full allowance for acceptable pollutant levels is given exclusively to local state waters. Consider if every state took this approach. For a non-carcinogenic pollutant with a specified Reference Dose, the criteria development equation would allocate this full dose to fish originating from the individual state. If a person then consumes overall 25 grams/day (glday) of fish, comprised of 5 glday each from 5 different states (and each state set a state-specific consumption rate of 5 glday), then the consumer could potentially receive five times the acceptable pollutant dose.	
	21	**Anadromous Fish** The EPA recognizes that Idaho has included steelhead, an anadromous species, in the calculation of its FCR. However, the EPA continues to have concerns with DEQ's proposed policy decision to exclude all other anadromous fish from the FCR, and recommends that DEQ either include all other anadromous fish in the FCR or provide additional demonstration of how criteria derived using a lower FCR that excludes anadromous fish will protect downstream shared waters in the Columbia River basin and protect the tribal populations exercising their treaty-reserved rights (see comments below regarding consideration of tribal reserved fishing rights). While the EPA's 304(a) recommended criteria account for exposures to non-carcinogens and nonlinear carcinogens in anadromous fish using the relative source contribution (RSC), the EPA supports and recommends that states include anadromous fish in the FCR when there is credible and compelling evidence of significant consumption of anadromous fish. For example, Oregon and Washington chose to include salmon in the FCR used to derive human health criteria due to, amongst other reasons, the large amounts of salmon consumed by tribes, the variation in individual market basket preferences (i.e., the types of fish that people purchase and consume), and uncertainties in the sources of salmon contaminant body burdens from inland and near shore waters (e.g., salmon residing in Puget Sound). The EPA approved Oregon's human health criteria in 2011. Similarly, the EPA supports Washington's decision to develop human health criteria using a FCR that includes anadromous fish consumption. The EPA also has reviewed recent work related to salmon contaminant acquisition from near coastal waters of the Pacific Northwest and recommends that DEQ also consider this available information. For example, the research conducted by Sandra O'Neill, James West, David Herman, and Gina Yitalo provides evidence that certain Pacific Northwest salmon species, most notably chinook and coho, acquire organic pollutants from near coastal marine waters. O'Neill et al. assayed salmon and herring for several classes of persistent organic pollutants (POPs). The POPs of interest included polybrominated diphenyl ethers (PBDEs), polychlorinated biphenyls (PCBs), hexachlorobenzene (HCB), and the insecticide DDT. An analysis of these POPs in herring populations identified unique regionally-specific patterns of these chemicals or "fingerprints," thus showing herring are acquiring contaminants from waters under CW A jurisdiction. Chinook salmon harvested from specific locations were found to have the same contaminant "fingerprints" as those exhibited by co-located herring samples, suggesting that they are feeding on herring in near coastal waters. This work provides evidence that certain Chinook salmon species are acquiring contaminants from near coastal waters of Washington and Oregon, as well as California and British Columbia. Similar but more limited data by O'Neill et al. indicate that coho salmon, which reside in coastal waters and have feeding preferences similar to chinook salmon, are also acquiring contaminants from waters under CW A jurisdiction. In addition, EPA has communicated with Laurie Weitkamp and Peter Lawson from NOAA, who have stated	DEQ is using the mean of the Nez Perce consumption of their Group 2 fish. This includes near coastal, estuarine, freshwater and anadromous fish. Please see DEQ response to commenter 5 in the above section regarding market fish for the reasons for DEQ's decision. As set out above, while Nez Perce Group 2 fish includes salmon DEQ does not believe the tribal treaty fishing rights mandate this result. Instead, DEQ's decision is based on the uncertainties raised by EPA regarding the source of salmon pollutant loads, and the balance of the various input factors DEQ is using to develop the criteria. It should also be noted that DEQ has included a downstream waters provision recommended by EPA. EPA itself has concluded that downstream protection does not mean that all state standards must be identical.

		that chinook (and likely coho) salmon from Idaho reside in near coastal waters off the Oregon coast. Myers at al. 1998, analyzing coated wire tag recovery, has concluded that Snake River Chinook salmon have a coastal residence pattern. O'Neill et al.'s work shows that resident chinook salmon from these waters have regional contaminant fingerprints specific to this area. Given the contaminant fingerprint correlation between herring and coastal resident salmon at all locations where both species were analyzed, it is very likely that coastal salmon originating in Idaho waters are acquiring contaminants from coastal waters under CW A jurisdiction. EP A recognizes that salmon acquire most of their body weight and, therefore, most of their body burden of highly bioaccumulative contaminants during open-ocean feeding. However, it is possible that salmon may acquire less bioaccumulative contaminants directly from water during their return spawning migration as adults. EPA consulted with Frank Gobas, a well-known expert in bioaccumulation and bioconcentration in aquatic food webs, to evaluate this issue and prepare an analysis. The analysis first involved the development of contaminant concentrations in salmon tissue that were associated with either a cancer risk of 1 in 1,000,000 or a non-cancer hazard quotient of 1. These risk-based concentrations assumed a fish consumption rate of 175 grams per day by an 80 kilogram person. Next, bio-concentration modeling was performed to determine the water concentration that results in a salmon tissue concentration associated with the aforementioned risk-levels. The model includes quantitative structure activity relationship biotransformation of chemicals and the impacts of changing lipid content associated with migration energy expenditure. The model also accounts for the time dependent nature of chemical uptake. This modeling utilized a range of migration times for spawning Idaho chinook and sockeye salmon associated with several harvest locations within Idaho. The longer the migration time, the greater the opportunity for contaminants to bioconcentrate. Finally, ratios of Idaho's proposed water quality criteria to modeled water concentrations were computed. The results showed, for example, toxicity ratios of 10 or greater for 13 chemicals with non-carcinogenic toxicity. In other words, for 13 non-carcinogenic chemicals, Idaho's proposed criteria could result in hazard quotients of 10 or more for populations consuming Idaho returning salmon at a rate of 175 grams per day or more. This far exceeds EPA's recommendation of limiting risks to non-carcinogens to a hazard quotient of 1 or less. Therefore, DEQ should consider these results. EP A has enclosed the analysis for your review and consideration (see attached spreadsheets). Idaho cites work by Hope 2012, suggesting that salmon do not acquire contaminants from waters under CW A jurisdiction, to justify excluding anadromous species from the FCR used to develop DEQ's proposed criteria. The Hope study's conclusions are limited by its focus on PCBs and not on other toxics, and the study does not consider salmon acquisition of contaminants from near coastal waters as demonstrated by 0'N eill et al. Central to the modeling is the assumption that contaminant uptake occurs largely through diet. While this is true for PCBs, depending on a chemical's lipophilicity, direct uptake from water may be a significant contributor to an organism's contaminant body burden. The Gobas work on contaminant bioconcentration in migrating adult Idaho salmon, described above, provides evidence that adult Idaho salmon may acquire contaminants directly from the water column through their gills, in addition to dietary uptake. Finally, the Hope study also does not discuss different patterns of contaminant uptake associated with the complex life histories of other salmonids, such as steelhead. In conclusion, DEQ should consider the above-referenced scientific information when making its final decision on whether to include anadromous salmonids, other than steelhead, in calculating the FCR. The EPA remains concerned that Idaho's decision to exclude most anadromous salmonids results in human health criteria that are not adequate to protect Idaho's primary and secondary contact recreation uses.	
	22	The ultimate result of the fish consumption rate rulemaking is the refinement of Idaho’s human health water quality criteria (HHWQC) to ensure such criteria are protective of public health. Thus, understanding	Please see response to commenters above.

		the potential exposure of the public to contaminants from eating fish from Idaho's waters and drinking Idaho water is key to setting water quality criteria and subsequent discharge levels for the regulated community. Underpinning this regulatory framework is the assumption that regulation of dischargers in Idaho directly affects the contaminants in Idaho fish and water being consumed. Thus, the substantive question related to fish consumption by Idaho residents is, what fish should be included in determining fish consumption rates for Idaho residents? A number of fish found in the marketplace come from marine sources, international sources or fish that are anadromous. Once again, back to the foundational assumption that Idaho water quality standards influence the contaminant levels in fish and water, where do these different sources of fish acquire contaminants and can Idaho water quality rules change these levels of contaminants in these fish? <u>Anadromous Species</u> Unlike true freshwater species, anadromous fish spend a substantial portion of their life in marine or estuarine environments that are outside the jurisdiction of Idaho. If a substantial fraction of the chemical-specific body burden (mass per fish) found in returning adult salmon is acquired during time spent in the ocean, there is effectively nothing Idaho water quality criteria can do to reduce risks to humans resulting from exposure to chemicals in the salmon they eat. Thus, the ultimate question is, what fraction of the final chemical burden in Idaho's returning adult salmon is acquired in Idaho vs. in the ocean? … IACI supports DEQ's definition of "Idaho Fish" and the decision to exclude market fish (other than rainbow trout), anadromous salmon, marine fish and other non-Idaho resident fish for determining fish consumption rates for the purpose of setting Idaho water quality standards. As discussed earlier, Idaho water quality regulations cannot control the level of contaminants in these excluded fish. For example, the predominant fraction of the ultimate PBT burden found in harvested adult salmon, even salmon passing through highly contaminated fresh and estuarine waters during out migration, is accumulated while in the ocean phase of their life cycle (i.e., Cullon et al. 2009; O'Neill and West 2009). This conclusion is supported by modeling as well (Hope 2012).18 Indeed, HHWQC could be set to zero and human health risks associated with consumption of these fish, assuming such risks are present, would remain unchanged. In short, Idahoans could be faced with substantially increased compliance costs and garner no benefit from such increased costs.	
	23	**Market Fish** Clearwater Paper supports IDEQ's scientifically justified choice of limiting the level of market fish by including only those fish reared naturally or purposefully in Idaho to set HHWQC. To include species not grown in Idaho or Pacific Northwest states in a fish consumption rate would be overly stringent and quite frankly result in risk assessments not rooted in reality. Because it is scientifically based and defensible and would result in an accurate risk assessment outcome, we strongly urge IDEQ to maintain the treatment of market fish as proposed. **Anadromous Fish** As with the issue of market fish, including anadromous fish that spend a negligible amount of time in Idaho waters would result in an overly stringent risk calculation and would have a negligible difference on the actual risk to those eating large amounts of anadromous fish. Forcing Idaho to adopt overly and unnecessarily stringent controls would not affect contaminants in anadromous fish: so to include such fish in the determination of HHWQC is not following a science-based decision process. Because it is scientifically	Please see response to commenters above.

		based and defensible and would result in an accurate risk assessment outcome, we strongly urge IDEQ to maintain the treatment of anadromous fish as proposed.	
	24	Fish Included – Fish group 2 should be used for determining Idaho's fish consumption rate (FCR) and not a cherry-picked group of fish that does not adequately reflect consumption patterns in Idaho, nor leads to protective WQC. Anadromous and market fish must be included in the FCR calculation and we adamantly oppose and reject the back-of-the envelope calculation used by IDEQ to inappropriately manipulate tribal FCR data. USRT and its member tribes reject the manner in which IDEQ derived both the angler/non-angler FCR and the tribal FCR, which was erroneously revised by stripping out anadromous and market fish. As such, we find that the FCR used by IDEQ to be illegitimate and in no way do we support its use.	DEQ has chosen to use group 2 fish.
	25	Salmon is a tribal First Food and the importance of it to the tribes cannot be overstated. The fishery resource is not only a major food source for tribal members, but also an integral part of our cultural, economic, and spiritual well-being. As ceremonial and subsistence fishers, we rely on the State to set reasonable and legitimate water quality standards that will protect our water and the fish that we consume from harmful exposure to toxic pollutants.	DEQ has chosen to use a fish consumption rate that included salmon in its criteria development. DEQ believes it has set criteria that are protective for all Idaho citizens.
Downstream Waters	5	DEQ has proposed rule language on how to apply the standards to the protection of downstream waters. This is a very significant issue which requires very careful examination and discussion. This provision also introduces new concepts that are undefined, therefore restricting our ability to determine potential impacts to this rulemaking to future DEQ rulemakings and any potential water quality decisions made by EPA. We raised this issue in previous comments and would again recommend that DEQ not include this provision in the rulemaking and address this matter in a future, separate rulemaking	Protection of downstream waters is a requirement of the CWA and its implementing regulations. We believe the added language clarifies current practice in Idaho; is not a new concept. While not a new concept, EPA has made addition of language to state and tribal water quality standards a national priority. Failure to address downstream protection directly in rule could give EPA sufficient reason to find fault with Idaho's proposal.
	6	Protection of downstream waters as required at 40 CFR 131.10(b) is an important consideration in designation of uses and associated water quality criteria. In 2015, EPA adopted revisions of the Water Quality Standards Rule that include clarification of six water quality standards items, including protection of downstream waters. EPA guidance on the six water quality rule elements included discussion of acceptable downstream water quality protection options to states, including narrative of numeric approaches. The proposed Idaho water quality criteria include a narrative for protection of downstream waters at 58.01.02.070.08, which appears to be an acceptable approach under the new water quality standards rule. AIC supports the dual approached proposed by EPA for states to comply with the downstream waters protection element of the rule and Idaho's proposed narrative approach, which is consistent with EPA guidance to states for satisfaction of this water quality standards element.	We agree, and see that it is important to address downstream protection clearly and now, in this current rulemaking effort. We believe the narrative language that we have chosen, based on EPA's template language, meets the requirements of the federal regulations while providing flexibility in implementation consistent with current practice in achieving downstream protection.
	15	The Tribes continue to request that IDEQ implement protective downstream water quality standards for each of the watersheds that may have an impact on reservation waters; particularly the mainstem Snake River, Blackfoot River, Portneuf River and Bannock Creek watersheds.	
	16	Unfortunately, IDEQ has chosen to embrace revised standards based on significantly reduced levels of protection for tribal people as compared to those for the general population. Adopting such standards would result in greater amounts of toxic discharges to Idaho waters than those allowed by other regional states and tribes, and those Idaho waters would eventually become the waters of those adjacent or downstream states and tribes. It is unacceptable that such neighboring jurisdictions should have to bear	It is impossible to equalize risks among all people in a population. (see above) As most of our criteria have decreased in value the proposed criteria, to the extent they affect water quality, offer more protection going forward. Our criteria are also lower than many of the criteria currently in place for Oregon and lower than those currently in place in Washington.

		the burden of Idaho's unenthusiastic approach to safeguarding water quality.	When water quality criteria are implemented – e.g. used in a TMDL or NPDES permit – we look at both Idaho water quality standards as well as those of downstream jurisdictions to make sure both will be met.
	19	While we support the inclusion of this clause directing that water quality in downstream waters shall be protected, we believe that the proposed language needs refinement. We advocate that language be added that states that existing and designated uses shall be protected. Doing so more accurately reflects the true extent of what is required to comply with the legal antidegradation requirements of protecting downstream water quality. See proposed additional language inserted into DEQ's proposed rule language below. All waters shall maintain a level of water quality at their pour point into downstream waters that provides for the attainment and maintenance of the water quality standards and protection of existing and designated uses of those downstream waters, including waters of another state of tribe.	The suggested language is not needed as water quality standards include uses, criteria and antidegradation.
	21	The EPA is encouraged by DEQ's inclusion of a downstream protection narrative criterion in the proposed rule, following the language in EPA's "Templates for Narrative Downstream Protection Criteria in State Water Quality Standards" (EPA publication No. 820-F-14-002). However, the EPA's Protection of Downstream Waters in Water Quality Standards: Frequently Asked Questions suggests that states consider a more tailored and specific narrative criterion and/or a numeric criterion in certain situations, such as when more stringent numeric criteria are in place downstream and/or environmental justice issues are relevant. As mentioned above, most of Idaho's waters are in the Columbia River basin and are, therefore, upstream of Washington's and Oregon's portion of the Columbia River. The EPA strongly encourages DEQ to adopt numeric human health criteria (either in addition to or instead of a narrative criterion) that ensure the attainment and maintenance of downstream human health water quality criteria, or to provide additional rationale detailing how use of a narrative downstream protection criterion in combination with Idaho's numeric human health criteria will ensure the attainment and maintenance of downstream human health criteria, consistent with the EPA's regulations at 40 CFR 131.10(b).	We note that EPA itself denied a Sierra Club petition on this matter in the Mississippi River Valley in 2004 (Letter to Maxine I. Lipeles, J.D. dated June 25, 2004) claiming that downstream protection required uniform state standards. EPA's response was basically that different uses and criteria among states is not a contradictory construct. This is perhaps best captured in this quote from EPA's denial: *The federal regulations state, "In designating uses of a water body and the appropriate criteria for those uses, the State shall take into consideration the water quality standards of downstream waters and shall ensure that its water quality standards provide for the attainment and maintenance of the water quality standards of downstream waters." 40 C.F.R. §131.10(b). The regulations do not compel states to adopt the same criteria and uses, nor do they suggest that this is the only way a state can meet these requirements. The water quality program is structured to provide states with flexibility to determine the best way to meet their obligations under § 131.10(b).* Also, adopting numeric human health criteria that ensure the attainment and maintenance of downstream water quality standards – if that means identically valued criteria – would be difficult. This is because Washington's human health criteria are in a state of flux. With Oregon, their human health criteria are based on a different set of inputs than are Idaho's current proposal and EPA's national recommendations – for bioaccumulation, relative source contribution, toxicity, body weight, drinking water intake in addition to fish consumption rate. A comparison of actual criteria (rather than just one of the input factors) will reveal some of Idaho's proposed criteria are lower in value than Oregon's, others are higher. This mismatch is likely to always be the case, or at least often so, as adjacent sates update their criteria on different schedules and with different information and policy decisions each time. As EPA itself noted in the Mississippi case above, this mismatch does not prevent meeting the requirements of 40 C.F.R. §131.10(b). Therefore a narrative approach is best.

	22	IACI requests that proposed Section 070.08 be withdrawn for the reason articulated in our letter of August 21, 2015 as well as Clearwater Paper's letter of August 20, 2015. In sum the downstream waters provision does not appear necessary and if it is in the future, it should be subject to a different negotiated rule-making. The provision also introduces a variety of new and undefined concepts that IACI cannot discern their potential impact to this rulemaking or future activities by DEQ and EPA. Illustrative of this uncertainty, does the proposed human health criteria rule comply with this new provision? As noted above, Oregon has adopted human health criteria that are likely an order of magnitude more stringent than DEQ's proposed rule. Many Idaho waters directly or indirectly flow into Oregon waters. In fact, the Snake River forms the border between the two states for hundreds of miles. Does this new provision mean that Idaho waters must meet Oregon's human health criteria? If so, then it appears that DEQ's efforts in relying upon a science-based approach to setting human health criteria has been a wasted effort. We are hopeful that such is not intent of the downstream water provision and that this provision is not abdicating the state of Idaho's sovereignty to establish designated uses and water quality criteria to downstream states or Tribes. However in light of the vague terms used in this provision, we are concerned that third parties may use this provision to suggest such a result. Accordingly we believe DEQ should withdraw this provision and consider addressing this issue in another negotiated rulemaking.	Our assessment is that addressing downstream protection in this rule is a prudent step. We follow EPA's national template language for a narrative criterion, the most flexible way to address the federal requirement for downstream protection. Please see our response to EPA's comment on downstream protection directly above. Downstream protection does mean that the quality of water leaving Idaho must meet downstream state water quality standards; this does not mean that all water within Idaho must meet those downstream state standards. In developing discharge permits we can look at downstream dilution as well as fate and transport to assure we meet downstream standards even though different standards apply locally, at the point of discharge.
	23	We urge IDEQ to withdraw this provision (IDAPA 58.01.02.070.08) for the reasons specified in our letter of August 20, 2015. In short, we believe this provision raises too many questions as to how it will be implemented and may complicate approval of this rule by the EPA in light of conflicting state and tribal criteria in this area.	To the contrary, we feel quite certain failure to address downstream protection would complicate approval of this rule by EPA. Please see our response above to commenter 22, as well as our response to EPA (commenter 21) on this matter.
	24	The protection of downstream water quality provision is but words on a piece of paper. The inadequate WQC proposed by IDEQ in no way will protect downstream waters under the jurisdiction of tribes, Oregon, and Washington. Should the WQC be approved, they will certainly lead to downstream water quality violations and open Idaho up to enforcement actions.	We are disheartened that you are prejudging us. Please see response to commenter 21 above.
Tribal treaty right and designated uses	2	The CWA sets a single threshold for setting water quality standards – protection of the designated uses. If a state's human health criteria do not protect both the right to safe harvest and the tribes that consume it, then EPA has indicated that they have the authority, and the duty to disapprove standards that do not protect tribal rights. Idaho must make appropriate policy choices that will result in a level of water quality that is adequate to allow the tribes to safely consume fish taken pursuant to their treaty-reserved rights.	Human health criteria in Idaho attach to the designated uses of recreation (fish exposure only) and domestic water supply (fish + water exposure). Idaho's secondary recreation use speaks to fishing but not any particular level of harvest such as subsistence or sustenance. None-the-less, and recognizing that every individual has a different risk, the data from recent Idaho and tribal fish consumption surveys coupled with Idaho's risk management decisions provide a high level of protection to even high end / higher risk consumers of fish, including tribal members taking fish pursuant to treaty-reserved rights. Please see also response to commenter 15 under "level of protection / allowable risk."

	15	Our expectation is that IDEQ will propose a FCR that recognizes the importance of our reserved Treaty rights and subsistence lifestyle by reducing the exposure risk to our high end fish consumers to the level of the General Population. … This final draft rule as it stands today will not meet our intensions or expectations for the membership to continue exercising treaty reserved rights or to utilize one of our first foods regularly without the risk of acute or chronic exposure to toxins.	It is not possible equalize exposure between populations with different fish consumption levels. Please see also response to commenters 2, 13, and 14 under level of protection / allowable risk above. We believe the criteria we have proposed are protective of high end consumers as required by the CWA. This includes tribal members taking fish pursuant to treaty reserved rights.
	16	Fishing is an appropriate and commonly-accepted designated use for Clean Water Act (CWA) regulatory purposes. In the Pacific Northwest, fishing by tribal members, based on various treaties with the federal government, and in a manner and to a degree contemplated by those treaties, is a "designated use" long recognized and acknowledged by numerous court decisions, above and beyond the CWA-specific definition. State water quality standards must be developed that protect the tribal fishing use. The Final Draft Rule does not.	Please see response to commenter 2 above. DEQ does not agree that the treaty reserved fishing rights require DEQ to adjust the fish consumption rate or increase the protectiveness of criteria beyond that required by the CWA. Please see response commenter 21 below.
	21	Per EPA's regulations at § 131.11(a), water quality criteria must contain sufficient parameters or constituents to protect the designated use, and for waters with multiple use designations, the criteria must support the most sensitive use. In determining whether WQS comply with the CW A and EPA's regulations, when setting criteria to support the most sensitive fishing designated use in Idaho, it is necessary to consider other applicable laws, including federal treaties. In Idaho, certain tribes hold reserved rights to take fish for subsistence purposes, including treaty-reserved rights to fish at all usual and accustomed fishing grounds and stations and in unoccupied lands of the United States, which in combination appear to cover the majority of waters under state jurisdiction. Many areas where reserved rights are exercised cannot be directly protected or regulated by the tribal governments and, therefore, the responsibility falls to the state and federal governments to ensure their protection. In order to effectuate and harmonize these reserved rights with the CW A, such rights appropriately must be considered when determining which criteria are necessary to adequately protect Idaho's waters used for consumption of fish (designated as Primary or Secondary Contact Recreation, IDAPA 58.01.02.100.02(a)&(b). Protecting Idaho's fishing designated uses necessitates protecting the population exercising those uses. Where a population exercising such uses has a legally protected right to do so under federal law such as a treaty, the criteria protecting such uses must be consistent with such right. Thus, in order to protect the applicable fishing designated uses in areas where such rights apply, as informed by the treaty-reserved right to continue legally protected culturally important subsistence fishing practices, the state must consider the tribal population exercising their reserved fishing rights in Idaho as the target general population for the purposes of deriving criteria that will protect the subsistence fishing use and allow the tribes to harvest and consume fish consistent with their reserved rights. The data used to determine the FCR are critical to deriving criteria that will protect the subsistence fishing use. The data used to determine a FCR must reasonably represent tribal subsistence consumers' practices that reflect consumption unsuppressed by fish availability or concerns about the safety of available fish. Deriving criteria using an unsuppressed FCR furthers the restoration goals of the CWA, and ensures protection of human health as pollutant levels decrease, fish habitats are restored, and fish availability increases. If sufficient data regarding unsuppressed fish consumption levels are unavailable, consultation with tribes is important in deciding which fish consumption data should be used.	EPA asserts that tribal reserved fishing rights must be taken into consideration by DEQ in adopting human health criteria. The relevant treaty language reserves the "right of taking fish at all usual and accustomed places in common with citizens of the territory…" and the right to "hunt on the unoccupied lands of the United States…" which has been interpreted to include fishing on unoccupied lands. The CWA requires States adopt criteria sufficient to protect designated uses. DEQ includes fishing as part of its secondary contact recreation use. (IDAPA 58.01.02.100.02.b.) Therefore, Idaho's human health criteria must ensure a level of water quality that allows the safe consumption of fish taken by recreational fishermen. DEQ agrees that, in order to ensure criteria are sufficient to protect the secondary contact recreation use, DEQ must take into consideration the amount of fish consumed by both the general population in Idaho and any more highly exposed subpopulations, including the consumption of fish by members of Idaho tribes pursuant to tribal fishing rights. DEQ has done exactly that. It has used the data from both the tribal surveys and the survey of the Idaho general population in order to set criteria that protect the general population and members of Idaho tribes taking fish pursuant to treaty fishing rights. EPA also, however, asserts that DEQ is required by the treaties in Idaho to use a fish consumption rate that reflects tribal subsistence consumption unsuppressed by fish availability or concerns about the safety of available fish. DEQ disagrees with this assertion for a number of reasons. First, it is worth noting that EPA has provided absolutely no legal analysis in their comments regarding the tribal treaties to support their position that the treaties in Idaho require DEQ to use an unsuppressed subsistence fish consumption rate. Second, the treaties do not expressly preserve to the tribes a right to a level of water quality, and no court has found that such a right is an implied part of the tribal fishing rights.[2] Third, EPA's argument is based on the proposition that the right to take fish under

		With these principles in mind, the EPA has concerns with whether DEQ's decision to calculate the FCR based only on current consumption of Idaho fish, and to use a mean FCR for high consuming populations, will adequately protect the treaty-reserved subsistence fishing use. First, in calculating the FCR, DEQ has not considered suppression, specifically suppressed consumption amongst tribal populations in Idaho with reserved rights to fish for their subsistence. Current average FCRs for the Nez Perce and Shoshone Bannock tribes are below heritage rates documented for both of these tribes, as well as heritage rates for the Kootenai and Coeur d' Alene tribes, suggesting that current tribal consumption rates could be suppressed. Second, given that tribal consumption rates are likely suppressed, DEQ has not provided adequate justification for how a rate based on the mean FCR for the tribal target general population will adequately protect tribal fish consumers exercising their treaty-reserved rights, including those whose consumption is not suppressed. Finally, as discussed in greater detail above, the omission of anadromous species from the FCR may result in criteria that are not adequately protective of Idaho's designated uses as informed by the reserved fishing rights of tribal consumers.21 Based on local conditions in Idaho, it is particularly appropriate to include anadromous species in the FCR, because it is well documented that a large proportion of fish consumption for the tribal target population to be protected consists of anadromous species, such as salmon. Accordingly, EPA recommends that DEQ select a FCR that reflects the tribal subsistence consumers' unsuppressed fish consumption, including consumption of anadromous fish. If such data are unavailable at this time, the EPA recommends using an upper percentile of consumer only data to account for uncertainty in the unsuppressed consumption rates of tribal consumers within the state and to help ensure that the resulting criteria protect the tribal target general population exercising their treaty-reserved rights. Additionally, government-to-government communications with affected tribes could inform, among other things, which fish consumption data should be used by DEQ.	the treaties includes a right to take the amount of fish that reflects an unsuppressed subsistence level of consumption. The relevant cases do not support this proposition, and in fact, say just the opposite. The U.S. Supreme Court in Washington v. Washington State Commercial Passenger Fishing Vessel Ass'n, 443 U.S. 658, 99 S.Ct. 3055 (1979), interpreted the off-reservation right to take fish in common to mean that the tribes have a right to "take a fair share of the available fish." The court explained that a fair share is a maximum of 50% of available fish, that can be reduced depending upon changing circumstances. Importantly, the court specifically refused to adopt the tribe's argument that the treaty guarantees a right to take as much fish as necessary to support their subsistence and commercial needs. In addition, the right was to "available fish" and the right was one that was subject to changing circumstances, rather than a right to take fish in the amounts the tribe once had harvested to support a subsistence lifestyle. Other courts have consistently held that the off-reservation right to take fish in common with others does not include a right to take an amount of fish at a level that existed when the treaty was signed. The Idaho district court in Nez Perce v. Idaho Power Company, 847 F. Supp. 791 (1994) held that the Nez Perce treaty does not provide the Nez Perce Tribe with an absolute right to preservation of the fish runs in the condition existing in 1855, free from environmental damage caused by a changing and developing society. Similarly, the Idaho State District Court in the Snake River Basin Adjudication was called upon to determine whether the off reservation right to take fish included a right to an amount of water necessary to support the right. The court found that the Nez Perce treaty language at issue did not guarantee a predetermined amount of fish, establish a minimum amount of fish, or otherwise require maintenance of the status quo. The right is subject to changing circumstances incurred by settlement and development. In Re SRBA (Nez Perce Instream Flow Claims) Order on Motions for Summary Judgement (November 10, 1999). The 9th Circuit Court of Appeals has also confirmed that the treaty right to take fish at the usual and accustomed places does not entitle the tribes to a particular minimum allocation of fish. U.S. v. Washington, 759 P.2d 1353, 1358-59 (9th Cir. 1985) ("Contrary to certain statements in the district court's opinion, the Supreme Court in Fishing Vessel did not hold that the Tribes were entitled to any particular minimum allocation of fish."); See also, U.S. v. Adair, 723 F.2d 1394 (9th Cir. 1983) (court found that the exclusive right to hunt and fish on the Klamath Tribe reservation included the implied reservation of water rights, but that this was only a right to the water to support hunting and fishing rights as currently exercised and "not as these rights once were exercised by the Tribe in 1864.")[3] In short, the underlying premise of EPA's argument that the treaties preserve a right to take and consume fish at a subsistence rate unsuppressed by fish availability or concerns about the safety of available fish is not supported by the treaty language itself or by relevant case law. Therefore, while DEQ recognizes its obligation under the Clean Water Act to develop criteria that are protective of all

			Idaho citizens, including tribal fish consumers, there is simply no support for EPA's position that DEQ is required by tribal treaty fishing rights to use a subsistence fish consumption rate unsuppressed by availability of fish or concerns regarding the safety of the fish. EPA also asserts that because there are tribal reserved fishing rights DEQ must treat the tribes as the general population of Idaho. Again, EPA provides absolutely no legal support for this position, and there is none. DEQ is promulgating state-wide criteria to protect all citizens of the state, including tribal members. The tribes are in fact subpopulations of the state, and the treaty right to share in available fish with the rest of the population does not somehow convert the tribe into the general population. The situation may be different if DEQ was only adopting criteria for waters within tribal jurisdiction. But, DEQ's criteria apply state-wide, except for those areas of the state within tribal jurisdiction. As a result, DEQ is setting criteria taking into account the tribes' consumption of fish taken from waters within the jurisdiction of Idaho where the tribes share fish with the rest of the state population. Under these circumstances, the tribes are clearly a subpopulation of the entire state, and EPA's position to the contrary has no legal, factual or logical basis. [2] In U.S. v. Gila Valley, 920 F. Supp 1444 (D AZ 1996) a tribe's demand for protection of water quality was at issue. But, this case involved the protection of water under prior appropriation law, and did not involve treaty fishing rights at all. Therefore, it does not provide authority for implying water quality protection based on treaty fishing rights. [3] U.S. v. Washington, 20 F.Supp.3d 1000 (W.D.WA 2013), that is currently on appeal to the 9th circuit, involves whether the treaties require Washington to repair or replace culverts that are preventing the passage of fish. The court in this case, however, did not determine whether the treaties preserve a right to any certain quantity of fish.
	24	To claim that treaty rights are an unresolved issue is preposterous. Treaty rights in Idaho exist and hold the force of law. IDEQ's proposed FCR and WQC are a clear violation of treaty rights. A century's worth of federal court decisions has established beyond dispute that treaty fishing rights are permanent in nature and that they secure for the tribes the right to take all species of fish found throughout their reserved fishing areas for subsistence, ceremonial, and commercial purposes. Tribal treaties are the supreme law of the land, and federal agencies including EPA, must interpret the state's designated uses to include subsistence fishing.	Please see response immediately above.
Idaho-specific / Tribal Bioaccumulation Factors (BAFs)	2	While CRITFC supports DEQ's use of BAFs consistent with EPA's 2015 human health criteria recommendations, Idaho has again chosen to use less protective parameters for tribal populations as compared to the general population in developing their Idaho-specific BAFs.	The BAFs (or BCFs) used in our criteria calculations are those provided by EPA in their 2015 Human Health Criteria update. For BAFs EPA's 2015 update provided 3 different values for each chemical depending on trophic level 2, 3 or 4. Since the NCI method fish consumption rates are not parsed by trophic level in either Idaho or tribal fish consumption results, it was necessary reduce the three BAFs per chemical to a single weighted average BAF per chemical. This weighted averaging was done using the trophic level break down reported in EPA's 2014 national fish consumption survey.
	16	The CTUIR DNR does not agree with Idaho's choice to use less protective parameters for tribal populations as compared to the general population in developing its Idaho-specific Bioaccumulation Factors (BAFs).	We have reverted to using EPA's national default FCR trophic level breakdown to derive a trophic level weighted average BAF from EPA's three trophic level specific

IDEQ used a value of fish intake for the general population that represents the 95th percentile of the general population to determine an Idaho general population BAF, while using a value of fish intake for tribal populations reflecting the mean consumption of tribal members—again, 95th percentile vs. mean; patently unfair on its face. In addition, market and anadromous fish (except for steelhead) were excluded from the evaluation of fish intake.

BAFs. This is described in our TSD as well as each of EPA's chemical specific documents and used where they have relied on BAFs, for example: http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OW-2014-0135-0163) , see sections 4.3, 7.1 and 7.2.

22 Uncertainty in the BAF estimate can be of substantial consequence to the final HHWQC. An overestimation of the BAF predicts higher concentrations in fish tissue at a given water concentration resulting in a HHWQC lower than necessary to protect human health at the target risk level specified by the HHWQC. BAFs are species dependent and those species feeding at a higher trophic level (TL) are generally expected to have more bioaccumulation and thus higher chemical concentrations than those feeding at a lower TL. Therefore BAFs are estimated by TL to reduce uncertainty. Based on intake rates of fish species grouped by TL (i.e. TL2, TL3, and TL4), EPA developed an equation to calculate a BAF that is weighted by expected fish intake within each TL. DEQ (2015), using Idaho fish consumption rates by species data available from the fish consumption survey, devised a similar equation for the general population using Idaho specific weights. (The TL for each species of Idaho fish are provided in Appendix A of IDEQ, 2015). DEQ (2015) also developed separate TL weights for the Nez Perce population using information from the Nez Perce tribal survey (Ridolfi, et al. 2015). However, because the dietary recall data were not available to DEQ at the time the TL weights were developed for the Nez Perce tribe, DEQ used data from the food frequency questionnaire (FFQ). The dietary recall data are generally judged to be more accurate for use in the estimation of usual intake and should be used rather than the FFQ data to derive TL weights for the Nez Perce population. Using, the dietary recall data from the tribal survey, Aracdis was able to calculate the percentage of fish consumption within each trophic level and calculated more accurate weights for use in the BAF weighting equation. A summary of the TL weights used by EPA and DEQ as well as the alternate weights calculated for the Nez Perce by Arcadis are presented in the table below.

Table 1

Intake Based Weights for Weighted Average BAF Calculation				
	Weights Presented in DEQ, 2015			Alternate Nez Perce Based on Dietary Recall Survey Data by Arcadis
Trophic Level	EPA Default	DEQ General Population	DEQ Nez Perce	
TL2	36%	9%	19%	5%
TL3	41%	73%	27%	70%
TL4	23%	17%	55%	25%

Higher trophic levels have higher estimated BAFs for most compounds, therefore higher weights within a higher trophic level result in a larger BAF than when weights are higher for lower trophic levels. As shown above the weights used by DEQ for the Nez Perce presume higher consumption of fish in TL4. The weights calculated by Arcadis for the Nez Perce based on the dietary recall data indicate that consumption in TL4 is lower and that the highest consumption is within TL3. Therefore, the weighted BAFs, using the alternate weights for the Nez Perce are generally lower than those reported by DEQ for the Nez Perce. A summary

We agree that a trophic level (TL) breakdown of fish consumption based on dietary recall is preferable to one based on food frequency questions. We are intrigued by your analysis and its finding that the Nez Perce Tribe's TL breakdown is quite similar to the one DEQ derived for the Idaho general population. Had we the time to recalculate criteria we would consider using one TL breakdown to weight the BAF for both populations.

Because we chose to use Nez Perce Group 2 fish and did not have time to determine a trophic level for Nez Perce Group 2 fish, we have used the trophic level breakdown in EPA's national default FCR to weight BAFs.

		of the BAFs presented by IDEQ (Windward, 2015) along with the BAFs calculated using the alternate weights for the Nez Perce based on dietary recall data are presented in Appendix A. As shown in the table, the alternate BAFs for the Nez Perce (based on dietary recall data) are generally lower than those presented by DEQ, (based on FFQ data). Finally, IACI recommends that where data are available, Idaho specific bioaccumulation factors be developed and used to calculate HHWQC.	
Bioaccumulation	11	Prior to this rulemaking, the Department used bioconcentration factors (BCF) in the calculation of HHWQC. The Department is now proposing to use bioaccumulation factors (BAF). Simplot supports the use of BAF instead of BCF. Simplot recommends that the Department, when data is available, calculate BAF based on Idaho specific data. For example, Simplot has done extensive work looking at selenium in the water column, fish tissue and other trophic levels. Simplot plans to submit such data to the Department for consideration in developing an Idaho specific BAF for selenium.	Thank you for supporting use of BAFs. The Department has relied on national data on bioaccumulation provided in EPA's 2015 human health criteria updates, or earlier BCF work where BAFS are not available. We are open to future consideration of Idaho specific information on bioaccumulation rates representative of Idaho waters.
	21	As stated in DEQ's Technical Support Document (TSD) for the human health criteria, DEQ created an Idaho-specific BAF weighting equation using Idaho fish consumption survey data and stated that the approach they used was similar to the framework that EPA used to derive the BAF weighting in the EPA's 2015 final human health criteria recommendations. According to the TSD, DEQ used food frequency data collected for the Idaho general population and dietary recall data for the tribal population. From these data, DEQ developed a trophic level weighted BAF using the following equation: (FCRm x BAFTl2 + FCRm x BAFTl.3 + FCRTL4 x BAFTL4) / (FCRT12 + FCRTL3 + FCRTL4). This approach is appropriate and addresses the EPA's previous concern that Idaho tribal populations consume larger amounts of high trophic level fish relative to the U.S. general population. However, the EPA recommends that DEQ provide more information on the derivation of the trophic level specific FCRs used to compute weighted BAFs.	We don't know what more information we could provide. Please see comment above prepared by ARCADIS and provided by commenter 22.
	22	DEQ is moving towards the use of bioaccumulation factors (BAFs) instead of bioconcentration factors (BCFs). A bioaccumulation factor (BAF) is an estimate of the ratio of the concentration of a chemical in the tissue of an aquatic organism to its concentration in water. IACI supports the use BAFs instead of BCFs, however as noted below, there are a number of technical considerations in using and determining BAFs.	Thank you. Please see our response to your more detailed comments on trophic level weighting of BAF above.
Relative source contribution	12	For example, other commenters have urged IDEQ not to use the EPA default Relative Source Contribution (RSC) factor of 0.2, and they provide information and data specific to Idaho to support those recommendations. … We urge IDEQ to adopt the RSC recommendations and to maintain its methodology for calculating the FCR.	Although DEQ believes there are logical ways to adjust RSC short of describing "central tendencies and high-ends for relevant exposure source pathways" as directed in EPA's Exposure Decision Tree, it was made clear to us that simple adjustments were not likely to be acceptable to EPA. We regret that we did not have sufficient time to develop, seek comment on and incorporate chemical specific RSC's developed according to EPA's decision tree approach beyond those provided by EPA itself.
	17	Finally, we encourage IDEQ to use the best available science for determining Relative Source Contribution (RSC) values, rather than simply relying on EPA's recommended values.	Please see response above.
	21	In June 2015, the EPA published final updated ambient water quality criteria recommendations for the protection of human health for 94 chemical pollutants. These updated recommendations reflect the latest scientific information and EP A policies, including updated body weight, drinking water consumption rate, FCR, bioaccumulation factors, health toxicity values, and relative source contributions (RSCs). The EPA supports DEQ's proposed approach to use RSC values specified in EPA's 2015 final 304(a) human health	While we appreciate your support, we also believe there are simpler logical adjustments that could and should be made to default RSC based on the role of bioaccumulation in magnifying the exposure due to fish consumption.

		criteria recommendations.	
	22	Along with the use of Idaho specific fish consumption survey results (utilizing Idaho fish), IACI recommends that DEQ use specific chemical data (for relative source contribution) and additional Idaho specific for determining bioaccumulation factors.	Please see response to commenter 12 above. Other than for methylmercury, arsenic and selenium, we are unaware of statewide Idaho specific data on bioaccumulation. The methylmercury and arsenic criteria are not being updated, nor does the current arsenic criterion incorporate bioaccumulation. The selenium criterion uses a bioconcentration factor. We believe adjustment of criteria on a site-specific basis is a future possibility, given site-specific data on bioaccumulation.
	22	DEQ used 2015 EPA recommended relative source contribution (RSC) factors; the default factor of 0.2 (20%) was used for most chemicals. IACI recommends that DEQ use a RSC other than 0.2 based on chemical specific information and the rate of fish consumption. The first, and most recognized instance for using a RSC of greater than 20% is when data indicate that the sources of daily exposure to a chemical, other than the sources regulated by a water quality criteria (HHWQC) (i.e., consumption of fish from a local water or consumption of fish from a local water body to which the HHWQC applies) comprise less than 80% of the allowable daily intake.2 When available data indicate exposures from sources other than local waters are a small fraction of the allowable daily exposure, the RSC can be set at a percentage of the allowable daily intake (i.e., reference dose (RfD)) greater than the USEPA default of 20%. For some chemicals, that percentage can be substantially greater than the default of 20%, sometimes exceeding the USEPA maximum default of 80%. The Florida Department of Environmental Protection (FDEP) recently reviewed the literature and developed RSCs for 21 non-carcinogenic compounds that ranged from 0.2 to 1.0.3 Consistent with these recent developments, the California Office of Environmental Health Hazard Assessment (OEHHA) had previously concluded that the default use of an RSC of 20% is unreasonably conservative for most chemicals.4 In fact, for 22 of 57 chemicals, a RSC of greater than 20% was used in the calculation of California Public Health Goals for those chemicals in drinking water. It also bears pointing out that the development of chemical-specific RSCs is not necessarily time or resource intensive and DEQ should undertake developing RSCs for chemicals with available data. Alternatively, given the availability of recently developed chemical-specific RSCs by FDEP, DEQ can also consider using those when developing HHWQC. ARCADIS has derived chemical-specific RSCs for eleven chemicals: acenaphthalene, anthracene, fluoranthene, fluorene, pyrene, 2-chlorophenol, selenium, diethyl phthalate, chloroform, butylbenzyl phthalate and toluene (see Table 2 and Appendix B). IACI recommends that these RSCs be used to derive Idaho human health water quality criteria. The other instance when the RSC can be substantially greater than EPA's default of 20% is when the fish consumption rate assumed by a HHWQC is large and, therefore, comprises a majority of an individual's daily protein intake. For such situations, the use of the 20% default RSC will underestimate exposures from consumption of fish caught from waters to which the HHWQC is applied. In such instances, particularly for chemicals that tend to bioaccumulate in the food chain and for which dietary exposure is assumed to be the dominant exposure pathway, an assumed high fish consumption rate can effectively mean that virtually all of an individual's daily protein intake is comprised of fish from local waters (waters regulated by the	In principal we agree that RSC should be adjusted and appreciate the work ARCADIS has done to inform the matter. Three things hold us back; 1) we believe that adjustment of RSC needs to be done 'across the board', that is, for all non-carcinogens and not just for selected non-carcinogens, 2) that any adjustment needs to be done in the context of the fish consumption rate being used and how that affects the contribution of fish included in 'water sources' relative to fish in other sources, 3) we ran out of time to do more with RSC.

HHWQC). In such cases, other dietary sources of protein which are also the sources of a bioaccumulative compound in the human food chain, become negligible and are replaced by locally caught fish. When that happens, the RSC can be set at value greater than the USEPA default of 20%, perhaps even close to or equal to 100%.

Table 2
Recommended RSC Factors

	IDEQ Draft RSCs	ARCADIS Proposed RSCs	Idaho Draft HHWQC (ug/L)	Idaho Draft HHWQC Adjusted with ARCADIS RSC (ug/L)
Acenaphthene	0.2	0.99	78	386
Anthracene	0.2	1.00	340	1700
Fluoranthene	0.2	1.00	20	100
Fluorene	0.2	0.99	51	252
Pyrene	0.2	1.00	26	130
2-chlorophenol	0.2	0.91	19	86
Selenium	0.2	0.65	20	65
Diethyl phthalate	0.2	0.97	620	3007
Chloroform	0.2	0.64	39	125
Toluene	0.2	0.31	36	56
Butylbenzyl phthalate	0.2	0.95	0.11	0.54

	23	Please refer to *Attachment C*, which presents an assessment of IDEQ's choices to set more reasonable than "default" RSC's in establishing the HHWQC for non-carcinogens. Clearwater Paper urges IDEQ to use the best available science in setting RSC's that reflect actual (not defaulting to worst case) risks to the citizens of Idaho from drinking untreated surface water and eating local fish.	Please see response above.
Probabilistic Risk Assessment – Additive Toxicity, and criteria calculation	2	Idaho calculated the state's water quality criteria using a probabilistic risk assessment (PRA) approach supplied by ARCADIS. PRA is an alternative to a traditional deterministic method where high-end or maximum values are typically used to calculate criteria. The method has been suggested as an alternative by dischargers because they believe that the deterministic approach can lead to overestimates of risk known as "compounded conservatism". The PRA approach can lead to less stringent standards since variables in the criteria calculations are no longer maximum values. If the PRA approach allows a larger fraction of high-fish consuming individuals to exceed acceptable doses of noncarcinogens or exceed risks of 1 x 10 -6 for carcinogens, then it must be fully evaluated for its use in setting human health criteria before it can be the basis for EPA approval of standards. In the National Toxics Rule, the EPA states: *The importance of the estimated actual risk increases as the degree of conservatism in the selected risk level diminishes."* Stated differently, analyzing and understanding actual risk should be emphasized when a state seeks to make standards less protective. Before the PRA approach should be accepted by EPA for calculating human health criteria, additional review of the actual risks from both the additive and synergistic effects	DEQ has determined to use the deterministic method to calculate its human health criteria. The issue of exposure to multiple toxins exists independent of whether PRA or deterministic methods are used to derive individual chemical specific criteria.

		of toxic compounds that have similar modes of action need to be understood and incorporated into the criteria formulation. When multiple chemicals induce the same effect by similar modes of action, EPA guidance is to assume that the chemicals contribute additively to risk. Evaluating cumulative risks from exposures to multiple chemicals "is especially important in cases where the resulting toxic effect from the mixture has been demonstrated to be greater than the sum of the individual effects". EPA notes that "[c]ertain categories of contaminants, in particular, persistent organic pollutants that share a common mode of action and/or target tissue, are of elevated concern when they co-occur in the fish and drinking water." These risks may be increased further still due to waterborne exposures to carcinogenic chemicals not addressed by the draft criteria, including chemicals in pharmaceuticals, flame retardants, and personal care products. Some flame retardant such as PBDE's are considered possible human carcinogens, although there are no state human health water quality criteria for these chemicals. Diet is a source of the PBDE body burden in humans, and fish have the highest PBDE levels among different types of food." DEQ should balance its PRA approach to countering "compounded conservatism" and fully consider the effects the health effects (both carcinogenic and non-carcinogenic) of exposure to multiple toxic chemicals. Since recommendations from a Scientific Advisory Board will not be available, EPA should also consider these issues before approving the use of PRA for setting human health criteria.	
	7,8	ISWR supports and commends IDEQ for choosing to utilize a probabilistic risk assessment approach in developing Idaho's Human Health Water Quality Criteria. By using the probabilistic approach, IDEQ is better able to develop defensible standards that more closely reflect the population and the Idaho state requirement that IDEQ use the "best available standards" in setting policy.	DEQ has determined to use the deterministic method. While DEQ recognizes the benefits of the PRA approach, DEQ is concerned about EPA's lack of support for this method in determining human health criteria. DEQ agrees that the deterministic approach is believed to compound the conservative nature of the calculation but, DEQ does not believe using this method in conjunction with the other inputs DEQ has chosen, will appreciably affect criteria.
	9	In previous comments, ICIE supported the use of the PRA method as technically sound and used in many research functions. It represents the best science in assessing risk, would represent all Idaho fish consumers, facilitates transparency in this rulemaking, and inherently calculates the risk to all Idahoans. We continue to do so.	Please see response above.
	12	AF&PA supports IDEQ's decision to use a Probabilistic Risk Assessment (PRA) approach for deriving its HHWQC. A PRA-based approach uses distributions of values to represent factors determining exposure and allow for the estimation of a distribution of potential risks. This is preferable to the deterministic method by which EPA derives national criteria because it: is the best science; allows an incorporation of all data for the different inputs that go into calculating HHWQC; avoids compounded conservatism; and, is more transparent, in that it allows the public and stakeholders to see how the range of data affects calculated human health values.	Please see response above.
	16	For the reasons discussed in the CRITFC comments, Idaho should not rely solely or exclusively on a Probabilistic Risk Assessment approach, but should consider and address the overlapping and synergistic health effects of exposure to multiple toxic chemicals.	The issue of additive toxicity is independent of the use of probabilistic risk assessment; it exists in deterministic as well as probabilistic calculations. We acknowledge that exposure to multiple toxins is real, as does EPA is section 2.3 of their 2000 Human Health Criteria Methodology. But there is to this day no solution offered by EPA in the context of setting broadly applied criteria; far too many assumptions would need to me made about the nature, magnitude and number of such exposures across a population over a lifetime.
	22	DEQ is using the probabilistic methodology for Idaho and tribal specific fish consumption rates, Idaho	Please see response to comments above re the PRA. Thank you for your support.

		specific body weight, and a national distribution for drinking water intake. IACI supports the decisions made by DEQ in the use of a probabilistic methodology for these parameters.	
	23	Using a probabilistic risk assessment approach for HHWQC criteria represents the best available science for setting HHWQC. EPA has endorsed PRA as noted in our comment later dated April 18, 2014, and as shown in *Attachment D*. Even the EPA's website advocates for the use of PRA. *See* http://www2.epa.gov/osa/probabilistic-riskassessment-white-paper-and-supporting-documents. Because it is scientifically based and defensible and would result in an accurate risk assessment outcome, we strongly urge IDEQ to maintain the use of PRA as proposed.	Please see response to commenters above.
	24	Criteria Calculation – USRT has not, and continues to not, support the use of PRA. The use of PRA is untested and leads to WQC that is not protective of tribal members. We are particularly dismayed that IDEQ altered course at the 11th hour and abandoned any use of deterministic criteria selection.	Please see responses to commenters above with respect to PRA. We urge you to look at the actual criteria values and compare them to sister states rather than making judgment based on single input values or policy decisions.
Backsliding	2	DEQ dropped its draft "no backsliding" provision which would have maintained current standards if the calculation of criteria by the PRA methodology was less stringent. The National Discharge Elimination System (NPDES) is designed to ratchet down on pollution discharges overtime, with the goal of eliminating pollution and restoring the nations' waters. Under the NPDES program, pollution effluent limits should be reduced as the regulated facility moves through multiple five-year permit cycles. The CWA expressly prohibits the development of NPDES permit effluent limitations that authorize an increase in the discharge of pollutants, stating, "a permit may not be renewed, reissued, or modified to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit." This prohibition is known as "anti-backsliding." Although the anti-backsliding provisions of the CWA are subject to some exceptions, such as availability of new data, nothing in the law expressly provides for changes in regulation that result simply from a different calculation methodology.	DEQ used the phrase "no backsliding" to distinguish its proposal at one time to not let Idaho's water quality criteria to become less stringent from "antibackslidiing" as applied in NPDES permits. Basically anitbacksliding as applied to NPDES effluent limits is different than a change in water quality criteria where new science, better understanding of exposure and toxicity, can result in criteria going up or down in value. This is in part evident in the fact that EPA's national human health criteria update resulted in 28% of their new recommended criteria becoming less stringent than previous recommended criteria – although achieving the same target level of protection. This aside, where there effluent limits are based on achieving water quality criteria (WQBELs) antibacksliding may indeed prevent the relaxation of those limits even though the water quality standard has changed. However, the rules regarding NPDES permits do allow exceptions to antibacksliding, see section 7.2.1.3 of EPA's NPDES Permit Writer's Manual: (http://water.epa.gov/polwaste/npdes/basics/upload/pwm_chapt_07.pdf)
	3	The CTUIR DNR is disappointed that you reversed your earlier decision, and have chosen to allow "backsliding," or a weakening of standards, when your calculations using the PRA methodology yielded a less stringent result. Weakened standards will do nothing to remedy our many waterways that already have well-documented pollution issues. We urge Idaho to work collaboratively with other states and tribes in the region to help solve the pervasive water quality problems that plague so many of our rivers and streams that are our shared natural heritage. Not weakening existing standards would be a start.	The decision to allow criteria to rise or fall was a matter of applying best science. It has nothing to do with use of probabilistic risk assessment to derive criteria, and is still the case now that we have gone with deterministic calculations for our proposed criteria. Please see also response directly above.
	24	No Backsliding – We have made ourselves clear on this policy decision and strongly disagree with IDEQ's last minute decision to abandon this principle.	The matter of not hanging onto older criteria is because they were based on outdated input values for bioaccumulation, relative source contribution, toxicity, body weight, and drinking water intake in addition to fish consumption rate. It was hard to justify not using better, more recent scientific information.
Process, best science and	3	State standards must, by law and regulation, reflect the best available science. But the standards development process also incorporates numerous state policy and risk decisions. This is where Idaho has	Thank you for acknowledging Idaho's efforts to do its best to integrate the science of human health effects with public policy to derive protective criteria.

policy decisions		demonstrated a sound and thoughtful process for evaluating what policy and risk decisions will work best for the state and be consistent with the CW A. Idaho has done its homework to consider the current science and EPA guidance and has made the tough policy and risk decisions to develop a rule that it believes protects human health for the citizens of the state and Native American tribes within the state - responsibilities that lie squarely within Idaho's purview.	
	11	Establishing the best data regarding Idaho specific fish consumption rates (FCR) is crucial for having water quality rules based on the most appropriate scientific information. There have been numerous studies determining FCR. Most of these studies are focused on sub populations (Native Americans), involve the consumption of marine and/or anadromous fish or lack information that would be helpful to determining fish consumption rates for Idaho residents. For example, the Columbia River Inter-Tribal Fish Commission 1994 report does not provide Idaho specific consumption information [see attachment for a review of Northwest FCR studies]. The work done by DEQ establishing an Idaho specific fish consumption survey has provided the best information upon which to help base Idaho water quality standards.	Thank you. We believe the combined work done by Idaho, the Nez Perce and the Shoshone-Bannock Tribes has provided us with excellent local information on fish consumption in Idaho, the best available.
	22	DEQ initiated this rulemaking with the approach of collecting Idaho-specific data and applying the best available science in determining new human health criteria. As described in the following comments, we believe the use of the Idaho fish consumption survey data in a probabilistic risk assessment methodology, adjusted RSC factors and Idaho specific BAF will provide the "sound science" to develop the new criteria.	In principal we agree, and appreciate your acknowledgement of our effort. While we would like to have done more with regard to relative source contribution and bioaccumulation, our resources and schedule did not allow this.
	23	IDEQ's use of a state-based fish consumption survey, correction of the data used in the analysis for fish not found in Idaho waters or the waters of nearby states, assumption of minimal anadromous fish and use of a probabilistic risk assessment approach are commendable and scientifically sound. The demand by some to include all market and anadromous fish in Idaho appears to be motivated by factors other than science or human health concerns for Idahoans. Furthermore, it is not based on the data gathered via the Idaho fish consumption survey. We strongly advocate for a science-based outcome on these issues.	Although there is more to criteria setting than just science – also science policy, such as use of toxicity uncertainty factors, and straight up policy, such as acceptable risk – we appreciate the endorsement of science based outcomes.
Public participation / Open process	5	NWFPA appreciates the process that DEQ has provided for extensive participation by interested parties in this rulemaking.	Thank you for saying so.
	6	The Association of Idaho Cities (AIC) has been a participant in all of the Idaho Fish Consumption Rate (FCR) rulemaking meetings and observes that the rulemaking process was robust, science and data based, consistent with EPA guidance, and transparent. AIC commends the IDEQ for conducting the rulemaking in an open, inclusive, transparent, scientifically rigorous, and well documented process.	Thank you for acknowledging our efforts. DEQ has worked hard to make this update of Idaho's human health water quality criteria an open and transparent process and believe as well that we have closely followed EPA's national *guidance*.
	9	We applaud DEQ's efforts to include a wide variety of stakeholders in the effort to review and update Idaho's water quality standards. The use of the best Idaho-based science in completing the review of Idaho's fish consumption and subsequent promulgation of new water quality standards was vital because of the potential impacts on the citizens and the economy of the state.	Thank you.
	22	Determining human health water quality criteria is a complex, technical matter. DEQ has approached this undertaking in a very systematic, technically based manner. The fish consumption survey that DEQ undertook has provided very valuable information for the foundation of this rule and is important for the protection of public health of Idaho's citizens. …	Thank you.

		As stated in earlier comments, IACI commends DEQ for the significant work done in this rulemaking and the opportunity that has been provided to stakeholders to participate in this process.	
210.03, Mixing Zones	1	The proposed rule includes provisions for mixing zones at section 210.03. Mixing zones are an important component for the implementation of the human health water quality criteria. For some pollutants, significant reductions of the pollutant concentration occur due to natural treatment mechanism. Use of a mixing zone for these pollutants provides an important implementation element necessary to appropriately account for pollutant behavior in the environment. AIC supports the inclusion of the mixing zone language at section 210.03 of the proposed rule.	Thank you for your support. We too see mixing zones as an important component of implementing any surface water quality criterion in a discharge permit.
	19	210.03.b. Upon review of this section, it appears that DEQ is proposing language that would allow the exceedance of water quality criteria in streams during periods of low flow. What is the justification for this provision? Periods of extreme low flow are inherently stressful for aquatic life. DEQ's provision to allow WQS to be exceeded during periods of low flow is the exact opposite of what should be happening. Allowing increased concentrations of pollutants during periods of low flow is likely to increase the detrimental impacts of these pollutants.	Low design flows are not new. They correspond with the frequency component of criteria. Specifying a design flow is necessary to develop water quality based effluent limits. By choosing a very low, rare instream flow condition, e.g. 7Q10 For aquatic life criteria, we can assure that while criteria could be exceeded under those rare flow conditions (assuming maximum effluent discharge and quality co-occur), the exceedance will be very infrequent, and very small if it does occur. This thus assures protection of uses.
400.06, Intake credits	7	The proposed rule includes provision for intake credits at section 400.06. Intake credits are an important component of the implementation of the human health water quality criteria. For some pollutants, intake credits will be a very important element of implementation because the source waters contain pollutants at elevated levels (e.g. background pollutant levels not the result of anthropogenic activities). AIC recognizes that Intake Credits will likely be used infrequently; however, in the circumstances where background is elevated, intake credits are an important tool. AIC supports the inclusion intake credit language at section 400.06 of the proposed rule	Thank you for your support. We too see intake credits as an important and reasonable component of implementing any surface water quality criterion in a discharge permit. Intake credits are likely to be especially important in dealing with naturally occurring pollutants like metals, and criteria that in some situations will be below background levels.
Suppression	9	Finally, the concept of "suppression" was thoroughly discussed and we support DEQ's decision not to include "heritage" or "suppression" rates. A review of the available information showed that it had not gone through a rigorous scientific analysis. Use of such information is too speculative and is not required under the Clean Water Act.	We agree that estimation of suppressed rates of fish consumption does not lend itself to the same degree of rigor as estimation of current fish consumption rates. We also agree that the CWA does not require DEQ to use an unsuppressed fish consumption rate. See response to commenter 19 below.
	19	DEQ has decided to not integrate suppression into its determination of a FCR. Establishing the appropriate fish consumption rate is important because Idaho will use this information to establish certain water quality standards. If Idaho underestimates the fish consumption rate then the DEQ will establish water quality standards that are not protective of human health. DEQ should identify a fish consumption rate that reflects the fact that fish consumption is currently being 'suppressed.' DEQ's proposes fish consumption rate should be inflated to account for this suppression. For the purposes of this discussion, we are considering that a suppressing effect occurs when a population, or a subset of the population, experiences a reduction in the amount of fish that they consume; and that this reduction in consumption occurs as a result of some exterior or artificial force beyond the control of the consumer and counter to the wishes of the consumer. There are two primary means of suppressing fish consumption that warrant consideration here. First, suppression based on contamination of the fishery. Second, suppression based on the lack of availability of fish to consume.	The CWA does not require a state to use an unsuppressed fish consumption rate. First, there is no language in the CWA or the federal regulations that addresses the concept of suppression. Second, the express language of the CWA requires states designate uses and adopt criteria to protect those uses. The CWA leaves it up to States to determine appropriate uses, as long as the States designate attainable fishable/swimmable uses. DEQ has adopted a recreational use that requires water quality appropriate for recreation, including fishing, on or about the water. This use has been approved by EPA. DEQ has not designated a traditional subsistence use or some other kind of use that suggests an intent to restore and protect a level of fish harvest that existed historically before dams and other factors restricted the availability of fish. Criteria that ensures water quality sufficient to protect recreational fishing given actual consumption patterns is clearly protective of Idaho's designated use as required by the CWA.

		… Numerous resident fisheries have been determined to be have elevated levels of certain pollutants, especially mercury. Contaminant levels are such that the State has issued a Statewide Fish Consumption Advisory for all bass (largemouth and smallmouth) caught in Idaho and Fish Consumption Advisories for certain other species of fish caught in Priest Lake, Lake Pend Oreille, Lake Coeur d'Alene, Hells Canyon Reservoir, Payette Lake, Brownlee Reservoir, Payette River, Boise River Lake Lowell, Jordan Creek, CJ Strike Reservoir, Grasmere Reservoir, Shoofly Reservoir. Salmon Falls Creek Reservoir, Oakley Reservoir, Weston Reservoir, Bear River, Glendale Reservoir, Chesterfield Reservoir, Portneuf River, American Falls Reservoir, and the South Fork of the Snake River.2 As you can see, these Fish Consumption Advisories are distributed across the entire state and encompass some of Idaho's most popular recreational fishing areas. … Idahoans who abide by the State's fish consumption advisories are suppressing their fish consumption, upon the advice of the State, in order to protect their health. … To avoid this 'downward spiral' the DEQ must take the necessary steps to ensure that the baseline fish consumption rate that is developed takes into consideration the fish consumption suppression that is occurring. Merely relying on the current, reported fish consumption levels recorded via surveys will not accurately capture the fish consumption rate that the DEQ should utilize when setting water quality standards.	Third, the CWA regulations provide that States must use 304(a) guidance, modified 304(a) guidance or other scientifically defensible methods. EPA's 304(a) recommended criteria are based upon fish consumption surveys that reflect actual consumption patterns and do not take into account suppression. The 304(a) recommended human health criteria for toxic pollutants is based upon the 2000 Methodology, and it also includes nothing about suppression. Fourth, EPA has not clearly articulated what is meant by an unsuppressed fish consumption rate, which would force DEQ to guess on what that number would be. Fifth, EPA itself has stated that adopting criteria for a traditional subsistence lifestyle is something more than the CWA requires .When EPA recently approved of the Spokane Tribe of Indians toxic pollutant criteria to protect the Tribes' traditional subsistence lifestyle, EPA considered the adoption of criteria to protect a traditional subsistence lifestyle to be more stringent than required by the CWA, and therefore, reviewed the WQS using a different standard of review. Technical Support Document for Action on the Revised Surface Water Quality Standards of the Spokane Tribes of Indians (December 11, 2013) at page20-22. Sixth, it is inconsistent with the CWA for States to adopt water quality criteria taking into account suppression because suppression due to availability of fish is not caused by inadequate human health criteria, nor can it be corrected by assuming some higher consumption rate and thus lowering human health criteria. Mercury is an interesting example to consider for it is largely a problem of airborne mercury depositing onto the landscape and into water bodies; a source that water quality criteria cannot control. It is worth noting that lower human health criteria would not reduce fish consumption advisories. This is because those advisories in Idaho are arrived at independent of water quality criteria. More importantly, the human health concerns addressed by Idaho fish consumption advisories are, and would continue to be, addressed by those advisories. This is the case regardless of the human heath water quality criteria, but especially where criteria may be exceeded. Finally, the current or proposed water quality criteria are not locked in forever. Within the past decade we are on now our third iteration of fish consumption rates and human health criteria. During this time criteria have mostly gone down and fish consumption has risen or remained steady. We find no evidence of a 'downward spiral' unfolding. It may be odd to consider, but if advisories were based on the human health criteria then lower criteria, at least in the short run, should lead to more fish consumption advisories, more suppression, not less.

	24	IDEQ's adamant refusal to consider suppression is inconsistent with the ultimate goal of the Clean Water Act, which is the restoration of U.S. waters. It would have also lead to more protective criteria, not less protective criteria. There certainly is irony that IDEQ dismisses the "downward spiral" premise and yet, IDEQ is now proposing that some WQC will be less protective moving forward, which will lead to diminished water quality and less fish consumption.	DEQ disagrees that the CWA requires States to take suppression into account. While some of our proposed criteria are higher in value than the criteria they are to replace, this is largely because of better understanding of toxicity. It cannot be said that such criteria changes provide less protection but rather more precisely provide the intended level of protection.
Ability to achieve criteria / Implementation tools	11	In regards to establishing appropriate Idaho water quality criteria, Simplot recommends that the Department conducts further studies looking at PBT's in Idaho waters including (but not limited to) chemicals such as arsenic, mercury and PCBs. Such chemicals have low toxicity threshold values and thus, depending on the factors used in calculating HHWQC, can have very low criteria. The result is criteria that are below background concentrations and or are not achievable. This issue is of the utmost importance to the regulated community (including Idaho residents) as certain of these chemicals exist naturally in Idaho (arsenic being an example), may primarily be a legacy contaminant (such as PCBs) or due to air deposition (which is primary source today of mercury addition to Idaho waters). This issue is discussed in a paper by Judd (2015).	The Department is keenly aware that some proposed criteria may be unachievable, especially in the near term., and possibly even in the long term when it comes to naturally occurring metals such as mercury and arsenic. We also recognize that effluent limitation is not the most efficient way to reduce legacy contaminants, particularly those such as PCBs which have been banned. Nor are water quality criteria effective in reducing mercury that is largely non-water in origin. To deal with these problem contaminants / criteria we have implementation tools; variance and compliance schedules already in rule, and the addition of provision for intake credits in the current rule. We also note that Idaho has not at this time proposed to update it mercury or arsenic criteria for protection of human health.
Consistency with CWA	13	The proposed changes to water quality standards proposed by IDEQ are alarming in that they are inconsistent with the goals of the Clean Water Act of achieving waters that are fishable and swimmable for the public.	Idaho's proposal is well within the guidance provided by EPA, will provide for waters that are fishable.
Stringency / purpose of proposed criteria	15	The Tribes cannot support a final draft FCR that will allow for WQC to become less protective, which will further suppress fish populations by allowing for additional pollution and contributing to the downward spiral of water quality. … According to Idaho's 2012 Integrated Report to the Environmental Protection Agency, 27.9% of the IDEQ sampled stream miles were classified as in poor condition, not fully supporting cold water aquatic life, with the lowest proportion of stream lengths classified as good found in the Pocatello Region. The purpose of the Clean Water Act is to restore degraded waters, not to allow for the back slide of WQC.	Criteria values depend on more than just the FCR (see response to commenter 5 under topic "level of protection / allowable risk" above). About 60% of Idaho's proposed human health criteria are lower in value than their current (2006) values. These are human health criteria, not aquatic life criteria. Human health criteria are based on protecting human health, while aquatic life criteria are for protecting aquatic life. Almost all the impaired waters in Idaho's 2012 IR are impaired for aquatic life unrelated to human health criteria. Within the impairments to aquatic life, most of those are not due to exceedance of any toxics criterion, rather stressors such as sediment or temperature, or direct biological assessment which takes into account factors such as habitat quality for which there are no water quality criteria. The CWA does not prohibit water quality criteria from increasing in value; in EPA's 2015 national update of human health criteria 28% of the criteria became less stringent.

	23	In the proposed rule, IDEQ has applied certain risk policy decisions in setting the proposed criteria that appear contrary to the spirit if not the specific intent of state law. Idaho Code 39-3602 prohibits IDEQ from adopting water quality standards that "impose requirements" beyond the minimum requirements of the CWA. Additionally, Idaho Code 39-107D requires IDEQ to specifically identify those provisions in proposed rules that are "broader in scope or more stringent than" the requirements under the CWA. We believe that these two provisions explicitly or implicitly create a directive to IDEQ to exercise whatever flexibility is afforded the state under the CWA when promulgating water quality standards to avoid overregulation of Idaho citizens.	DEQ disagrees that the proposed criteria are more stringent than or broader in scope than federal law or regulations. DEQ complied and will continue to comply with 39-107D by clearly identifying that the proposed rule is not more stringent than or broader in scope than federal law or regulations, and does not regulate an activity not regulated by the federal government.
BAF for pentachlorophenol (PCP)	18	Specifically, EPA used a log K_{ow} of 5.12 as the denominator in the equation for the Food Chain Multiplication (FCM) factors in the model used to derive the BAFs for each of the three tropic values. This log K_{ow} is incorrect as the log K_{ow} for PCP is pH dependent. The correct log K_{ow} at environmentally relevant pH is no higher than 3.69 and this value should have been used in the BAF calculation. A log K_{ow} of less than 4.0 would result in a FCM of 1.0 rather than the higher FCM used by U.S. EPA in deriving the BAFs for PCP. We urge the Idaho Department of Environmental Quality to rerun the modeling used to derive the BAFs for PCP with the correct log K_{ow} as Idaho cannot simply adopt U.S. EPA's calculations in its rulemaking without independently assuring the correctness of those calculations. We urge the Idaho DEQ to rerun the modeling used to derive the BAFs for PCP with the correct log K_{ow} as Idaho cannot simply adopt U.S. EPA's calculations in its rulemaking without independently assuring the correctness of those calculations.	This comment appears to take issue with EPA's derivation of their national BAF values and thus should be directed to EPA. DEQ is not in a position to rerun EPA's modeling of BAF.
210.05.b.ii	19	We believe that DEQ should state what fish consumption rate is to be utilized to derive water quality criteria, rather than just reference that a fish consumption rate that is representative will be utilized. This level of vagueness is inappropriate in Rules. We are concerned that this section's proposed use of a mean adult body weight value may place children (who weigh less than the mean adult body weight) at greater risk. DEQ should ensure that its criteria are protective of children because the implications of over exposure to children may be direr and longer lasting than the implications of adult exposure. The average Idaho household has just over two children in the home. To protect Idaho children, DEQ should utilize a mean child weight when calculating water quality criteria.	DEQ will put the formula it uses to calculate criteria in section 210 in the rule. However, some factors are chemical specific, and it would be impossible to include all such information in the rule. Also this section of the rule speaks to development of criteria for chemicals not in the table of toxics criteria. The input parameters for the criteria in the table are fully describes in the Technical Support Document referenced in footnote c.
	21	The EPA is concerned that this provision lacks specificity with regard to a fish consumption rate and the target population to be protected that will be used to derive numeric human health criteria in the future, when numeric criteria are not identified in the toxics table. It would seem reasonable to specify an appropriate fish consumption rate as well as the target population and percentile of the target population that would be used to estimate a fish consumption rate consistent with how Idaho's numeric criteria in the table at Section 210 were derived. For example, the language in b.ii refers to using a fish consumption rate that is representative of the population to be protected. The EPA suggests DEQ include specific language identifying the population to be protected consistent with EPA's previous comments.	DEQ will put the formula it uses to calculate criteria in the rule. But, the degree of specificity requested would be difficult to provide in that we do not know what new information the future may bring. We might be able to specify a percentile, i.e. an upper percentile of the general population so long as the mean of a target high end consuming population is also adequately protected, but to specify a target population seems presumptuous given recent history.
Treatment of the Tail	19	In both the WindWard Report generated for DEQ and DEQ's 'Idaho Human Health Criteria: Technical Support Document,' it is reported that certain statistical methods applied to the upper end distribution tail (95th percentile to 100th percentile) of the Nez Perce Tribe data result in a mean value of 19.2 g/day. DEQ has not explained why it chose to use 16.1 g/day instead of the more protective 19.2.	While we are confident that the distribution used in the probabilistic risk assessment is appropriate for describing risk up to the 95th %tile this is no longer material as DEQ has determined to use the deterministic method to calculate its human health criteria.

Fish Consumption Surveys and Data Use	19	As was discussed in great detail at a rulemaking meeting, we do not support DEQ's utilization of only certain aspects of the Tribal data. The Tribes conducted surveys of their members to develop information to aid in the calculation of fish consumption rates. DEQ appears to be dissatisfied with the high fish consumption rate that the Tribes calculated. This dissatisfaction appears to have lead the State to cherry pick certain data out of the Tribal data and then to use this data to develop a fish consumption rate that is significantly different than the rate that the Tribe calculated. This repurposing of Tribal data is inappropriate and at a minimum violates the understanding of how this data was to be used. We ask DEQ to respect the Tribes' wishes with regard to how the State utilizes Tribal data.	DEQ is using the tribal group 2 fish.
	21	Another concern is development of an appropriate tribal fish consumption distribution for PRA. The National Cancer Institute (NCI) method cannot be used to characterize consumption of a particular grouping of fish (e.g., fish caught in Idaho waters) if the data necessary for the method are not available. Idaho has used tribal Food Frequency Questionnaire (FFQ) and NCI data in an attempt to develop "NCI-like" estimates of average tribal consumption of fish caught in Idaho waters. As previously noted, DEQ should include market fish, including anadromous species, in the FCR used to set Idaho's AWQC. The EPA also has methodological concerns about using FFQ and NCI data to derive ''NCI-like'' FCR statistics based on Westat's review of the PRA approach (see attached Westat memoranda). Thus, the EPA recommends that the NCI group 2 (i.e., anadromous, near coastal and inland fish and shellfish) FCR data for the Nez Perce Tribe be used to develop statistics representing current fish consumption.	Tribal 'Group 2' fish, which includes salmon and estuarine species and our 'Idaho Fish' group are clearly much different. So this appears to us to be a comment about included fish rather than a suggestion for an improved adjustment to make the data we were provided more comparable to that generated by Idaho. Please see response to comments above regarding included fish.

	22	As described earlier, DEQ recently completed a state-wide survey on fish consumption in Idaho (NWRG 2015). National Cancer Institute (NCI)-adjusted usual intake distributions for fish consumption, as reported by Buckman et al. (2015), were used to develop FCR distributions for the general population of Idaho. DEQ chose to base its draft HHWQC on consumption of resident freshwater fish, referred to as Idaho Fish. EPA in collaboration with the Nez Perce and Shoshone-Bannock Tribes, recently completed a survey of tribal fish consumption (Ridolfi and Pacific Market Research 2015). Similar methods were used to survey both tribes, and NCI modelling was conducted using data from both tribes with a tribal identifier used as a covariate in the modelling. Information from this survey was used by IDEQ to develop FCR distributions for the Nez Perce tribal population of Idaho. The Nez Perce fish consumption survey data were reported based on different species groupings than the state-wide Idaho fish consumption survey. Arcadis followed the process outlined by DEQ (2015) to derive an adjustment factor using the Nez Perce dietary recall data to calculate consumption of "Idaho Fish" (known as a Group 2 adjustment factor). The calculations were conducted separately for each of the two dietary recalls because there were some missing responses for the second recall. The NCI methodology for estimating usual intake distributions for fish consumption rely on the dietary recall data, and therefore deriving a Group 2 adjustment factor from these data is more appropriate than relying on the FFQ data. The mean adjustment factor for the two recall events is 7.04%. Arcadis applied the alternate adjustment factor to the mean and each fifth percentile of the empirical distribution of Nez Perce Group 2 fish consumption to derive an alternate estimated distribution of Nez Perce Idaho fish consumption. … In lieu of the discrete distributions used by the draft HHWQC that overestimate the arithmetic mean of the empirical FCR data substantially and which require interpolation between existing percentiles with no basis to determine if the interpolation model is correct, Arcadis recommends that DEQ use continuous theoretical curves to model FCR distributions in @Risk when deriving probabilistic HHWQC. This approach, as described in detail in Appendix C, results in theoretical distributions that fit the individual percentiles of the empirical distributions as well as DEQ's discrete distribution, but provide a much closer fit to the arithmetic mean FCRs. It is crucial that both of these statistics be accurately represented when developing distributions to derive probabilistic HHWQC so that risk managers can knowledgeably and appropriately manage risk for the average member of the population as well as any given percentile.	We appreciate the great amount of work you have put into the finer details of the recent fish consumption survey results, the adjustment to make them comparable, and adjustments to improve their utility for probabilistic risk assessment. At this time we have no ability to incorporate your suggestions.
	23	As noted above *Attachment A* describes a statistically necessary adjustment to the tribal fish consumption data set used by DEQ in setting HHWQC. This data only became available from the EPA last week but should be reflected in the final HHWQC criteria that IDEQ adopts and proposes for approval by the IDEQ board and Idaho Legislature. Some of the HHWQC as proposed are now inconsistent with IDEQ's stated risk policy choices.	Please see response above.
210.03.d.ii Use of annual harmonic mean for human health criteria compliance	21	This provision provides a frequency and duration for human health criteria that are not to be exceeded based on an annual harmonic mean. EPA understands DEQ is attempting to clarify the frequency and duration for the state's human health criteria and is supportive of that effort. EPA's 304(a) recommendations for human health criteria are based on long-term average exposure over a lifetime (70 years). Idaho's proposed duration of one year is protective because it represents long-term or chronic exposure but within a reasonable timescale for the purposes of regularly assessing attainment of the criteria. However, the harmonic mean is an inappropriate measure of central tendency in this context, because it is likely to under-represent the presence of pollutants in ambient water. Harmonic means are an appropriate measure of	We appreciate EPA's recognition of the value of filling in a gap, not leaving this un addressed. We consulted with EPA in early 2014 when we were confronted with the rare occasion of how to compare multiple measurements of a concentration to a human health criterion. We are aware that harmonic means are most appropriate to averaging rates and note that while the criteria in water are purely concentrations they are derived based on bioaccumulation rates that lead to

		central tendency when evaluating rates with varying denominators, such as flows or speeds. However, for measures of varying mass per volume, such as concentrations of contaminants in ambient water, the arithmetic (for skewed datasets) or the geometric mean is the more appropriate measure of central tendency. EPA recommends that DEQ delete reference to the harmonic mean and, instead, insert arithmetic mean.	concentrations in fish that create the exposure of concern. This leads us to believe harmonic means are appropriate for water column measurements and that EPA's suggestion of an arithmetic, or geometric mean would better for direct fish tissue measurements.
400.06, Intake Credits	9	This provision refers to the Idaho Pollutant Discharge Elimination System Program (IPDES) rules and is not a water quality standard. However, in EPA's October 2, 2015 letter from Michael Lidgard to Paula Wilson, EPA provided comments on IDAPA 58.01.25 regarding the proposed intake credit rule language as proposed in the IPDES rules. The EPA is continuing to coordinate with DEQ's IPDES program and has recommended that, if DEQ intends to adopt an intake credit provision into the IPDES rules, it be consistent with the Great Lakes Initiative (GLI). Another option is for DEQ to consider Oregon's intake credit provision rule language, as that language is most similar to the GLI and was approved by EPA.	We agree this is not a water quality standard. This is simply an authorizing provision to clearly allow use of intake credits in applying water quality criteria in effluent limitations, referring to the IPDES regulations for details on how that is to be done.

References:

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