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Principles and Policies for the 2002/2003 DRAFT INTEGRATED (303(d)/305(b)) REPORT



Upper Owyhee Watershed



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DEPARTMENT OF ENVIRONMENTAL QUALITY WORKING PRINCIPLES AND POLICIES FOR THE 2002/2003 INTEGRATED (303(D)/305(B)) REPORT

Introduction

These are the Department of Environmental Quality (DEQ) working principles and policies that were used to compile the *2002 Integrated Report*. This report which includes requirements of the Clean Water Act (CWA) Section 305(b) and Section 303(d) lists. Each state is required, by the CWA, to furnish this report and list to the U.S. Environmental Protection Agency (EPA) every two years. This year these two separate documents are being combined into one report, referred to as the "integrated report."

This integrated report will categorize or classify all of the state's waters into one of five different categories, explained in detail below. This is a substantial change from how reports were organized in the past and consequently they will look completely different from past efforts. This is the case for two reasons. First, the five categories (which correspond to the report's five sections) will encompass all of the states waters. Second, the use of "assessment units" (AU) used in this report do not always match previous boundaries. It will be nearly impossible to do a direct comparison between the 1998 303(d) list and the 2002 integrated report. However, there will be a crosswalk to locate 1998 303(d) segments in this new assessment unit framework, under Section 5.

This integrated report serves two functions. First it is a reporting requirement of the CWA and second, and maybe more importantly, it informs the public and provides a chance to comment on the status of all of Idaho's waters. Second, it enables interested parties to comment on Idaho's 305(b) Report for the first time. This is a unique opportunity for the public to understand the overall status of Idaho's water quality and learn what DEQ is planning on doing to improve it.

These working principles and policies do not supercede *Idaho's Water Body Assessment Guidance – Second Edition* (WBAG) (Grafe, et al. 2002); rather this document supports its use and provides guidance on its implementation as a tool for determining beneficial use support status and determining water quality standards exceedances for the purposes of 303(d) listing.

EPA Requirements for the 2002/2003 Integrated Report

The federal CWA provides the regulatory context and mandate for state water quality monitoring and assessment programs. The overall objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. There are a number of goals set in the CWA to meet this objective, including an interim goal of "...water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water (to be achieved by July 1, 1983)." Various subsections within the CWA call on the states to conduct specific activities to monitor and protect their waters. These activities include:

- developing and adopting water quality standards to protect beneficial uses (Section 303),
- establishing monitoring programs to collect and analyze data regarding water quality (Section 106),
- reporting on the status of waters and the degree to which designated uses are supported (Section 305(b)), and
- identifying and prioritizing waters that are not meeting water quality standards (Section 303(d)).

EPA Regulations at 40 CFR 130.7(b) describes requirements for identification and priority setting for water quality-limited segments still requiring TMDLs, including:

- (1) Each State shall identify those water quality-limited segments still requiring TMDLs within its boundaries for which:
 - (i) Technology-based effluent limitations required by Sections 301(b), 306, 307, or other Sections of the Act;
 - (ii) More stringent effluent limitations (including prohibitions) required by either state or local authority preserved by Section 510 of the Act, or Federal authority (law, regulation, or treaty); and
 - (iii) Other pollution control requirements (e.g., best management practices) required by local, state, or federal authority are not stringent enough to implement any water quality standards (WQS) applicable to such waters.
- (2) Each state shall also identify on the same list developed under paragraph (b)(1) of this section those water quality-limited segments still requiring TMDLs or parts thereof within its boundaries for which controls on thermal discharges under Section 301 or state or local requirements are not stringent enough to assure protection and propagation of a balanced indigenous population of shellfish, fish and wildlife.

The EPA issued the *2002 Integrated Water Quality Monitoring and Assessment Report Guidance* on November 19, 2001. The EPA guidance recommends that states, territories, and authorized tribes submit a *2002 Integrated Water Quality Monitoring and Assessment Report* that will satisfy CWA requirements for both Section 305(b) water quality reports and Section 303(d) lists. This integrated report should include the following information:

- delineation of water quality AUs based on the National Hydrography Dataset;
- status of and progress toward achieving comprehensive assessments of all waters;
- water quality standard attainment status for every AU;
- basis for the water quality standard attainment determinations for every AU;
- additional monitoring that may be needed to determine water quality standard attainment status and, if necessary, to support development of total maximum daily loads (TMDLs) for each pollutant/AU combination;
- schedules for additional monitoring planned for AUs;
- pollutant/AU combinations require TMDLs; and

- TMDL development schedules reflecting the priority ranking of each pollutant/AU combination.

Public Comments to DEQ

Since the integrated report is an EPA recommendation, DEQ is not seeking comments on the structure of the five part list. While the format is EPA's recommendation, the way decisions are made about how to place waters in each category is, to an extent at, DEQ's discretion. The exception is when waters are moving from Category 5 (303(d) list) to another category. Additionally, listing in Categories 1-4 can be viewed as decision to not list in Category 5. It is important for EPA and the public to understand how DEQ makes decisions about categorizing waters. Thus, DEQ will respond to comments about how waters are placed in each category (see Relevant Policies, Section 1).

Section 5, formerly known as the "water quality impaired list" or "list of waters requiring a TMDL," or the "303(d) List is the focal point for comment. DEQ is soliciting the public to comment on all the waters of the state. Specific comments, such as the placement of a water body in a category of the list, or an omission from a category are the most helpful. DEQ is providing an opportunity for more general comments as well, though these may be more difficult for DEQ to address, particularly as they may involve issues outside of Section 305(b) and Section 303(d) requirements. Fundamentally, DEQ wants to know, if Section 5 is accurate and complete.

DEQ relies on several key technical and policy statements in making water quality determinations, all which come together in DEQ's WBAG II (Grafe et al. 2002). This document is the foundation to DEQ's ambient monitoring and assessment program. It focuses on biology as a measure of aquatic life and water quality status (NRC 2001). There are a number of technical documents that support WBAG II: Idaho River Ecological Assessment Framework, Idaho Small Streams Ecological Assessment Framework and Public Involvement and Responses to comment Summary; Water Body Assessment Guidance, Second Edition. All of these are available on DEQ's web page. Through the WBAG II and these technical-supporting documents, DEQ sets out a consistent and relevant water quality decision-making process. The second edition, used for compiling the integrated report, reflects an investment of millions of dollars and thousands of man-hours. DEQ has already spent a considerable amount of time and effort taking and responding to public comment to make this a better final product. The response to this public comment, over 100 pages, can be viewed at DEQ's web page, as can any of the documents listed above. DEQ is not seeking further comments on its process or tools at this time, but will hold any received for consideration in the next edition of the WBAG II.

Description of the Five Integrated Report Sections

DEQ will report to EPA via EPA's Assessment Data Base. This will be an all-electronic report. Certain supporting documents will be or have been posted to the World Wide Web via DEQ's web server. The report consists of five sections as outlined below.

- Section 1) **Water of the State Attaining All Standards**
At this time Idaho is proposing a minor number of select Assessment Units falling wholly in wilderness areas or roadless (See Section 14 p. 16 for definitions and an explanation) for placement in Section 1. Idaho has many waters that support all beneficial uses but lack an assessment methodology addressing the wildlife and aesthetics beneficial uses. Even though Idaho's Water Quality Standards state that compliance with general narrative standards is deemed to be all that is needed to show a water body as supporting the Wildlife and Aesthetics Beneficial Use, Idaho chooses to list most waters in Section 2 below. The only distinction between Section 1 and Section 2 of the integrated report is the wilderness status of these selected Assessment Units.
- Section 2) **Waters of the State Attaining Some (most) Standards**
Waters bodies admitted to this category fully support those beneficial uses that were assessed. No Tier 1 data were submitted to DEQ for assessment that indicated impairment. Waters assessed for the 1998 303(d) List that supported their beneficial uses and that were approved by EPA as supporting their uses were carried forward to this section when no data indicated a change in their beneficial uses support status.
- Section 3) **Waters of the State with Insufficient Data and Information to Determine if Any Standards are Attained.**
Water bodies displayed in Section 3 of the integrated report meet two criteria: first, no Tier 1 data indicated an impairment of beneficial uses and, second, not enough data existed at the time of assessment to make a determination that standards have been attained using DEQ's WBAG II.
- Section 4) **Impaired or Threatened for One or More Standards but Not Needing a TMDL**
Section 4 has three subsections:
a) TMDL Completed
b) Expected to Meet Standards
c) Not Impaired by a Pollutant
- Section 5) **TMDL Needed.** This portion of the integrated report is equivalent to the 1998 303(d) list. Section 5 is a streamlined 303(d) list that does not contain waters impaired by non-pollutants such as flow alteration or habitat modification. For a water to be listed in Section 5, the following must be present:
A) Water Listed in 1998 as impaired OR The water is impaired as determined by WBAG II.
B) The water is impaired by a pollutant
C) Must comply with WQS §58.01.02.054

Water body **segment/pollutant pairs** might be on more than one part of the list, but according to the Integrated Report guidance, "Each AU should be placed in only one of the five assessment categories." Most occurrences of this are for water bodies that are impaired for multiple pollutants. Various scenarios exist:

- a) A TMDL is approved for only a subset of the causes impairing a water body (for example, a water body is listed for sediment and temperature and only has an EPA approved TMDL for sediment. That water body would be listed in Section 4a for sediment (EPA approved TMDL) and Section 5 for temperature.
- b) A water was put on the 303(d) list for a pollutant (e.g., temperature) and for a non-pollutant (e.g., flow alteration). The water body would be listed in Section 5 for temperature and Section 4c for flow alteration. See the policies regarding pollutants and pollution below.

Relevant Policies

1. Criteria to Exclude or Remove Waters from Section 5 (303(d) list)

DEQ must demonstrate good cause for not including water bodies in Section 5 of the integrated report that were on previous 303(d) lists (pursuant to 40 CFR 130.7(b)(6)(iv)). Good cause includes, but is not limited to, more recent and accurate data, more sophisticated water quality modeling, flaws in the original analysis that led to the water body being listed, or changes in conditions (e.g., new control equipment or elimination of discharges).

The process by which DEQ makes beneficial use support status determinations is outlined in Idaho's WBAG II. DEQ worked extensively to ensure the public and EPA had opportunity to review and comment upon their assessment process (the WBAG II document). DEQ has considered and incorporated suggestions made by EPA and the public. EPA reviewed this assessment process and provided comments in June 2001, met with DEQ to clarify those comments in July 2001 and provided comments again in September 2001. While EPA neither approves nor disapproves any state's assessment methodology, they reviewed it prior to its use.

In EPA correspondence dated September 28, 2001, EPA was in agreement that the purpose of WBAG II is to "...identify those water quality limited segments still requiring TMDL (as per implementing regulations at 40 CFR 130.7(b)) and is not a tool to identify downward trends, threatened waters, change in condition, or areas of anti-degradation."

2. Pollutants

Pollutants are generally any substances introduced into the environment that adversely affects the usefulness of a resource or the health of humans, animals, or ecosystems. Pollutants are defined under the CWA Section 502(6) and WQS §39.3602(19). With regard to Idaho's 303(d) list this includes things such as sediment, nutrients, toxics, and thermal modification, if they impair a beneficial use.

3. Pollution

Pollution is a very broad concept that encompasses human-caused changes in the environment that alter the functioning of natural processes and produce undesirable environmental and health effects. Pollution includes human-induced alteration of the physical, biological, chemical, and

radiological integrity of water and other media. Flow and habitat alterations are considered pollution but not pollutants according to EPA (WQS §502(6), §502(19) CWA and Robert H. Wayland III, November 19, 2001 memo), hence DEQ does not develop TMDLs in these two situations. However, water bodies affected by these forms of pollution are not overlooked or ignored, they are identified in Section 4c of the Interpreted Report. While not pollutants, flow and habitat alteration are often the result of or affected by the existence of pollutants in the water body that are suitable for TMDL calculation. Thus, for example, there may be excess sediment that impairs a use and therefore, violates state water quality standards on a water body that may be impacted by a lack of water flow (or habitat modification). If the impairment is at least in part the result of excess sediment, the water body will be listed on the 303(d) list.

4. Data Representation and Assessment Unit

Assessment Units (AUs) are groups of similar streams that have similar land use practices, ownership, or land management. AUs now define all the waters of the state of Idaho. These units and the methodology used to describe them can be found in the WBAG II. Using assessment units to describe bodies of water offers many benefits; the primary benefit is that now all the waters of the state are defined consistently. This fundamental requirement of 305(b) reporting is now fulfilled. Because AUs are a subset of water body identification numbers there is now a direct tie to the water quality standards for each AU so that uses defined in the standards are clearly tied to streams on the landscape.

This powerful new framework of AUs for reporting and communicating needs to be reconciled with the legacy 303(d) segments. Due to the nature of the court-ordered 1994 listings, all segments were added with boundaries from "headwaters to mouth." In order to deal with the vague boundaries in the listings and to complete TMDLs at a reasonable pace, DEQ set about writing TMDLs at a watershed scale so that all the waters in a drainage are and have been considered for TMDL purposes since 1994.

The boundaries from a currently listed segment have been transferred to the new AU framework using an approach quite similar to how DEQ has been writing SBAs and TMDLs. All AUs contained in the listed segment were carried forward to Section 5 of the Integrated Report. AUs not wholly contained within a previously listed segment but partially contained (even minimally) were also included in Section 5 of the Integrated Report. This was necessary to maintain the integrity of the 1998 303(d) list and maintain continuity with the TMDL program because AUs were not based upon 303(d) listing, rather on the factor described above. These new units have lead to better assessments for listing and de-listing

When assessing new data that indicated full support, only the AU that the monitoring data represented was removed from Section 5 of the Integrated Report as opposed to removing all wholly or partially contained AUs that were carried forward from the previous 303(d) list.

Boundaries for all waters in the Integrated Report will be solely based on AUs as defined in the Water Body Assessment Guidance.

5. Beneficial Uses, Designated and Presumed

The following is taken directly from WBAG II and is included here because of the importance of beneficial uses, designated or existing, play in the assessment. DEQ is not soliciting comment on the following sub-sections entitled "Designated Surface Waters" and "Undesignated Surface waters" since this material has already undergone public comment and response. It is referenced here for information purposes only.

Designated Surface Waters

Surface water use designations are defined and listed in the Idaho water quality standards (WQS § 100-160). These include uses that are applied on a water body-specific basis (aquatic life, recreation, domestic water supply), and uses that are applied to all waters of the state (agricultural and industrial water supply, wildlife habitat, and aesthetics). Waters may also be designated as outstanding or special resource waters (WQS § 055, 056); however, these two designations are not covered in this guidance.

Water bodies with specific use designations are listed in tables in WQS § 110-160 following the Idaho WBID (see Section 2 for an explanation of the WBID system). Unless broken out separately in the tables, use designations listed in the tables as the standards for a WBID unit apply to all perennial segments of waters included within that particular WBID unit. Usually these are tributaries, but in a few cases include nearby disconnected waters, since the WBID system has to encompass all waters in the state. For example, Cottonwood Creek, WBID 17040212-14, is designated for cold water and secondary contact recreation uses. This designation also includes subordinate streams within that WBID unit as shown in Table 3-1.

Table 3-1. Subordinate Streams within WBID 17040212-14

WBID #	WBID Name	Included Waters	Perennial portions also become designated as:
14	Cottonwood Creek	Burnt Creek	COLD SCR ¹
		Cottonwood Creek	COLD SCR
		Dry Cottonwood Creek	COLD SCR
		North Cottonwood Creek	COLD SCR
		Williams Reservoir	COLD SCR

¹ COLD = cold water;

SCR = secondary contact recreation

If, for example, North Cottonwood Creek also had unnamed tributaries, then the cold water and secondary contact recreation designations would apply to those perennial portions of the unnamed tributaries as well.

The distinction that, unless otherwise designated, the use designations of a WBID unit only apply to perennial portions of waters in the WBID is necessary because of the inclusive manner in which WBIDs are defined. Somewhere in the

continuum of stream channels from rivers to rills, there is a point above which a rivulet is so small that it cannot provide an aquatic habitat that can support a biological community with composition and function similar to reference conditions. All of the aquatic life uses presume fully established biological communities, which in turn presume a persistent aquatic environment. Temporary waters (e.g., intermittent streams, vernal pools) may have important ecological functions but cannot attain the same biological communities as perennial waters.

Undesignated Surface Waters

Waters listed in WQS § 110-160 for which uses have not yet been designated or which have incomplete use designations are considered undesignated waters for those uses. Two concepts that are important for determining which beneficial uses are to be protected, and thus assessed on undesignated waters, are addressed in the Idaho WQS: presumed uses and existing uses.

1.1.1. Presumed Uses

DEQ presumes that most waters in Idaho will support cold water aquatic life and, depending on the characteristics of the water body (Section 7), primary or secondary contact recreation (WQS § 101.01a). Cold water aquatic life use support determination procedures, including numeric criteria and recreation criteria, apply to undesignated, perennial waters to protect these presumptive uses. If an undesignated surface water body is intermittent (i.e., has zero flow at some time during most years), then aquatic community indexes cannot be applied; however, numeric criteria do apply to intermittent waters during periods of "optimal" flow (see WQS § 003.51, 070.07).

1.1.2. Existing Uses

Existing beneficial uses of the waters of the state are to be protected, even if not designated (WQS § 050.02b). "Existing" is defined as more recent than 1975, if the use no longer can be documented to occur. Section 7 describes how to determine which recreational use is "existing." For the purpose of determining whether a water body fully supports designated and existing beneficial uses per the WQS § 053, aquatic life beneficial uses may be assumed to exist as described in Section 3.2.2.1. These initial determinations of existing aquatic life uses are needed to complete water body assessments and to assemble a 303(d) list. Actual subsequent use designations may be different, depending upon additional information that may be received following the procedures described in Idaho Code 39-3604 and the WQS § 101.01.

6. Existing and Readily Available Data

DEQ conducted a 45-day call for data from February 21, 2002 to April 8, 2002. During that time DEQ Regional Offices sent letters requesting data pertaining to water quality criteria and

beneficial uses to their data partners such as the Idaho Department of Fish and Game, U.S. Forest Service, and the Bureau of Land Management. Prior to this 45-day period DEQ advertised in daily newspapers across the state that DEQ was looking for data as described above. In addition to these outreach efforts, DEQ hosted a comprehensive web site to help the public to find AUs geographically to assist them in providing data for the assessments. The web site served approximately 13,074 users, averaging 189 requests per day.

7. Data Quality

As noted above for beneficial uses, the following subsections entitled "Tier I, Tier II and Tier III, respectively, are taken directly from WBAG II and are intended for context and information only. DEQ is not soliciting comments on these subsections as they have already undergone public comment and response. As published in the WBAG II, data are the foundation of DEQ's assessment process. Although the WBAG II was designed primarily to assess Beneficial Use Reconnaissance Program (BURP) data obtained by DEQ, DEQ also considers existing and readily available data from other sources. The data used in the assessment process may be from other agencies, institutions, commercial interests, interest groups, or individuals and may relate to the existence, support status, or associated criteria for the beneficial uses in a water body.

Tier I

The scientific rigor of Tier I data is characterized as high and typically includes monitored data collected by professional scientists or professionally trained technicians with more than 30 hours of supervised training. The data are collected and analyzed under a monitoring plan with quality assurance and parameters measured. Samples are processed in an EPA-certified lab following standard methods or by a professional taxonomist. Biological data may come from one of several different assemblages, such as macroinvertebrates, fish, or algae, and are identified by a professional taxonomist. Physical habitat data may have quantitative measurements and standardized qualitative assessment procedures.

To be considered relevant, Tier I data usually include direct measurements or observations of beneficial uses, criteria, or causes of impairment. In addition, the sampling needs to be representative, that is, 1) to have been conducted at multiple times and locations, or 2) at a representative location with specific locations identified on a map or with geographical information system (GIS). The information must be less than five years old and must be able to be differentiated along a gradient of environmental conditions (EPA 1998). Predictive models must include calibration factors and, as noted below, are not used exclusively to make beneficial use determinations. Examples of the types of monitoring data typically meeting Tier I criteria include BURP, EPA Environmental Management and Assessment Program (EMAP), Rapid Bioassessment Protocols, Use Attainability Analyses, graduate theses, and professionally prepared and peer-reviewed studies, reports, or predictive models. These data can come from a number of possible sources such as state and federal agencies, academic institutions, local governments, or private parties. Tier I data are of sufficient quality and relevance to be used for 303(d) listing and de-listing decisions, 305(b) reports, subbasin assessments, and TMDL development. Data must meet both scientific rigor and relevance of Tier I criteria to be classified at the Tier I level.

Tier II

DEQ characterizes the scientific rigor of Tier II data as qualitative or semi-quantitative data. The data collectors will have followed documented field, laboratory, and data-handling protocols, have rated parameters, and may have a monitoring plan. The monitoring plan may not provide quality assurance (QA) or quality control (QC) information. Tier II data include professionally conducted evaluations and habitat data consisting primarily of standardized visual assessments or evaluations. However, some field staff may not be trained, the evaluating laboratory may not be certified, or a professional taxonomist may not identify the samples. Relevant Tier II data may include evaluations based on monitored or evaluated data more than five years old, watershed land use information, modeling results with estimated inputs, or measurement of an atypical event (EPA 1998). Data may relate to a watershed rather than be water body specific. They may also relate to guidelines or objectives of other government entities. Data collected for Environmental Assessments, Proper Functioning Condition (PFC) assessments, Cumulative Watershed Effects (CWE) Process, and agency planning documents, as well as Citizen Volunteer Monitoring data, are examples of types of data that would be considered Tier II. Tier II data are not used in 303(d) listing decisions due to higher data requirements for impairment decisions under Section 303 (see Section 1.4.1). However, Tier II data may be used in subbasin assessments and TMDLs when the assessor has the time to consider these data in context with other collected information. These data can also be used to establish beneficial uses for assessments and in 305(b) reports.

Tier III

The scientific rigor of Tier III data often includes information collected by unknown or untrained individuals. The data may not have been collected or analyzed following standard or reported protocols. Data without any originating documentation also appears in this category. Relevance of data is limited due to information having no intrinsic judgment or known reference for comparison. The data may have been extrapolated based on other sites, or a reflection of a specific localized condition not representative of the water body. This type of information may be considered as general background information, but it is not of sufficient rigor and relevance for listing decisions or regulatory actions. Tier III data are not used in 303(d) decisions, subbasin assessments, TMDLs, or 305(b) reports due to the uncertainty in the scientific rigor in their collection and relevance to beneficial uses or water quality standards. This data may be used in helping DEQ target future planning and monitoring.

8. Temperature

A 10% temperature criteria exceedance policy exists for 303(d) listing and de-listing decisions only and is not intended to determine compliance with the WQS for other purposes. While necessary to target the current water quality criteria in drafting a TMDL, if the frequency of exceedance of the temperature criteria is less than 10%, and there is no other evidence of thermal impairment, then it is possible to move for de-listing rather than proceed with a temperature TMDL. If a temperature TMDL is established, then during implementation of the TMDL the water will be reassessed. In that reassessment the goal for temperature would be considered met if criteria exceedances fall below 10% for a 90 percentile air T year (per the air T exemption).

Frequencies of temperature exceedances must be calculated on the metric of interest (e.g., the frequency of daily maximum stream temperature exceeding daily maximum criteria). Except for single daily maximum criteria, this requires data processing of the raw temperature record before counting exceedances. What follows is more detail on calculation of a criteria exceedance frequency for water temperature.

Time Periods of Interest

For cold water aquatic life the summer period of June 21 through September 21 is the period of interest on which to gage frequency of temperature exceedances. This 93-day period acknowledges the natural seasonal progression of water temperatures in which peak water temperatures typically occur between July 15 and August 15, with progressively cooler temperatures generally occurring on both sides of the peak period.

For salmonid spawning the time period of interest is the entire spawning and incubation period at a given site, but not less than 45 days. Forty-five days is set as a minimum spawning period as this allows two weeks for spawning and an additional month for egg incubation. The frequency of exceedances of salmonid spawning criteria should be based on the entire spawning and incubation period at the site in question. The entire spawning period at a site, even when greater than 45 days, will usually be shorter than the broad periods that were formerly in Idaho's water quality standards. Those broad periods, often still used as rules of thumb, were intended to encompass spawning periods statewide, from valley to mountain.

Critical Time Periods

In absence of data to the contrary, critical periods for water temperature are defined as follows. For cold water aquatic life the critical time period is from July 15 through August 15, the time period when most streams reach their highest temperature of the year. Spawning often occurs when water temperatures are in a spring or fall transition. Therefore, for *salmonid spawning* the critical time period is the 22 days at the warmer end of the spawning period. For spring spawners this will be at the chronological end of the period, while for fall spawners this will be at the chronological beginning of the period.

Complete Data Records

In order to calculate and evaluate a percent exceedance for temperature, an adequate data record is needed. The best situation is to have a complete data record for the entire period of interest as defined above; however, it is acknowledged that this is not always possible, even when planned. Furthermore much historical data will have been collected before this policy was in place. While collecting a complete data record for the entire period of interest should be the goal of future monitoring efforts, the allowances discussed below are made for evaluating partial data records.

Partial Data Records

Partial data records that do not include the critical time periods are inadequate for estimating a frequency of exceedance less than 10% and therefore can not be used to determine compliance with Idaho's temperature criteria.

On the other hand, partial data records that do not include the critical time periods may be sufficient to estimate a frequency of exceedance that is at least 10% and thus a violation of criteria. This occurs when the observed number of days over criteria in the partial record is greater than the number of days necessary to reach 10% exceedance for the entire period of interest. For example, if for salmonid spawning a partial data record includes 41 days of a 90 day spawning period, and 15 of those days are over the criteria, then the frequency of exceedance is at least $15/90$, or 17%, even if it were assumed the 49 days without data met the criteria. For cold water aquatic life a frequency of exceedance greater than 10% is documented with 10 days of exceedance, even if those 10 days are the only data available ($10/93$, or 11%). Data records less than 10 days for cold water aquatic life or less than 10% of the applicable spawning period are inadequate to show a frequency of exceedance that is at least 10% and are therefore inadequate to determine violation of Idaho's temperature criteria.

If the partial data record includes all of the critical time period it may be possible to infer the frequency of exceedance is not more than 10%. For cold water aquatic life, if the partial data record includes the critical period from July 15 thru August 15 inclusive and the frequency of exceedance is less than 10%, then it can be assumed the frequency of exceedance for the entire summer period of interest is less than 10%. Similarly, if the data record during *salmonid spawning* includes the warmest 22 days of the spawning period (end or beginning of the time period depending on whether spawning extends into spring or fall) and the frequency of exceedance is less than 10%, then it can be assumed that the frequency of exceedance is less than 10% for the entire spawning period.

If the calculated frequency of exceedance is greater than 10% for a partial data record it may still be possible to infer a frequency of exceedance as if data for the entire period of interest had been collected. To do so one must examine the data record and consider seasonal trends in temperature.

If the last (or first) seven consecutive days at the cool end of the record show no exceedances of criteria, then it may be assumed the entire following (preceding) unmonitored portion of the time period of interest is also without exceedances. In which case an inferred frequency of exceedance may be calculated using the entire period of interest as the denominator. For example, a period of interest maybe a spawning period which begins May 1 and ends June 30. The available data record begins June 1st and shows five exceedances of a 13 °C daily maximum criterion. The calculated frequency of exceedance is $5/30$, or 17%. Further examination of the data record reveals that all five exceedances occurred after June 15th with no exceedances in the first 7 days of June, at the cooler beginning of the record. It can therefore be assumed that had data been obtained for May it would also show no exceedances of the criterion. The inferred frequency of exceedance for the entire spawning period would be $5/61$, or 8%; no violation of standards.

Metric Definitions

Water quality criteria can be expressed in several different kinds of metrics. The four most common metrics are defined below.

MDMT – Maximum Daily Maximum Temperature. This is the highest daily maximum temperature recorded during the survey period at a site. This is the metric for Idaho's cold water biota criterion of 22 °C, and salmonid spawning criterion of 13 °C. In the case of the salmonid spawning criterion, the applicable time period is when spawning is known to occur, not necessarily the entire period monitored.

MDAT – Maximum Daily Average Temperature. This is the highest daily average temperature recorded during the survey period. This is the metric for Idaho's cold water criterion of 19 °C, and salmonid spawning criterion of 9 °C.

MWMT – Maximum Weekly Maximum Temperature. This is the highest weekly maximum temperature (i.e., the peak in the seven-day running mean of daily maximum temperatures during the survey period). This is the metric for Idaho's juvenile rearing bull trout criterion of 13 °C, and EPA's juvenile rearing bull trout criterion of 10 °C. Idaho's criterion applies June through August; EPA's June through September.

MWAT – Maximum Weekly Average Temperature. This is the highest weekly mean temperature (i.e., the peak in the seven-day running mean of daily average temperature during the survey period). This is metric is not currently used in Idaho's water quality rules but is the metric for EPA's proposed juvenile rearing criterion of 15 °C.

These definitions are important as they require different amounts of data in order to be calculated, and as a matter of policy, are handled differently as explained below.

Three Types of Temperature Data

Water temperature data can be collected by dipping a thermometer (mercury, alcohol, or digital) into a stream, producing a single measurement. These will be referred to as adhoc measurements. Information from these measurements is of very limited utility as usually only one measurement is obtained and thus could only be used for evaluating MDMT. Often these measurements are obtained for reasons other than evaluation of water temperature criteria (e.g., in order to properly set an electrofisher), and can be taken without due regard to being representative, influences of direct sunshine, or proper calibration. This is true of most of Idaho's BURP water temperature measurements.

More commonly, water temperatures are obtained as a continuous record, with digital recording thermometers. These devices do not produce a truly continuous record but rather store a history of regularly spaced measurements that can be conveniently downloaded to a computer. If there are enough measurements per day, these records can be used to calculate all the metrics above and more. Older analog devices were used for a time and produced truly continuous records of

temperature, as a line on a piece of paper. This data format, however, requires much greater effort to process into metrics such as above, and involves a person reading the chart and through transcription producing a record basically no different than that of digital recording thermometers. Both of the above will be referred to as continuous measurements.

Far less common, water temperatures are collected by a maximum/minimum thermometer the "remembers" only the highest and lowest temperature in the time period between readings. If read regularly (e.g., at the same time each day), these can provide useful information. These will be referred to as data maximum/minimum measurements.

Data Required To Calculate Metrics

Maximum Daily Maximum Temperature

A daily maximum is the highest temperature in a day, thus it only requires one measurement taken at the right time; however, it usually is not known when water temperatures peak unless continuous measurements are at hand. The likelihood of a continuous record actually capturing the maximum temperature (or the difference between the true maximum and measured maximum) depends on how fast the temperature changes during a day and how closely spaced measurements are taken. However, if a single measurement exceeds the MDMT limit, even if it not known for sure that the temperature recorded is the true daily maximum, it is known that the daily maximum is no less than the that single measurement, and therefore the criterion is exceeded.

Thus a single measurement greater than the MDMT, whether obtained by adhoc, maximum/minimum, or continuous measurement is sufficient to document an exceedance of this criterion. However, an exceedance will be judged a violation of criteria subject to the following limitations.

Because of concerns with regard to representativeness, accuracy, and precision of adhoc temperature measurements obtained with an alcohol or mercury thermometer, a single measurement of this type will not be sufficient for judging compliance with instantaneous criteria (e.g., MDMT). Thus Idaho will not use single BURP water temperature measurements by themselves to judge violation of water quality standards.

If two or more measurements of temperature are independent and agree with one another the chance of error is reduced. Thus single measurements may be corroborated by other independent temperature data. Two or more adhoc measurements from the same location on different days showing exceedance will be sufficient corroborating evidence, as will additional data of a different type (e.g., continuous or max/min).

Multiple adhoc, max/min, continuous measurements, or a combination from the same stream reach can be combined and subjected to the 10% exceedance policy to judge violation of water quality standards. (See WBAG, Second Edition Section 5-2 and Attachment A, [Grafe et al. 2002]).

Maximum Daily Average Temperature

Normally a daily average requires at least a minimum and maximum in the same day to be calculated. However, Idaho's bull trout standard specifically requires six evenly spaced measurements in a 24-hour period. That requirement is applied to all metrics that are based on daily averages (i.e., MDAT as well as MWAT which is made up of seven consecutive daily averages).

Multiple daily averages are subject to the 10% exceedance policy to judge violation of water quality standards.

Maximum Weekly Maximum Temperature and Maximum Weekly Average Temperature

These weekly or seven day metrics require a minimum of seven consecutive daily maximums, or daily averages, each subject to the same limitations set out above.

Frequency of exceedance for these compound metrics is based on the final calculated metric, not a frequency of exceedance of its components (i.e. one MWMT above criteria does not require nor imply seven daily maximums above criteria).

9. Intermittent waters

Intermittent waters naturally occur throughout Idaho. Some 33,000 miles are identified by the U.S. Geological Survey in its National Hydrography Database as intermittent in Idaho. Per Idaho Water Quality Standards, if a surface water body is intermittent (i.e., has zero flow at some time during most years), then numeric criteria apply only during periods of "optimal" flow (see WQS § 003.51, 070.07)." For bioassessment purposes DEQ does not believe its current assessment indices are appropriate for the assessment of intermittent waters. Further, at this time DEQ does not have a specific process for monitoring or assessing intermittent waters. Thus, DEQ expects that a large portion of these waters are unassessed and can be found in Section 3 of the Integrated Report. These waters are included in AUs and are examined in detail during the SBA and TMDL process.

10. Springs and Lake Outlets

Assessment of springs and lake outlets were dealt with on a case-by-case basis at the discretion of the assessor. Generally springs and lake outlets fundamentally differ biologically from free flowing streams and therefore require a unique assessment tool. Multimetric macroinvertebrate indexes such as the Stream Macroinvertebrate Index are not suitable for use in some atypical, natural stream types. Macroinvertebrate communities from spring-fed streams and lake outlets may have very low natural diversities and would receive very low index scores, even under pristine conditions. (See Maret et al. 2001, Maret 1997, Anderson and Anderson 1995), (Mebane, C. A. 2001.)

11. Wetlands

DEQ does not have an assessment process in place for assessing the beneficial uses or determining if water quality standards are met in wetland settings. While wetlands are protected by the CWA, DEQ has chosen not to incorporate them into any category of the 2002/2003 Integrated Report.

12. Tribal waters

Waters on the 1998 303(d) List and in the 2002/2003 Integrated Report may be wholly within Indian reservations, on lands held by tribal members subject to a restriction on alienation, and/or held by the United States in trust for Indian Tribes. DEQ's actions with respect to the integrated report and such waters do not constitute a determination, waiver, admission, or statement on the part of the state of Idaho with respect to jurisdiction over such waters. AUs were edited to end and or begin at the Reservation Boundary. The status of the AUs within the Reservation boundary was maintained with respect to the 1998 303(d) unless there was an EPA approved TMDL.

13. Prioritization for Subbasin Assessment and Total Maximum Daily Load Development

DEQ is working under a settlement agreement. This agreement sets a schedule for the development of TMDLs based on Hydrologic Unit, segment, and pollutant through 2007. When DEQ developed and prioritized the schedule, they considered severity of pollution and the uses to be made of such waters.

For purposes of TMDL priorities in Section 5 of the integrated report, those TMDLs due in 2003 and 2004 are high, 2005-2006 medium, and 2007 and beyond low. DEQ resources are allocated in accordance with this settlement schedule. AUs added to the 2002/2003 Report will be scheduled for TMDL development starting in 2008. This does not mean all the AUs added during this cycle would be done in 2008, merely, they will be scheduled for 2008 and beyond. However, the settlement agreement contains a mechanism for DEQ to complete TMDLs sooner for newly listed waters. In determining whether to assign a higher priority to newly listed waters, DEQ may consider whether resources are available and the local Watershed Advisory Group and Basin Advisory Group for that TMDL are in agreement. Modifications to the schedule will be done on a case by case basis.

14. Wilderness and Roadless

Two groups of waters are going to be added to Section 1 of the Integrated Report; AUs attaining water quality standard and no use threatened. These are AUs that fall entirely within a designated wilderness or inventoried roadless area. These two groups of waters best exemplify DEQ's "natural background condition" water quality standard (WQS §58.01.02.053.03). Waters falling under this condition exhibit "no measurable change in the physical, chemical, biological, or radiological conditions existing in a water body without human sources of pollution within the watershed."(WQS §58.01.02.003.65). There are a few important concepts embedded in this standard, they are: 1) pollution controls are intended to address human-caused exceedances and

impacts; 2) natural background condition does not necessarily equal pristine; 3) water quality standards speak to human affects to water quality, not acts of nature or natural physical or biological processes; 4) TMDLs deal with human caused impacts or impairment; and 5) changes to water quality due to humans should be small or diminimus and not adversely affect the beneficial use.

DEQ believes waters within designated wilderness and inventoried roadless areas meet the intent of natural background conditions by virtue of the fact there has been little to no significant human management to cause changes in water quality or affect beneficial uses. The reason wilderness was designated is because it met this low human impact criteria. For roadless, DEQ used the two most restrictive criteria; those recommended for wilderness where road building is prohibited (1-B1 USFS); and those where road building is prohibited (1-B USFS). Waters within these two groups, wilderness and roadless, are found in Section 1 of the Integrated Report. DEQ is soliciting information that would indicate why a particular water should not be included here. This data or information would need to demonstrate there is a human impact that is, or might be impairing water quality. In the absence of such data, DEQ will proceed with the presumption that wilderness and roadless waters, as described above, are unimpaired and place them in Section 1 of the integrated report. The number of assessment units (AUs) qualified for the wilderness policy are 235 out of 5,360 or 4.4% percent of the state's waters. This policy is not applied to previously listed waters, thus there are not de-listings associated with this policy, and the policy only applies to waters that DEQ has not yet assessed (thus, no data waters) or has assessed as fully supporting and falls within the roadless/wilderness definition above. Further, the policy only applies to Assessment Units that are fully (100%) within wilderness areas and the top 2 categories of roadless areas, which addresses concerns about waters that briefly flow through wilderness or roadless areas. Most of these Assessment Units are found in the Selway-Bitterroot and Frank Church River of No Return Wilderness. This amounts to 6.5% of the Assessment Units in Idaho.

15. Wildlife and Aesthetics Beneficial Uses

Wildlife and aesthetics beneficial uses are considered not assessed for all AUs in the integrated report with the sole exception of the 313 AUs that fall wholly within wilderness or roadless areas as stated in 14 above.

16. Pollutants and Cause(s)

Failing to meet a numeric or narrative water quality criteria or impair a beneficial use, will be cause to put that AU into Section 5, water quality limited, requiring a TMDL. If that AU failed a specific numeric criteria i.e. temperature, then the cause or pollutant for that listing is thermal modification. Similarly failure to meet a narrative i.e. sediment, would also put that AU into Section 5. The important point here is that data exists to inform the assessor what the cause or causes are.

DEQ relies heavily on biology to gauge narrative and numeric criteria. Since DEQ does not collect data to evaluate every possible numeric and narrative criteria, the assessor in many instances will not know the exact cause of the impairment, merely that impairment exists. As an

example, an AU found to be not supporting its Aquatic Life Beneficial Use would be placed in Section 5, with the cause stated as "UNKNOWN". EPA sent out a clarification memo on April 4, 2002, for the Integrated Report Guidance stating: "When existing and readily available data and information (biological, chemical or physical) are sufficient to determine that a pollutant has caused, is suspected of causing or is projected to cause the impairment, the AU should be listed in Category 5." The memo further clarifies that "Only when the state determines that existing data and information (biological, chemical or physical) are insufficient to support an attainment determination, can an AU be listed in Category 3." DEQ discourages assessors from making educated guesses on causes since changing a cause after initial listing can be costly in terms of time and resources. DEQ feels it is reasonable and prudent to leave the cause, as unknown, until it can be accurately determined in the subbasin assessment phase of the TMDL.

17. De-Listed Waters

Assessment units on the 1998 list that were there from the original 1994 EPA promulgation, may have been de-listed based on newer in-stream data. However all waters from the 1998 list have been carried over. Then new data was considered. If it met tier I (QA/QC), and it shows WQS are met and there is no tier I data showing impairment, then the AU was moved to Category 2. These waters now reside in Section 2, Waters Supporting Some Uses, of the Integrated Report, waters supporting some uses. The justification for this is addressed in 1 above. Documentation for this has been input into ADB as an administrative record of decision.

18. Idaho Water Quality Standards: Numeric and Narrative

Specific language detailing how narrative and numeric water quality standards are interpreted in assessments for the integrated report are detailed in the WBAG II. These policies were adhered to for all assessments. DEQ largely relies on Beneficial Use Reconnaissance Program monitoring data and biological assessments to demonstrate compliance with the state's narrative water quality standards. These standards are written such that the waters of the state shall be free from pollutants impairing beneficial uses. Biological assessments directly measure the beneficial uses that the narrative standards were written to protect so that a full support decision based on the WBAG II largely satisfies compliance with these narrative standards.

Numeric standards are somewhat different and a detailed discussion of the state's approach to assessing these standards was published in the WBAG II. Even among the numeric standards, temperature presents some unique challenges and is examined in Section 8 of this listing guidance

"Due to natural variability in water quality, variability in translation to a biological response, and possible measurement errors, DEQ does not interpret the numeric criteria for conventional pollutants as a sharp line between impairment and non-impairment. Rather, there is a gray-zone where there may or may not be an impairment.

Because criteria are developed conservatively, DEQ believes this gray-zone falls above the set criteria levels. By policy DEQ thus establishes a zone up to 10 percent criteria exceedance in which the assessor has flexibility to consider other evidence to determine a violation. This

numeric criteria evaluation policy of DEQ is consistent with guidance from EPA (EPA 1997) and other states in EPA Region 10 (WDOE 1997), WABGII, 2002.”

While this policy deals solely with frequency, DEQ does recognize that magnitude and duration of any criteria exceedance is also important to the biological response and ideally should be considered as well. Magnitude, duration, and frequency are typically not independent of one another. Thus, evaluating frequency alone, while it can have its limitations, is a practical gage of criteria exceedance and one that is supported by national EPA policy.

19. DEQ proposes the following waters in Idaho be removed from the current 303(d) list (Section 5), or not listed, for temperature as a pollutant. Reason’s for delisting or not listing include:

- 1) Idaho Water Quality Standards natural background provisions (IDAPA §58.01.02.003.65 and §58.01.02.053.3);
- 2) Data quality does not meet minimums in Idaho’s Waterbody Assessment Guidance II, i.e. more than a single grab sample temperature measurement needed (Chapter 5); or
- 3) Frequency of exceedance less than assessment threshold, WBAGII allows up to 10% exceedance of numeric criteria if the bio-assessment indicators are good (Chapter 5).

The following lists are not comprehensive, but rather a sample of waters that have been identified to fall under one or more of the above three reasons for removal from the 303(d) list, or not be listed. Idaho thus reserve’s the right to propose additional waters be removed from the 303(d) list, or not listed, for these reasons in the future.

Waters in Idaho currently listed for temperature for which that Idaho proposes temperature be dropped as a pollutant either because 1) the human caused impairment is below allowable temperature increase, or 2) the temperature data used for listing was insufficient. Since these waters are only listed for temperature they should be removed from the 303(d) list.

Stream name	WBID	Currently Listed (Yes/No)	Listing Data Source	Reason for Delist
Lochsa River	17060303	Yes	USFS	Less than de-minimus increase, HDR Modeling Report
Worm Creek	16010202	Yes	DEQ	Data quality, single temperature measurement
Santa Creek	17010304	Yes	DEQ	Data quality, single temperature measurement
Hot Creek	17040213	Yes	DEQ	Data quality, single temperature measurement

Waters in Idaho currently listed which Idaho proposes be removed from the 303(d) list because there are no human causes of impairment.

Stream name	WBID	Currently Listed (Yes/No)	Listing Data Source(s)	Reason for Delist
Storm Creek	17060303	Yes	USFS	apriori natural
Boulder Creek	17060303	Yes	USFS	apriori natural
Fish Creek	17060303	Yes	USFS	apriori natural
Smithie Fork	17040217	Yes	USFS, DEQ	apriori natural

Waters in Idaho that were considered for 303(d) listing but should not be listed.

Stream name	WBID	Currently Listed (Yes/No)	Data Source(s)	Reason for Not Listing
Weir Creek	17060303	No	DEQ	apriori natural
Robin Creek	17060303	No	DEQ	apriori natural
Selway River	17060301,2	No	DEQ, USFS	apriori natural, less than 10% exceedance
Bear Creek	17060301	No	DEQ, USGS	apriori natural, less than 10% exceedance
Running Creek	17060301	No	DEQ	apriori natural, less than 10% exceedance
Moose Creek	17060302	No	DEQ, USGS	apriori natural, less than 10% exceedance
MF Salmon	17060205,6	No	DEQ, USFS	apriori natural, less than 10% exceedance
Indian Cr	17060205	No	DEQ	apriori natural, less than 10% exceedance
Big Creek	17060206	No	DEQ	apriori natural, less than 10% exceedance

Public Participation

DEQ is seeking public comment on the assessment decisions made for the 2002/2003 Integrated Report. Data and/or site-specific comments are welcome and will be evaluated prior to final submission of the integrated report to EPA. Below is an overview of the milestones to date and anticipated project completion of the integrated report.

- March 15, 2002: 45-Day Call for Public Data; Open Interactive Integrated Report Web Site
- April 30, 2002: Close Call for Data; Begin Assessment of Water Bodies for 2002 Integrated Report
- June 2, 2003: Draft Integrated Report Completed; Begin 60 Day Public
- August 4, 2003: Close Public Comment Period on Draft Report

September 8, 2003: Final Integrated Report Delivered to EPA

How to Comment

DEQ will make available to the public, via our web site a downloadable list in Adobe™ portable document format (PDF) and an interactive map service to retrieve the locations of listed segments in relation to major landmarks such as roads, rivers, and county lines. This map service will also allow the public to comment on specific water bodies and attach relevant comments. The comment tool may be found on DEQ's web site: www.deq.state.id.us or www.deq.state.id.us/water/water1.htm#surface_water

