Idaho Antidegradation Implementation Procedures

State of Idaho
Department of Environmental Quality
Surface Water Section

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Public Comment Draft

Contents

List of Figures

List of Tables

List of Equations

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Preface

This document provides guidance for conducting reviews of permits or licenses to determine compliance with the antidegradation provisions in Idaho's water quality standards (WQS). It was developed through an open public process. Nine public meetings were held to discuss and negotiate content. A 30-day public comment period was opened on January 27, 2012.

Antidegradation reviews will be governed by existing requirements of the Clean Water Act (CWA), US Environmental Protection Agency (EPA) implementing regulations, and the WQS. This document does not substitute for those provisions, regulations, or rules. The recommendations in this guidance are not binding; the Idaho Department of Environmental Quality (DEQ) may consider other approaches consistent with the CWA, EPA regulations, and the WQS. Decisions regarding compliance with the antidegradation provisions in the WQS will be made on a case-by-case basis, taking into account comments and information presented at that time by interested persons regarding the appropriateness of applying these recommendations to the particular situation. DEQ may vary from the recommended procedure outlined in this document based upon site-specific information and comments provided by the public and the permit or license applicant. DEQ may change this guidance in the future.

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Acronyms and Abbreviations

§303(d) Clean Water Act section requiring reporting of waters that need total maximum daily loads

§305(b) Clean Water Act section requiring reporting on water quality status of all waters

§401 Clean Water Act section requiring certification that water quality standards will be met

§404 Clean Water Act section requiring permits for discharge of dredge or fill material

7Q10 7-day, 10-year minimum statistical flow value

30Q10 30-day, 10-year minimum statistical flow value

AA alternatives analysis

ACOE Army Corps of Engineers

AU assessment unit

BMP best management practice

BURP Beneficial Use Reconnaissance Program

CFR Code of Federal Regulations

CWA Clean Water Act

DEQ Idaho Department of Environmental Quality

EPA US Environmental Protection Agency

FERC Federal Energy Regulatory Commission

HUC hydrologic unit code

IDAPA refers to Idaho Administrative Code

IR Integrated Report

MGD million gallons per day

NPDES National Pollutant Discharge Elimination System

ORW outstanding resource water

POTW publicly owned treatment works

RDI river diatom index

RFI river fish index

RMI river macroinvertebrate index

RPI river physicochemical index

RPTE reasonable potential to exceed [water quality criteria]

SEJ social or economic justification

SFI stream fish index

SHI stream habitat index

SMI stream macroinvertebrate index

SPI stream periphyton index

TMDL total maximum daily load

TSD EPA's Technical Support Document for Toxics Control (see references)

USGS United States Geological Survey

WBAG Idaho's *Water Body Assessment Guidance*, second edition (see references)

WBID water body identification [number]

WQ water quality

WQBEL water quality–based effluent limit

WQS Idaho water quality standards (IDAPA 58.01.02)

Executive Summary

What is Antidegradation?

Antidegradation is a policy and set of procedures aimed at maintaining the existing quality of Idaho waters. Maintaining water quality that is better than the minimums set by water quality criteria is a primary objective of the Clean Water Act (CWA) and is considered one of the three key elements of water quality standards: beneficial uses, water quality criteria, and antidegradation. This objective is achieved by reviewing water quality related permits and licenses for their effect on water quality. If the water receiving the discharge is of high quality, significant proposed degradation in water quality is evaluated closely to determine if it can be minimized or avoided. If significant degradation cannot be avoided, then the activity is evaluated to determine if the activity is necessary and important to the social or economic health of the affected public.

Why This Guidance?

Federal rules on antidegradation date back to 1983, and Idaho has had a policy in its water quality standards (WQS) for nearly as long that mimic the federal requirements. However, Idaho lacked an identified set of implementation procedures for its antidegradation policy, and actual implementation was not evident. Lack of identified implementation procedures became the subject of a legal complaint against the US Environmental Protection Agency (EPA), in its oversight of Idaho's WQS, and led to Idaho adopting new rules to describe its antidegradation implementation procedures. These rules were finalized in spring 2011. This guidance document elaborates on the requirements of these new rules, describing in greater detail how antidegradation is to be implemented in Idaho.

Three Tiers of Protection

Antidegradation policy assigns water bodies one of three levels of protection. Each level, or tier, has its own requirements for protecting existing water quality:

- Tier 1 is the lowest level of protection and requires that water quality be maintained such that the existing and designated uses of the water are supported. This tier is the minimum level of protection for any water body and generally means ensuring that all applicable water quality criteria are met. Water bodies with this protection may already be of lower quality (i.e., listed as impaired in the Integrated Report). All water bodies subject to antidegradation regulations receive at least Tier 1 protection.
- Tier 2 is the middle level of protection. Protection consists of making sure degradation is "necessary to accommodate important economic or social development" (IDAPA 58.01.02.051.02). Degradation is not forbidden, but it must be necessary and justified. Because the water quality of water bodies given Tier 2 protection is better than the minimum levels set by water quality criteria and may be so by a wide margin, these are also known as high-quality waters.
- Tier 3 is the highest level of protection, reserved for waters of outstanding character. No degradation of water quality may be permitted in these waters.

Antidegradation is more about levels of protection than it is about levels of quality. In fact, for Tier 3 it could be said that antidegradation is all about protection, as the outstanding character may have little to do with actual water quality in the traditional sense of pollutant concentrations (e.g., waters may have particularly high ecological value).

Most of the interest in antidegradation policy is regarding Tier 2 waters. This tier is where antidegradation procedures can work to maintain high-quality water and is also where dischargers may have to expend extra effort to reduce or justify their proposed degradation of water quality.

Key Points of Idaho's Antidegradation Program

Federal rules for antidegradation set some minimum program requirements. Idaho's rules adhere closely to these federal requirements, but the federal rules are not detailed and thus have allowed states a fair degree of flexibility in how they implement their programs. Key points of Idaho's rules and program in regard to this flexibility are as follows.

Activities Subject to Review

Under the CWA, only discharges to waters of the United States are regulated, thus it is only these discharges that are subject to antidegradation review in Idaho. By Idaho rule, antidegradation review is triggered by an application for a federal permit or license that requires certification under section 401 of the CWA: EPA National Pollutant Discharge Elimination System (NPDES) discharge permits (CWA §402), Army Corps of Engineers dredge and fill permits (CWA §404), and Federal Energy Regulatory Commission licenses. What these discharges or activities have in common, in addition to their potential to degrade water quality, is that they all require §401 certification by DEQ to ensure they comply with Idaho WQS before they may proceed. This certification provides the opportunity for antidegradation review.

Discharges not needing a permit or license, such as from nonpoint source activities, are not directly subject to antidegradation review. Idaho rule also exempts from antidegradation review restoration activities designed to improve water quality.

Tier Determination

Under Idaho rule, the level of protection (i.e., tier) is determined on a water body by water body basis, using the most recent federally approved Integrated Report, which summarizes Idaho's assessment of water quality. The Integrated Report identifies water bodies that do not support beneficial uses or meet all water quality criteria, also known as impaired water bodies. Because the water quality criteria for aquatic life and recreational uses are distinct and different, water body tiering is split by these broad use categories. Thus a water body can be in Tier 1 for recreational uses and Tier 2 for aquatic life uses, or vice versa.

Nondegrading, Degrading, and Insignificantly Degrading Activities

An early step in the review process is evaluating the change in water quality proposed. Not all of the activities subject to review will be found to degrade water quality.

In evaluating proposed changes in discharge that may cause degradation of water quality, it is the permit or license's change in allowable discharge that is reviewed. For an existing discharge, if a reissued permit or license maintains allowable discharge and the activity does not otherwise change in character, the activity will most likely be nondegrading.

Under Idaho rule, our concern for degradation is forward-looking. That is, we look at what may be permitted for the future, not what has already been permitted in the past. In general, an activity must be new or cause an increase in pollutant discharge from an existing activity, through greater volume or concentration of pollutants, to degrade water quality.

For discharge to waters receiving Tier 2 protection, a degrading activity that would cause no more than a cumulative 10% loss of assimilative capacity from July 1, 2011, will be considered an insignificant degradation of water quality. An insignificant degradation of water quality is permitted without investigating other source controls or needing social or economic justification.

Although the level of protection is afforded on a water body–specific basis, evaluation of degradation occurs by pollutant for those pollutants of concern in a discharge.

Significant Degradation of High-Quality (Tier 2) Water

One of the conditions for allowing significant degradation of high-quality water is that other source controls be achieved for both point and nonpoint sources. When evaluating proposals to significantly degrade high-quality waters (i.e., Tier 2 waters), the Idaho Department of Environmental Quality (DEQ) will look at whether nonpoint sources in the watershed will be controlled through cost-effective and reasonable best management practices. Thus, nonpoint sources not subject to antidegradation review may impede the ability of activities subject to review to get approval to degrade water quality.

The other major condition that must be met to allow significant degradation of high-quality water is that the activity must be shown to be "necessary to accommodate important economic or social development" (IDAPA 58.01.02.051.02). This condition has been broken down into two parts: 1) assessing the necessity of degradation by finding ways to reduce or avoid increases in discharge of pollutants or lessen their impact on water quality and 2) demonstrating there is an important social or economic justification for degradation that cannot be reasonably avoided.

A new or proposed increase in pollutant discharge could be rejected either because the degree of degradation is unnecessary or because the activity is not justified as socially or economically important. If reasonable steps to minimize degradation are taken, then the analysis will depend on showing a social or economic reason to accept the proposed degradation.

Review Process

Antidegradation review in Idaho is integrated into the state's §401 certification process. Reviews will be done by DEQ staff when certifying permit/license applications and supporting documents. DEQ will determine if Tier 2 protection applies according to the rules, the degree of water quality degradation that will occur, and if that degradation is significant.

When significant degradation of a Tier 2 (high quality) water body is proposed, DEQ will work with the applicant to evaluate alternatives to reduce degradation and determine if degradation

that cannot be reasonably avoided is socially or economically justified. DEQ will present its determination in an antidegradation review document, which will be attached to DEQ's §401 certification.

Public review is an important part of this process, particularly if degradation is to be allowed in a Tier 2 water body. The antidegradation review will be open to public comment as part of DEQ's §401certification.

1 Purpose and Overview

The purpose of these procedures is to provide guidance to persons implementing Idaho's policy to protect surface water quality from **degradation**.

Federal rules on **antidegradation** date back to 1983, and Idaho has had a policy in its water quality standards for nearly as long that mimics the federal requirements. Federal antidegradation policy is found at Title 40 Code of Federal Regulations (CFR) § 131.12. However, Idaho lacked an identified set of implementation procedures for its antidegradation policy as required by 40 CFR § 131.12(a). Idaho adopted new rules to describe its antidegradation implementation procedures. These rules were finalized in spring 2011 and approved by the US Environmental Protection Agency (EPA) on August 18, 2011.

The statutory policy on antidegradation is echoed in rule at section 051 of the Idaho water quality standards (WQS) and consists of three tiers of antidegradation protection, as required by federal rule (IDAPA 58.01.02). Section 052 of the WQS addresses implementation of the policy. Detailed implementation steps are depicted in the flowchart in Appendix A and include the following:

- Identifying the antidegradation protection levels (i.e., the "tiers") that apply to a surface **water body**
- Ensuring **existing uses** of the water body are maintained and protected in all cases
- Determining whether a new, or change in an existing, activity or **discharge** will result in significant water quality degradation
- Coordinating with other government agencies
- Reviewing and approving **less-degrading** or **nondegrading alternatives** for **high-quality waters**
- Assessing the importance of social or economic development to justify significant degradation of high-quality waters
- Engaging the public in the process

This guidance document elaborates on the requirements of these new rules, describing in greater detail how antidegradation is to be implemented in Idaho. Federal rules for antidegradation set some minimum program requirements, and Idaho's rules adhere closely to these federal requirements. However, the federal rules are not detailed and thus have allowed states a fair degree of flexibility in how they implement their programs.

To aid Idaho Department of Environmental Quality (DEQ) staff in performing antidegradation review, a review template was created. The current version as of the writing of this guidance is provided here, for reference, in Appendix B.

1.1 Applicable Laws and Regulations

Requirements for the protection and management of surface water quality are established in Idaho Code, Title 39, Chapter 36. Section 3603 of this code establishes Idaho's antidegradation policy. Sections 3617–3620 establish procedures for designating and restricting nonpoint source activities on **outstanding resource waters** (ORWs).

The Board of Environmental Quality, with assistance from DEQ and approval by the Idaho legislature, promulgates administrative rules on water quality. Idaho's WQS are specified in Idaho Administrative Code (IDAPA) Chapter 58.01.02, "Water Quality Standards."

Additional information on antidegradation can be gleaned from the *Water Quality Standards Handbook* (EPA 1993) and EPA's 1998 Advance Notice of Proposed Rulemaking (ANPRM).

1.2 Antidegradation and Water Quality Standards

Antidegradation is one of three required regulatory elements of the WQS. The other two elements are assignment of **beneficial uses** and adoption of **water quality criteria** (narrative and numeric). All three elements must be administered as a whole to effectively protect water quality and the uses dependent on that quality. **Designated uses** and water quality criteria applicable for each of the uses are found in Idaho's WQS.

Section 100 of the WQS describes designated beneficial uses and the use categories that may be applied in Idaho. Specifically, these are by category (aquatic life, recreation, or water supply) and subcategory (for example, *cold water* aquatic life or *primary contact* recreation):

- **Aquatic Life—**salmonid spawning, cold water, seasonal cold water, or warm water
- **Recreation**—primary contact or secondary contact
- **Water Supply**—domestic, agricultural, or industrial

In addition, aesthetic and wildlife uses apply to all waters.

Section 101 describes waters for which uses specified in section 100 have not been designated (undesignated surface waters as defined in section 101.01). Undesignated waters are presumed to support cold water aquatic life and primary or secondary contact recreation; therefore, DEQ applies the cold water aquatic life and contact recreation criteria when protecting and managing undesignated these waters. About 70% of Idaho's water bodies do not have specific use designations as of 2010 and are thus protected through the application of section 101.

For waters where uses have been designated, the specific use designations are identified in the WQS sections 110–160 by subbasin (US Geological Survey [USGS] 4th-field hydrologic units, represented by hydrologic unit codes [HUCs]) and **water body units** (represented by water body identification numbers [WBIDs]). Designated uses normally reflect existing uses of a water body at the time of designation but may also reflect a desired or potential use not yet attained.

Uses may exist in a water body even if they have not been designated in the WQS (sections 110–160) and are not presumed by default (section 101). Salmonid spawning, a recognized use in section 100, is a prime example. Many waters in Idaho support salmonid spawning yet have not been so designated. Such existing uses must be protected even though they are not designated.

Water quality criteria specific to Idaho's beneficial use designations (i.e., numeric criteria) are found in sections 210 and 250–253 of the WQS. All waters of the state are subject to general criteria contained in section 200 (i.e., narrative criteria), regardless of use.

Beneficial uses may vary within a water body; that is, they may change with location, water body size, or type. Most waters have more than one designated beneficial use or existing use. Where

multiple uses exist or have been designated for a water body, the use with the most stringent water quality requirements must be maintained and protected.

All **jurisdictional waters** of the state are protected under at least one of the three tiers of the antidegradation rule. Section 1.3 of this document describes these tiers. Section 1.4 explains jurisdictional waters and the activities and discharges antidegradation applies to.

1.3 Tiers of Protection from Degradation

The federal rule and Idaho's statutory policy establish three levels, or tiers, of antidegradation protection.

Tier 1 (Maintenance of Existing Uses)

Tier 1 protection requires that the level of water quality necessary to protect existing uses be maintained and that the water quality criteria be met. This is the minimum level of protection. Tier 1 protection applies to all surface waters, regardless of the **existing water quality** or designated use(s). A review is conducted to prevent authorizing an activity or discharge that would cause or contribute to a beneficial use not being fully supported or violation of water quality criteria.

Tier 2 (High-Quality Waters)

Tier 2 protection applies only to the subset of surface waters that are of high quality as determined on a water body by water body basis. For these high-quality waters, Tier 2 provides an added layer of protection in addition to the Tier 1 minimum protection. Tier 2 is an intermediate level of protection.

A Tier 2 determination protects high-quality waters from degradation by requiring an analysis of the necessity for significant degradation and the social or economic importance of the activity before it is allowed. Under Tier 2 protection, insignificant degradation will be allowed without analysis. Significant degradation may occur only after an acceptable analysis of **reasonable** alternatives for avoiding or minimizing pollution of the water and an acceptable **social or economic justification (SEJ) of importance** of the action causing degradation. Procedures for determining whether degradation is insignificant and, if significant, whether it is justified and may proceed, are presented in section 5.

Tier 3 (Outstanding Resource Waters)

Tier 3 protection prohibits degradation and applies only to waters of the highest quality or with other outstanding resource values that the legislature has designated by law as worthy of such protection. These waters are ORWs. An activity or discharge that will not cause degradation may be allowed as described in section 6. Temporary and limited degradation of Tier 3 waters may be allowed by DEQ on a case-by-case basis as explained in section 4.6. Tier 3 is the highest level of protection.

Tier Listing

There is no need to create a list of Idaho waters given only Tier 1 protection (Tier 1 waters), as this protection applies to all water bodies. Nor does DEQ intend to create and maintain a complete list of waters given Tier 2 protection in addition to Tier 1 protection (Tier 2 waters). A list of all Tier 2 waters in Idaho would be dynamic and could not be complete unless all waters in the state are regularly monitored and assessed. DEQ has prepared a list identifying the anticipated tier of protection for Idaho waters currently receiving National Pollutant Discharge Elimination System (NPDES) permitted discharges, based on information available at the time this guidance was prepared (Appendix C). Tier 3 ORWs must be designated by the legislature. As of 2011, no ORWs have been designated.

Since it is already clear which waters receive Tier 1 and Tier 3 protection, section 2 of this guidance describes how DEQ will determine whether a water body warrants Tier 2 antidegradation protection. This determination is based on Idaho's **Integrated Report** (IR) and its supporting data. Classification as a Tier 2 water reflects overall water body quality based on information used in compiling the IR. Since the IR is updated every 2 years, this water body by water body classification will be dynamic. Furthermore, for unassessed waters, there could be additional or newer information not available at the time the latest IR was developed. Therefore, it is DEQ's intent to determine whether Tier 2 protection is needed at the time an activity or discharge that might degrade water quality is proposed on a permit or license application.

1.4 Applicable Waters and Activities

Idaho's antidegradation policy applies to all activities that may result in a discharge subject to certification under section 401 of the Clean Water Act (CWA). Such activities include all those that require a permit pursuant to CWA § 402 (NPDES discharge permits) and CWA § 404 (dredge and fill permits) or Federal Energy Regulatory Commission (FERC) licenses.

Jurisdictional waters are a subset of the waters of the state. The EPA and US Army Corps of Engineers (ACOE) have developed guidance (ACOE and EPA 2008) on making CWA jurisdiction determinations in accordance with the Supreme Court's decision in RAPANOS v. United States (547 U.S. 715 (2006)). The ACOE and/or EPA are responsible for making jurisdictional determinations. Certain activities, as discussed below, are not subject to antidegradation review.

Restoration Projects

If an activity qualifies as a restoration project, antidegradation review does not apply. Water quality restoration projects are those whose primary purpose is to return a water body to something closer to its natural or original condition. It is not necessary that a restoration project completely achieves the goal of natural or does so immediately. Restoration projects are a step in that direction and designed to improve water quality; if they do not improve water quality, they are unlikely to qualify as restoration projects.

Even so, DEQ recognizes that some projects whose goal is to improve water quality in the long run may still result in short-term worsening of water quality. For example, forest road obliteration projects or culvert replacements may cause a short-term pulse in sediment. This

degradation is expected and acceptable so long as reasonable measures (such as best management practices, or BMPs) are taken to minimize short-term worsening of water quality. Such measures should be incorporated into the design of a restoration project and be considered in the project approval decision.

Emergency Actions

The rules regarding antidegradation do not speak to emergency actions. Most emergency activities do not require a permit or license that would trigger antidegradation review. Nor will there be time in most true emergencies for DEQ to consider antidegradation. DEQ will handle emergency actions on a case-by-case basis using its discretion to apply antidegradation provisions in a manner that is appropriate to the circumstances.

Temporary Degradation and Short-Term Activities

As a general principle, DEQ believes degradation of water quality should be viewed in terms of permanent or long-term **adverse** changes. Therefore, short-term and temporary reductions in water quality, if reasonable measures are taken to minimize them, may be considered in the context of restoration projects and emergency actions subject to CWA permitting. This allowance does not mean DEQ should overlook a collection of small, **short-term activities** that collectively have a longer and more-or-less continuous impact.

Short-term activities are addressed by Idaho's WQS at IDAPA 58.01.02.080.02, "Short Term Activity Exemption." This provision allows DEQ to exempt a discharge from WQS compliance, including from the WQS antidegradation requirements, for activities deemed essential to protecting or promoting the public interest and that cause no permanent or long-term injury to beneficial uses.

2 Determining Where Tier 2 Protection Applies

Tier 1 antidegradation protection applies to all jurisdictional waters, and Tier 3 waters are designated by statute; therefore, the only tier determination that remains is which water bodies warrant Tier 2 protection. This section describes the procedure for determining if Tier 2 protection is applicable.

By statute, Idaho has established a water body by water body approach for identifying waters that will receive Tier 2 antidegradation protection. This approach uses Idaho's IR for water quality status and supporting data. The IR is updated every 2 years; therefore, each Tier 2 determination will be made as applications for new or reissued permits or licenses come before DEQ.

Tier 2 determination is based on the following three factors:

- The water body's category of use support according to the most recent federally approved IR (i.e., Categories 1–5)
- The beneficial uses of the receiving water body
- Whether data indicate the water body as a whole is of high quality

Section 2.1 provides a brief overview of the IR. Section 2.2 describes how DEQ will determine whether or not Tier 2 protection is appropriate.

2.1 The Integrated Report and Use-Support Status Categories

Every 2 years, DEQ is required by the federal CWA to conduct a comprehensive analysis of Idaho's water bodies to determine whether they meet state WQS and support beneficial uses or if additional pollution controls are needed. This analysis is summarized in the IR, which is submitted to EPA for approval. The report serves as a guide for developing and implementing water quality improvement plans (i.e., total maximum daily loads, or TMDLs) to protect water quality and achieve federal and state water quality standards. An IR must be approved by EPA before it can be used by a state to guide its management decisions. The most recent EPA-approved report is the 2010 IR (DEQ 2011).

Category 5 of the IR is equivalent to a streamlined version of the former §303(d) list of impaired waters (Category 5 excludes waters for which a TMDL has already been developed). This category identifies waters that do not meet all water quality standards; if they fail to meet at least one criterion or measure of their quality (i.e., a **parameter**), they are impaired. The Category 5 list identifies the water body and the cause(s) for listing. Causes are usually parameters for which the water body fails to meet a criterion but may also be failure of the biological community to achieve benchmark scores for biological indices (see Grafe et al. 2002). A TMDL must be developed for the certain parameters for which a water body is **listed**, unless other measures are put in place to provide the water quality improvement needed (in which case the water body is placed in Category 4b).

The IR compiles available environmental data and information from all components of DEQ's surface water quality program, as well as from other agencies, organizations, companies, and

individuals. These data and information give water quality managers an indication of the relative quality of Idaho's water bodies and are used to set priorities and allocate resources accordingly. All of the state's waters are classified into at least one of the five different use-support categories. The five categories are described in the following paragraphs and summarized in Table 1.

Category 1: Waters of the State Wholly within Designated Wilderness or Inventoried Roadless Area Where Standards are Presumed to be Attained

Category 1 waters are wholly within a designated wilderness or inventoried roadless area where water quality standards are presumed to be attained for all beneficial uses. The only distinction between Category 1 and Category 2 waters is the wilderness and roadless status of the waters in Category 1.

Category 2: Waters of the State Attaining Some Standards

Category 2 waters fully support those beneficial uses that have been assessed. For those water bodies, no existing or readily available data or information indicated a need for a change in the beneficial uses support status.

Category 3: Waters of the State with Insufficient Data and Information to Determine if Any Standards are Attained

Category 3 waters have insufficient data or information to indicate an impairment of beneficial uses and to determine if standards have been attained. Category 3 is meant to be temporary until sufficient data and information are obtained to support a designated use attainment determination. However, in Idaho a water may remain in Category 3 under any of the following circumstances: 1) the stream has no flow when visited by DEQ (i.e., is intermittent); 2) access to the monitoring site was denied; or 3) the monitoring site is inaccessible. When DEQ encounters any of these circumstances, every attempt will be made in subsequent years to collect sufficient data and information to support a designated use attainment determination for these waters.

DEQ's experience has been that for aquatic life and recreational uses, the majority of unassessed waters are found to be high quality once sufficient data are obtained.[1]

Category 4: Waters of the State Impaired for One or More Beneficial Uses but Not Requiring the Development of a Total Maximum Daily Load

Category 4 waters fail to meet at least one of the applicable water quality standards and thus do not fully support at least one applicable beneficial use. These are also known as "impaired waters." However, waters in Category 4 do not require a TMDL to be developed to correct the impairment due to one of three reasons. These reasons are used to group Category 4 water bodies into one of three subcategories:

- Category 4a: TMDL completed and approved by EPA.

[1] In the course of negotiated rulemaking in 2010, DEQ examined the change in status of 167 assessment units (AUs) that were not assessed in the 2002 IR but were assessed for the 2008 IR when new data were available. Of the 167 AUs in Category 3 in 2002, 92 (55%) were determined to belong in Tier 2 (high-quality waters) based on their 2008 assessments. Of the remaining 75 AUs, 58 failed to meet at least one water quality criterion, but because they lacked biological data, they were not classified for antidegradation.

- Category 4b: Waters that have pollution control requirements in place, other than a TMDL, and are expected to meet standards within a reasonable period of time.
- Category 4c: Water bodies impaired by pollution (e.g., flow alteration and habitat alteration) but not **pollutants**. According to EPA, water bodies impaired by pollution do not require development of a TMDL.

Category 5: Waters of the State for Which a TMDL is Needed

Impaired water bodies that do not meet applicable water quality standards for one or more beneficial uses due to one or more pollutants are placed in Category 5. Category 5 is a streamlined §303(d) list that excludes waters that have an EPA-approved TMDL (Category 4a) and waters impaired by pollution (Category 4c), such as flow alteration or habitat modification. Waters can only be removed from Category 5 by having either an EPA-approved TMDL or EPA approval to remove based on good cause.

In some cases, a water body may be classified in more than one category. If the water is impaired or if water quality standards are not being met, an assessment unit may show up in both Category 4 and 5. Most occurrences of such multiple listings are for water bodies that are impaired for multiple pollutants or pollution (e.g., flow or habitat alteration). For example, if a water body is impaired by a pollutant (e.g., temperature) and pollution (e.g., flow alteration), then the water body would be listed in Category 5 for temperature and Category 4c for flow alteration.

Table 1. Integrated Report categories

Integrated Report Category	Description
1	Waters[a] with all applicable uses presumed to be fully supported. Presumption based on lack of pollution sources.[b]
2	Waters for which all applicable uses that have been assessed were found to be fully supported
3	Waters with no assessed applicable uses due to lack of data
4a	Waters that have an EPA-approved TMDL
4b	Waters with controls other than a TMDL that are expected to restore all applicable uses to full support
4c	Waters for which a lack of applicable use support is caused by flow or habitat alteration (i.e., pollution), not a pollutant
5[c]	Waters for which one or more applicable uses are not fully supported due to a pollutant[d]

[a] The term "waters" means assessment units (AUs), which are subdivisions of water body units represented with WBIDs in the Idaho WQS.
[b] This presumption is based on these waters being located entirely within wilderness/roadless areas.
[c] Category 5 is equivalent to the §303(d) list of impaired waters (i.e., a TMDL "to do" list).
[d] While assessment is done by use, an AU is listed as impaired for a specific cause or pollutant. If just one water quality criterion is not met or any one use is not fully supported, the AU is listed in Category 5 unless the cause is flow or habitat alteration (i.e., pollution) and then it is listed in 4c. When a TMDL is completed, the AU is listed in category 4a for the pollutant for which the TMDL was done. Because listing and TMDL development is *by pollutant*, a given AU can appear in both Category 5 (for one or more causes) and 4 (for different causes).

All of the state's waters are broken into **assessment units** (AUs) (as described in the following section). An individual AU may be classified in more than one of the above categories since the

IR lists waters by cause. For example, if a water body is impaired due to temperature and flow alteration, it would be listed in Category 5 for temperature and Category 4c for flow alteration because flow alteration is not considered a pollutant.

Water Body Units and Assessment Units

Water body units are the geographic basis for identifying waters of Idaho and designating beneficial uses in the WQS. These units and their identification numbers (WBIDs) are based on 1:100,000 hydrography and divide the state of Idaho into unique, nonoverlapping drainage areas.

In headwaters areas, WBIDs correspond to true watersheds; that is, all surface water in a water body unit flows to a single point where it exits the unit. In Figure 1, this situation is exemplified by the stream labeled 003 (shown in red in the inset). Because water body units are nonoverlapping by design, any unit downstream from a headwater unit has both an entry and an exit point and is not a true watershed. This situation would correspond to the heavy green, purple, and blue lines in the inset of Figure 1. These nonheadwater water body units may consist of a large mainstem segment and a collection of many smaller tributaries. The small tributaries likely provide only a fraction of the flow in the mainstem. Thus, water quality and uses within a WBID can be quite varied.

This potential variation in water quality and uses within a WBID becomes problematic when evaluating the effect that a discharge or activity might have on water quality. It is also problematic to the assessment of use support and even in designation of uses. The further removed from the headwaters a water body unit is, the more probable it is that the mainstem flow of water in and out of the unit is unlike that of the tributaries within the unit (e.g., WBID 001 in Figure 1). DEQ addressed this problem for assessment purposes by using stream order (a measure of the number of tributaries upstream and thus size of a stream) to break water body units into smaller subunits for assessment called AUs. Small tributaries to larger streams, which can be very different in character but occur in the same water body unit, are therefore split into separate AUs. This finer division allows DEQ to do a better job of refining its assessment of water quality and use support.

WBID 001 in Figure 1 has two very different AUs: the 001_07 AU (which is a portion of the 7th-order mainstem represented by the heavy blue line) and the 001_02 AU (represented by the collection of thin blue lines indicating 1st- and 2nd-order tributaries to the mainstem). Both AUs are part of the 001 WBID. They have the same designated beneficial uses but are assessed using different methodologies and data since it is unlikely that 1st- and 2nd-order tributaries would have the same characteristics as the 7th-order mainstem Salmon River. The same situation can be seen with the tributaries to WBID 002 (green lines) and WBID 029 (purple).

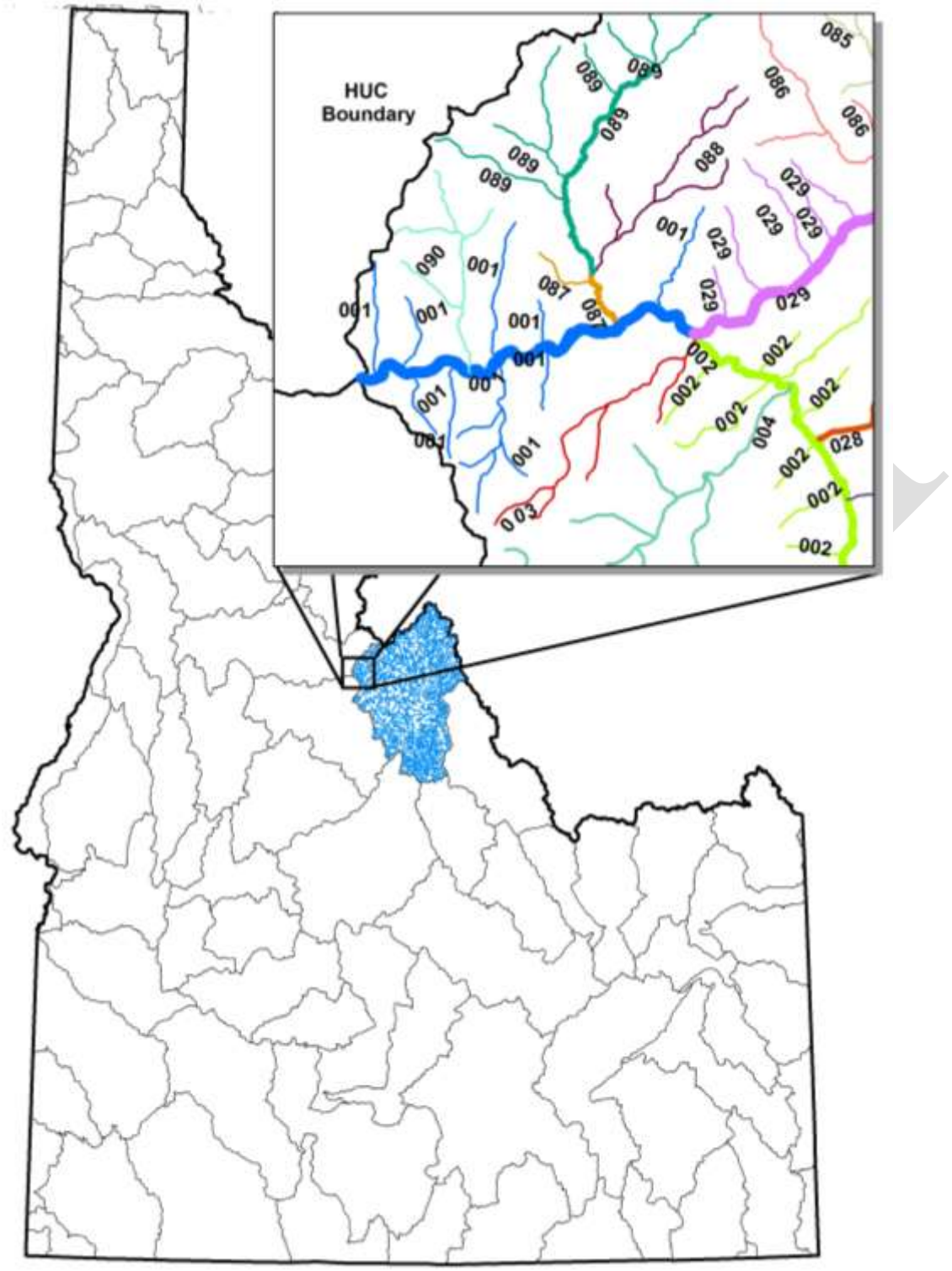


Figure 1. Map detailing water body IDs (WBIDs) for hydrologic unit code (HUC) 17060203—the Middle Salmon-Panther Subbasin. Inset shows how the individual waters are associated with a WBID number. Each color represents one WBID to show the different stream segments that are part of that WBID. The thickness of the line corresponds to the stream order (thinner lines equate to 1st- and 2nd-order streams and thicker lines equate to larger-order streams).

While AUs are better for assessment purposes than whole water body units (WBIDs), they still are not perfect since many separate 1st- and 2nd-order tributaries that drain different areas are still lumped together into one AU. Although these small tributaries are in the same water body unit and are thus likely to be similar in water quality condition, they may also have different activities and discharges that differentially alter their quality. Consider again the situation represented by WBID 001 in Figure 1, and imagine the possibility that tributaries on one side of the river drain a largely roadless area with few human impacts while tributaries on the other side have impacts from recreational use (e.g., campgrounds) and timber harvest.

DEQ could subdivide AUs further, but doing so would necessitate additional data collection that is not feasible. Instead, we must use data collected from specific sampling sites to infer water quality throughout an AU. It is always possible that differences in activities and discharges exist within an AU and that all water within the AU may not be of the same quality as found at the sampled sites. Typically, DEQ samples at the most downstream extent of an AU where it is expected that water quality will reflect the effects of any and all upstream activities. Even in larger streams, the location of a sampling site could reflect better or worse water quality than the bulk of the AU. This issue will be revisited in section 2.5.

2.2 Assigning Tier 2 Protection

Tier 2 antidegradation classification of a water body is based on the most recent federally approved IR, its supporting data, and the beneficial uses of the receiving water body. However, to ensure that the level of protection reflects the water quality of the water that would be affected by a proposed new or increased activity or discharge, DEQ may also consider how well the available data represents that water.

Use of Integrated Report

When a proposed project requires an antidegradation review, DEQ will use the most recent EPA-approved IR to determine which category the water body of interest is in. If necessary, DEQ will examine the IR supporting data and more recent relevant data that may be available at the time. This evaluation is summarized in Figure 2 and Table 2.

Water Bodies Supporting Assessed Beneficial Uses

All AUs considered to be fully supporting all their applicable uses or all their assessed applicable uses (i.e., those in Category 1 and 2 of the IR) will be given Tier 2 protection for all uses.

Water Bodies with Unassessed Uses

Waters in Idaho may be unassessed due to a lack of suitable data at the time assessments were performed for the latest IR. AUs without an assessment (i.e., those in Category 3 of the IR) will be evaluated on a case-by-case basis to determine whether they are high quality and need to be given Tier 2 protection. This evaluation need not occur, and generally will not occur, until DEQ receives notification of an application for a new or reissued permit for a proposed new discharge or activity that could degrade water quality.

When an activity or discharge is proposed on unassessed water, all relevant information available will be used to determine the appropriate level of antidegradation protection, including new information generated during the application process to specifically address the question of whether the water is of high quality. New information may come from DEQ, other agencies, organizations, companies, or individuals. DEQ may ask the **applicant** to gather information to help with this determination.

DEQ may not have the level of information necessary under DEQ's *Water Body Assessment Guidance* (WBAG) to determine support status for purposes of the IR (Grafe et al. 2002). Nevertheless, Idaho Code (§39-3603(2)(b)(ii)) requires DEQ make a determination of the level of antidegradation protection based on available information. Therefore, even if the information is not sufficient to make a use support call for the IR, DEQ will use the data to make a determination regarding the appropriate level of antidegradation protection.

For unassessed aquatic life uses, DEQ will look for or obtain the following information:

1) Data on compliance with water quality criteria
2) Biological and habitat data collected under DEQ protocols
3) Biological and habitat data collected by other entities

The latter may not be amenable to calculation of DEQ's assessment indices and thus would have to be interpreted using weight of evidence and best professional judgment. If relevant data cannot be found or obtained in a timely manner, DEQ will ask the applicant for agreement in treating the water as Tier 2, and, if the applicant agrees, proceed with antidegradation review on this basis.

For an unassessed recreational use, all that is needed to make a tier determination are *E. coli* data. It is best to have a 5-sample geometric mean to compare to the water quality criteria (IDAPA 58.01.02.251.01.a). However, a single sample analyzed for *E. coli* will be enough to make a tiering determination. If this sample shows that bacteria levels are less than the single sample maximums that trigger additional sampling (IDAPA 58.01.02.251.01.b), DEQ will consider the water Tier 2 for recreation.

Water Bodies Not Fully Supporting Beneficial Uses or Not Meeting all Criteria

DEQ assesses aquatic life and recreational uses differently because there are differences in water quality requirements in the criteria (values) as well as the pollutants (parameters) that apply to each. Although uses are assessed separately, if one use is not supported, the water body is considered to not fully support applicable beneficial uses and for the purposes of the IR is placed in Category 4 or 5.

While a water body must be identified as not *fully* supporting its uses if it fails to meet even one criterion, it is not considered to be consistent with antidegradation policy to dismiss protection of the water body from degradation that would affect another use that *is* fully supported. Therefore, for AUs identified as not fully supporting at least one use, the rule calls for DEQ to evaluate aquatic life and recreational uses separately to determine the appropriate level of antidegradation protection.

Because applicable uses are assessed separately and there are different data requirements for evaluating each use (e.g., bioassessment data are not used in evaluating recreational uses and *E. coli* data are not used in evaluating aquatic life uses), it is possible that a water body may warrant Tier 2 protection for recreation and Tier 1 for aquatic life, or vice versa. This mixed, by-use assignment of antidegradation tiers is deliberate and will be resolved during the review of a proposed activity or discharge and its expected effect on water quality and applicable uses as described in section 4. Sections 2.3 and 2.4 describe how DEQ evaluates potential degradation of aquatic life and recreation beneficial uses, respectively.

The relationship between IR categories and antidegradation protection is summarized in Table 2. Examples of water body–specific classifications related to IR categories are provided in Appendix D.

Table 2. Translation of Integrated Report categories to tiers of antidegradation protection

Integrated Report Category	Antidegradation Protection Tier
1	Tier 2 for all applicable uses
2	Tier 2 for all applicable uses
3	Tier 1 or 2, as data show at time of antidegradation review
4a	Tier 1 for the use that is impaired—except aquatic life use may be Tier 2 if cause of impairment is dissolved oxygen, pH, or temperature and bioassessment shows support of aquatic life use
4b	Same as 4a above
4c	Tier 1 for aquatic life uses. AUs in Category 4c are listed for causes other than dissolved oxygen, pH, or temperature and therefore the rule does not allow for biological data to provide addition of Tier 2 protection.
5	Same as 4a above

The IR lists a cause for impairment. Some causes are general (e.g., combined habitat/biota) and don't necessarily correspond with specific water quality criteria, while others are specific (e.g., copper) and are associated with particular criteria.

Waters with a use designation of "none" will be provided Tier 1 protection only for the use with the designation of none.

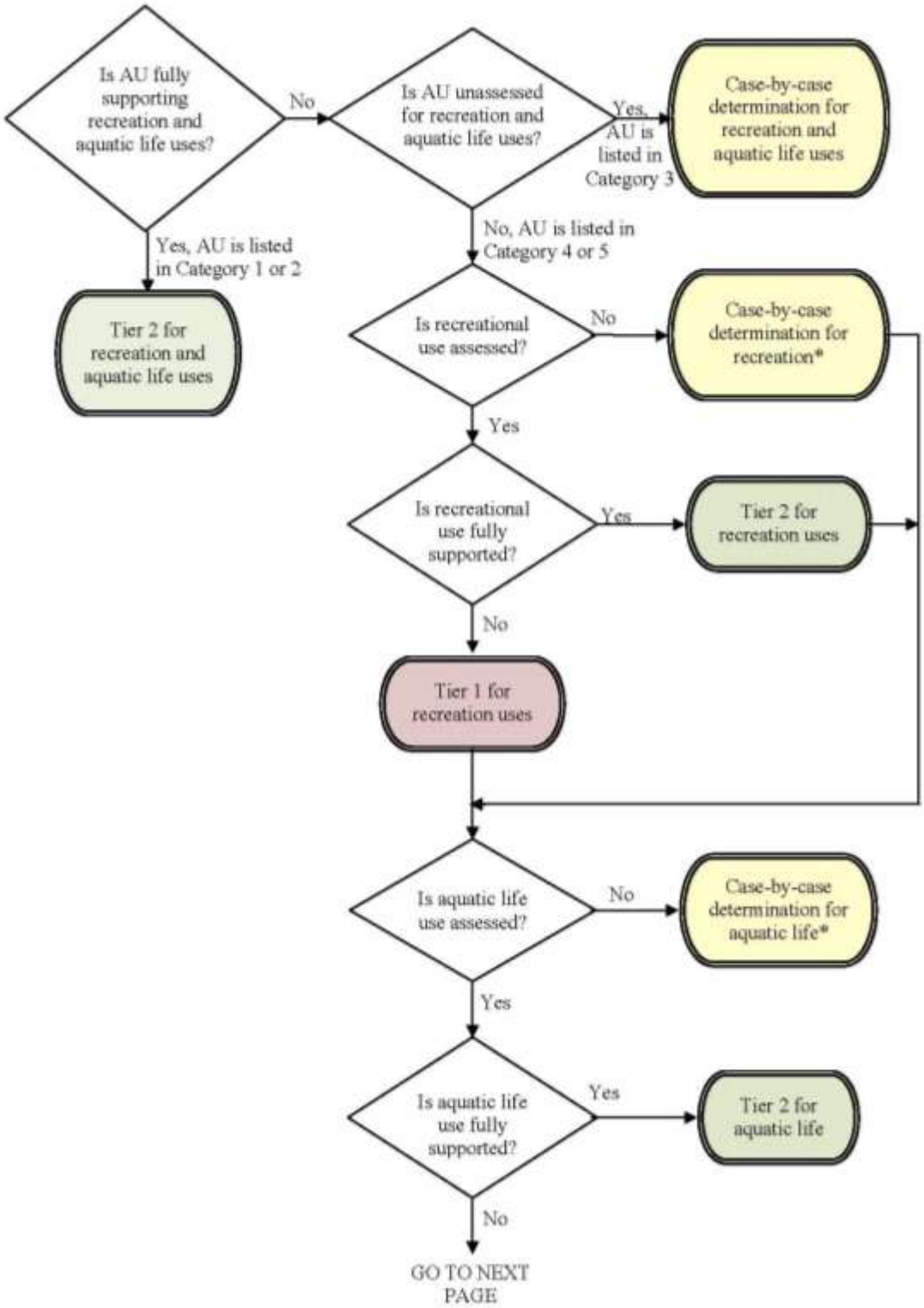
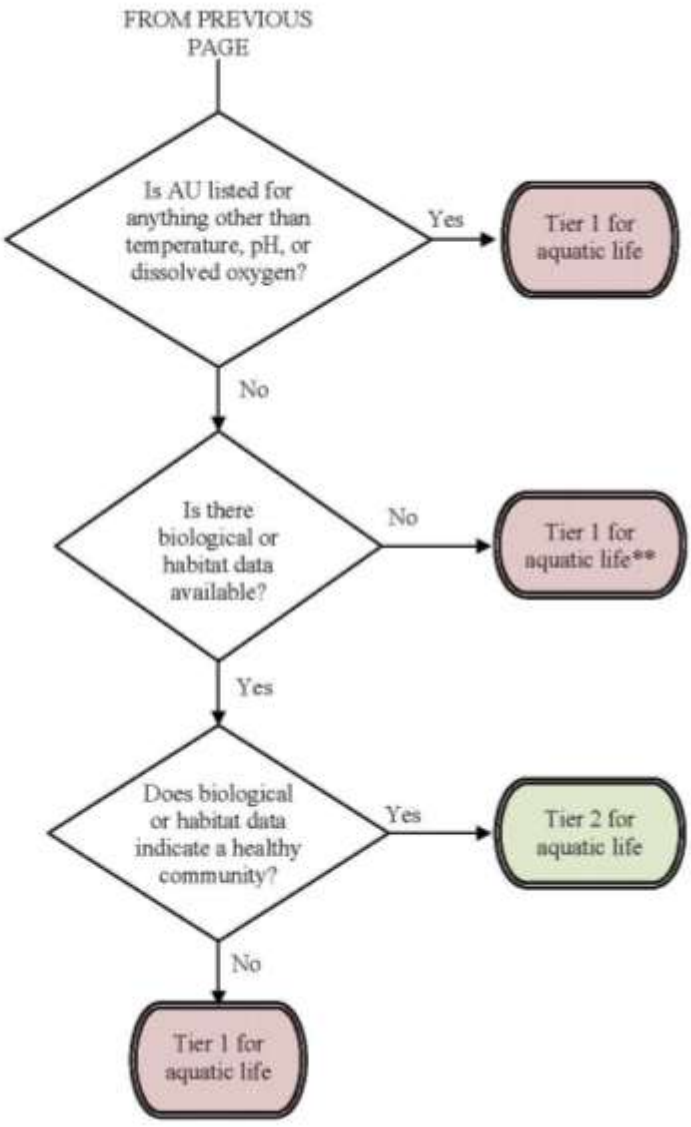


Figure 2. Flowchart for determining whether Tier 1 or Tier 2 protection is warranted



*In this situation DEQ will make an effort to obtain data needed in order to make an informed decision on support of the use that is unassessed.
**In this situation, DEQ will make an effort to obtain biological or habitat data in order to make an informed decision on the aquatic life use support.

Figure 2 (cont.). Flowchart for determining whether Tier 1 or Tier 2 protection is warranted

Manmade Waterways

DEQ's interpretation of the Idaho WQS is that canals or drains not specifically designated are not protected for CWA § 101(a) uses and will be treated as Tier 1 waters for antidegradation purposes unless DEQ is presented with data to the contrary. This policy is in keeping with IDAPA 58.01.02.101.02, "Man-Made Waterways," which states that manmade waters are protected for the use for which they were developed, namely agricultural water supply. DEQ does not consider natural water bodies modified after November 28, 1975, to be manmade waterways.

2.3 Aquatic Life Beneficial Uses

An AU may be identified as either supporting or not supporting its applicable aquatic life beneficial use(s) based upon one or more of the following data types:

- Chemical (i.e., dissolved oxygen, pH, or other applicable pollutant concentrations)
- Physical (i.e., turbidity and temperature or other applicable measures)
- Biological (biological assessment data—see Box 1).

Biological data provide the major source of information for DEQ's assessments of aquatic life use support, although there are many instances where chemical or physical data may also be available or be the only data available. Chemical and physical data are relevant and easily compared to water quality criteria in the WQS, and they may, and often do in the case of temperature, exceed criteria when the biological data do not indicate that a problem exists.

Box 1. Biological Assessment

A biological assessment is an integration of biological data that reflects exposure of the sampled populations to pollution over time. Thus, a biological assessment is a holistic measure of a water body's condition.

Much of the data available for biological assessment is data DEQ collects on macroinvertebrate and fish communities and habitat quality via its Beneficial Use Reconnaissance Program (BURP) or comparable data other entities collect. These data are reduced to various multimetric index scores. Individual index scores are then combined for each site and, if available, scores for multiple sites may be combined to arrive at a single score for each assessment unit, as described in the WBAG (Grafe et al. 2002).

Data that are not BURP compatible may also be used in bioassessment, as described in Grafe et al. (2002).

This conflict in signals among the various data types must be resolved in some manner. For purposes of the IR, DEQ is required to implement the federal "independent applicability" policy, which means a water must be listed if either the biology indicates lack of use support or any one of the associated water quality criteria are not met.[2] Independent applicability means a water body can be assessed for its support of aquatic life without biological data.

It is somewhat counterintuitive that a single chemical or physical measure of water quality, such as a point-in-time measurement of temperature or copper concentration, can overrule a more integrative measure such as a multi-index biological assessment. However, this conservative approach is justified by EPA because chemical and physical measures are considered leading indicators of problems yet to appear in the biology. While it may be appropriate to queue up a TMDL to address a failure to meet one criterion, this does mean there are many water bodies in Idaho that are biologically healthy and would be considered high quality by most Idahoans, yet fail to meet one or two criteria. A prime example of this is the Lochsa River in north-central

[2] While independent applicability originated with NPDES permitting, it has long been applied by EPA to reporting for CWA section 303(d) purposes.

Idaho, a high-quality stream where temperature criteria set to protect cold water aquatic life are occasionally exceeded (Box 2).

In order to be similarly conservative in antidegradation evaluation and not discount the high quality of streams such as the Lochsa River, Idaho's antidegradation rule calls for assigning Tier 2 protection based on biological data when the listing cause is only dissolved oxygen, pH, or temperature, thus favoring biological data over these three chemical and physical measures of water quality.

Box 2. Examples of Water Body Classification for Antidegradation Protection

This example will focus on several assessment units. AU 17060303CL001_05 is the Lochsa River from Deadman Creek to the mouth. This water body is in Category 5 of the Integrated Report since it is not fully supporting its aquatic life beneficial use. However, the only identified cause for listing is temperature and no biological data are available. This water body would be assigned an antidegradation tier of protection based on a case-specific evaluation. Although this water body may be listed for temperature, local knowledge suggests that this river is considered one of the best trout fisheries in the state.

The IR and its supporting data will be the primary determinant of whether or not a segment of water is high quality. Valid data collected by third parties will also be used. For applicable aquatic life uses, if a water body is listed for one or more of the causes outlined in the rule but the bioassessment data indicate a healthy and balanced biological community, the water body will receive Tier 2 protection. If biological data are lacking or insufficient, other relevant data will be considered to make an antidegradation tier assignment for each case that arises from a proposal for an activity or discharge with degradation potential.

Use of Biological Data

When a water body is not fully supporting its applicable aquatic life uses due to dissolved oxygen, pH, and/or temperature, DEQ will examine the underlying biological data. If the biological and aquatic habitat data indicate a healthy aquatic community, the water body will be provided Tier 2 antidegradation protection. In this evaluation, DEQ will consider the representativeness of the data for the area that would be affected by a proposed discharge or activity (see section 2.5 for further discussion). Table 3 lists the biological data that DEQ may have available.

Table 3. Multimetric indices currently used by DEQ in assessing aquatic life use support in streams and rivers

Wadeable Streams	Rivers
Stream Macroinvertebrate Index (SMI)	River Macroinvertebrate Index (RMI)
Stream Fish Index (SFI)	River Fish Index (RFI)
Stream Periphyton Index (SPI)	River Diatom Index (RDI)
Stream Habitat Index (SHI)	River Physicochemical Index (RPI)

To use these multimetric indices for determining whether Tier 2 antidegradation protection is appropriate, *scores for at least two indices must be available*. DEQ will follow the protocols outlined in Idaho's WBAG (Grafe et al. 2002), or subsequent updates, for evaluating the indices. If the average of the indices is greater than or equal to 2, then DEQ will consider the water body to be of high quality and will apply the Tier 2 level of protection. If the average of the indices is less than 2, then the water body will not be considered high quality, and Tier 1 protection will apply. DEQ will incorporate biological monitoring data for the specific location of an activity or discharge that may become available during the permitting process.

There may be instances where biological data are available but are not compatible with DEQ's biological assessment protocols (i.e., not BURP-compatible). This possibility exists particularly in the case of large rivers and reservoirs. In these instances, biological data collected by sources outside of DEQ (such as the USGS or Idaho Power, to name a few) are available, but the data may not have been collected in a manner that allows it to be reduced to the multimetric indices used by DEQ. These data can still be informative; however, they will have to be evaluated on a case-by-case basis.

On the other hand, there may be instances when no biological data are available. In this case, DEQ will try to obtain new information relevant to determining the appropriate level of antidegradation protection. New information may come from DEQ, other agencies, organizations, companies, or individuals. DEQ may ask the applicant to gather information to aid in this determination.

2.4 Recreation Beneficial Uses

The assessment of recreational use support is typically based on traditional measures of water quality that can be compared to numeric criteria such as bacteria and toxics criteria. The most common measure of water quality used to assess support of contact recreational uses is the amount of bacteria present. Measured bacteria such as *E. coli* indicate the likely presence of pathogens that could affect the health of swimmers and others who may ingest the water while recreating on or in it.

Data on concentrations of toxic pollutants are also used to gauge support of recreational uses such as fishing. While fishing is supported by a healthy, reproducing population of fish and their food organisms, supporting consumption of those fish requires they have levels of contaminants that make them safe to eat.[3] Because fish that are caught may be eaten, toxics criteria (see Box 3) for protecting human health apply to waters protected for recreational use. Recreational toxics

[3] The criteria ensure acceptable risk at specific levels of consumption used to calculate the criteria.

criteria are different from those for the protection of aquatic life. The relevant pollutants are different and the criteria values for the same pollutant can differ greatly.

If a water body is listed as not fully supporting its applicable primary or secondary contact recreation beneficial uses, there should be accompanying water quality data indicating an exceedance of the water quality criteria (usually *E. coli* concentrations). Unlike aquatic life uses, DEQ does not have an assessment methodology independent from criteria for evaluating the support of recreational beneficial uses. There is no mechanism with recreational uses to override minor exceedances of criteria and independently determine the use is fully supported. Therefore, if a water body is listed as impaired for recreation, Tier 1 antidegradation protection for recreation will always apply.

Box 3. Recreational Toxics Criteria

Toxics criteria applicable to protecting recreational use are typically concentrations in water. They are derived from the toxin's tendency to bioaccumulate in fish tissue and then be consumed by people. An exception is mercury, whose criterion is a concentration in fish flesh—this provides a more direct measure of human exposure and bypasses the need to consider bioaccumulation from water in limiting the risk to health.

2.5 Spatial Extent of Water Quality Characterization

Because water quality within a water body unit or even an AU can vary considerably, DEQ will evaluate and assign the appropriate level of antidegradation protection to the smallest subdivision of a water body unit that makes sense in terms of representativeness of data. That subdivision will be at least as small as an AU.

While DEQ does its best to avoid sampling sites that are not representative of an AU, occasionally an AU may have a site or sites that are not representative of the unit as a whole due to either the sheer number of smaller waters lumped in the AU, access constraints, or monitoring strategies based on probability design for a statewide assessment.

Many AUs have multiple sampling sites representing a single AU. In such cases, the sampling results are unlikely to be exactly the same among sites, possibly due to sampling in different years. In some cases, multiple results may even be in conflict with regard to support status determination.

In situations where there are multiple sampling sites per AU, DEQ will evaluate whether these sites are representative of the water that will be affected by a proposed discharge or activity. If all the data are determined to be representative, DEQ will follow the procedures established in the WBAG for evaluating the information. The WBAG directs the assessor to use the lowest index score when there are only two sampling sites. If data from more than two sampling sites are available, the assessor is directed to average the multi-index scores into one score for the AU (Grafe et al. 2002).

If some or all of the sampling sites are not representative of the water that would be affected by the discharge or activity, then DEQ may opt to use none of the data or only use data from those

sampling sites that do represent the affected water. This means that for antidegradation purposes, DEQ may further divide an AU where doing so makes sense.

This additional division may be especially applicable when an AU consists of a collection of 1st- and 2nd-order tributaries and when the activities, and thus water quality, differ among the streams in the AU. If this is the case, DEQ will use only the data from the stream that would be affected by an increased discharge or activity, or in the case of a new discharge or activity, only sampled streams within the AU with comparable influences on water quality. Another example would be a larger (higher-order) stream with sampling sites both upstream and downstream of an activity or discharge. In this case it makes sense to use only the nearest downstream sampling site. This strategy is particularly wise if doing so avoids confounding effects that intervening tributaries may have on water quality.

The guiding principle when characterizing water quality is to look at and evaluate the tier of protection appropriate for the water that could or would be affected by a proposed activity or discharge. If this is only a portion of the AU, then it is sensible to use only the data that is relevant to the affected water's condition.

3 Tier 1 Review—Protecting Existing Uses

This section describes the review that is performed to ensure existing uses are protected.

Existing uses and the water quality necessary to protect those uses must be maintained. In addition, all activities or discharges must not cause or contribute to a violation of water quality criteria. For NPDES permitting, ensuring the water quality necessary to protect existing uses will be accomplished through evaluating reasonable potential to exceed (RPTE) water quality criteria. This evaluation is based on the lowest applicable criterion and must protect the most sensitive use, whether or not existing uses are designated. The key in this process is to determine what the existing uses are and whether they are more sensitive than the water body's designated uses or undesignated **presumed use protections**.

3.1 What is an Existing Use?

The regulatory definition of an existing use is as follows:

> Those beneficial uses actually attained in waters on or after November 28, 1975, whether or not they are designated for those waters in Idaho Department of Environmental Quality Rules, IDAPA 58.01.02, "Water Quality Standards." (IDAPA 58.01.02.010)

Thus, if historical data indicate a use has once occurred (between November 28, 1975, and now), it would be an existing use.

The following two questions regularly come up when discussing existing uses:

- What does it mean for a use to be "actually attained?"
- Is the suite of possible use choices limited to those described in the Idaho WQS?

It is not the purpose of this guidance to fully explore these questions, so as a practical matter the following answers are provided for purposes of antidegradation:

- A use may be determined as existing as described in Chapter 3 of Idaho's WBAG (Grafe et al. 2002). DEQ will use all available information to make this determination, including information in any completed subbasin assessment (SBA).
- Existing uses will fall within the beneficial use choices defined in the Idaho WQS. These uses will be protected and maintained by applying the numeric and narrative criteria in the Idaho WQS.

Once the applicable uses are determined—for most water bodies there are several uses—a Tier 1 review is a matter of ensuring that an activity or discharge will not cause or contribute to a failure to meet applicable criteria for the most sensitive use in the receiving water, which may mean at the edge of any authorized mixing zone.

Beneficial Uses

The Idaho WQS describe the beneficial uses that may be assigned to water bodies at IDAPA 58.01.02.100, "Surface Water Use Designations." Specifically, these are by category (aquatic life, recreation, or water supply) and subcategory (for example, *cold water* aquatic life or *primary contact* recreation):

- **Aquatic Life—**salmonid spawning, cold water, seasonal cold water, or warm water
- **Recreation**—primary contact or secondary contact
- **Water Supply**—domestic, agricultural, or industrial

In addition, wildlife habitat and aesthetic uses are recognized (i.e., presumed) for all surface waters of Idaho (see IDAPA 58.01.02.100.04 and .05).

Multiple use categories may apply to a given water body. In fact, all waters are required by the CWA to support both an aquatic life use and a recreational use. For aquatic life and recreation, most of the subcategories are mutually exclusive (e.g., a water body is designated for either primary or secondary contact recreation and for either warm water or cold water aquatic life). An exception within the aquatic life category is that a water body may be designated as protected for both salmonid spawning and cold water aquatic life. Within the water supply category, however, the uses are not mutually exclusive. Agricultural and industrial water supply uses apply to all waters of the state (see IDAPA 58.01.02.100.04 and .05), and domestic water supply is designated on a case-by-case basis. So a water body might have all three water supply uses designated.

The subcategories, as listed above, are in somewhat hierarchical order. For example, domestic water supply generally requires better water quality than agricultural water supply, but this is not strictly so. The most sensitive use is discussed in more detail below.

3.2 Determining Applicable Criteria

Uses are protected by criteria, which are specifications of two types:

- A numeric limit on quality (numeric criteria)
- A general narrative statement that prohibits harmful quantities of a particular pollutant (e.g., sediment) or class of pollutants (e.g., nutrient and toxics)

Narrative criteria play an important role in protecting uses from harm due to pollutants for which there is limited knowledge of adverse effects or difficulty in specifying broadly applicable numeric criteria. In determining use support status, these criteria are often evaluated by looking at ecological, biological, or other physical factors for a water segment. However, a narrative criterion requires water body–specific interpretation, just as in a TMDL or water quality–based effluent limit (WQBEL), to arrive at a numeric value useful in antidegradation. Together, numeric and narrative criteria cover all possible pollutants that may harm uses.

Achieving the water quality necessary to protect existing uses in a Tier 1 review will come down to ensuring that the applicable criteria for the most sensitive existing use, designated or not, will not be exceeded by the proposed activity or discharge.

Most Sensitive Use

The use that is more sensitive depends on the pollutant. For example, humans are more sensitive to arsenic while fish and many other aquatic organisms are more sensitive to zinc. Since the CWA requires all waters of the US to support some form of both recreational and aquatic life uses (unless it is shown such uses are unattainable), and many water bodies have other designated uses as well, multiple criteria apply. The result of these multiple uses and overlapping criteria is that the use with the most restrictive criteria determines the required water quality.

There will always be multiple uses existing or designated for a water body, resulting in two kinds of criteria. First, each use has its own set of relevant parameters (e.g., dissolved oxygen, temperature, arsenic, etc. for aquatic life and bacteria and arsenic and other bioaccumulative toxins for recreation). Second, where parameters are the same, the criterion set for each use may be different (e.g., the level of arsenic that will support aquatic life differs from that necessary to support fish consumption [recreational use]). Thus, for each pollutant we are evaluating, we must determine whether there are multiple criteria values for that pollutant that differ by use. If different values are applicable for a given pollutant, the focus in the Tier 1 review will be on the criterion for the use that requires better water quality. The use requiring better water quality is referred to as the most sensitive use.[4] This use will vary from pollutant to pollutant. Some example cases, discussed below, will clarify this point.

Let us consider a water body that has cold water aquatic life and primary contact recreation as existing or designated uses.

Case 1—Criterion for One Use but Not the Other

If bacteria are the pollutant, then a criterion exists for the recreational use but not for aquatic life, so recreational use is the most sensitive use for bacteria.[5] For temperature and dissolved oxygen, criteria exist for aquatic life but not recreational use, so aquatic life is the most sensitive use for temperature and dissolved oxygen.

Case 2—Criterion for Both Uses

If arsenic is the pollutant, there are different criteria values to protect aquatic life uses and recreational uses. For arsenic, the criterion for recreation, set to protect human health, is at lower levels than the arsenic criteria for aquatic life; thus, recreation is the most sensitive use.[6] If selenium, zinc, or cyanide is the pollutant under evaluation, then the most sensitive use is aquatic life. One can figure this out for any pollutant by comparing the criteria; the use with lower criteria is more sensitive and thus drives water quality protection.

[4] When we say "most sensitive," it is in the context of what we know now. There may be a more sensitive use that we are not aware of when we make this determination.

[5] While bacteria criteria could be developed for fish, the only criteria currently in place are for *E. coli*, which are an indicator of possible presence of human pathogens.

[6] Human health criteria for toxins such as arsenic that are applicable to water protected for recreation are based on exposure due to consumption of fish.

These examples involve numeric criteria. Narrative criteria are fundamentally no different and can create either of the situations exemplified in the two cases above. A common example is sediment, for which aquatic life is generally the most sensitive use.

4 Evaluating Potential to Degrade

This portion of the document outlines the procedure for evaluating an activity or discharge to determine whether it will degrade or **lower water quality** (i.e., change the concentration of a pollutant closer to a water quality criterion). Only an activity or discharge that might cause degradation is subject to a Tier 2 antidegradation evaluation. This evaluation is performed for each parameter or pollutant of concern associated with the activity or discharge as relevant to the use for which the water body is afforded Tier 2 protection. If water quality is degraded for any one parameter, that will mean the activity as a whole degrades the water.

4.1 Pollutants of Concern

Pollutants of concern are those quantifiable qualities of a discharge that may adversely affect the water quality of a receiving water body. Not every chemical found in discharge or every parameter for which there are water quality criteria will be of concern (Box 4). Pollutants that rise to the level of concern will vary by discharge—its quality as well as size—and location of that discharge (i.e., quality of the receiving water).

In general, DEQ will take its cue on what are pollutants of concern from the writers of the permit or license. For EPA-written NPDES permits, this means that pollutants of concern are any pollutant for which the following are present:

- Effluent limits
- Monitoring requirements
- An analysis RPTE criteria

Because an analysis of RPTE is not necessarily positive, it will be necessary to consult the NPDES factsheet to ascertain all the pollutants for which an analysis of RPTE was performed.

Box 4. Relevance of pollutants

The relevance of a parameter depends upon the designated use being protected. For example, criteria for dissolved oxygen (DO) are set to protect aquatic life uses, but not recreational uses; so DO is relevant to aquatic life but not recreation. Conversely, *E. coli* criteria are set to protect recreational use of water, but not aquatic life. Many pollutants, e.g. arsenic have criteria to protect both use categories, because they can effect both uses, albeit at different levels. Arsenic is thus relevant to both aquatic life and recreational use of water.

Because it is possible for a water to have Tier 2 antidegradation protection for one use category and not the other, one must take into account the relevance of the pollutant to a particular use when conducting an antidegradation review.

Narrative criteria apply to all uses, so relevance is more of a judgment call. It is DEQ's considered judgment that total phosphorus is relevant to both recreation and aquatic life use, while sediment is relevant only to aquatic life.

DEQ will also look for pollutants of concern in TMDLs and impaired listings in the IR, but this effort will be more pertinent to §404 permits or FERC licenses.

4.2 Evaluating Change in Receiving-Water Quality

A proposed activity can result in existing receiving-water quality being degraded, improved, or unchanged. To evaluate which of these will occur, expected water quality for two different effluent scenarios must be determined and then compared:

1. Without the new or increased activity or discharge (i.e., existing or currently permitted)
2. With the new or increased activity or discharge (i.e., proposed or future)

In this context, existing water quality is the pollutant loading that is permitted to occur, before any changes in the permitted activity or discharge. Outside of new discharges or activities, existing water quality will likely need to be estimated rather than measured, due to variations in discharge and receiving stream conditions. Proposed water quality results from those pollutant levels that may be allowed to occur in the future after new or increased activities or discharges are licensed or permitted. Proposed water quality cannot be measured and must be estimated.

Potential existing water quality for existing discharges is estimated by calculating water quality after the mixing of the maximum permitted discharge with the receiving water under critical conditions. Performing this calculation again with the proposed discharge gives the potential future water quality. To perform these calculations, we need to know five things:

1. The upstream water quality
2. The effluent quality that is currently allowed (zero if the proposal is for a new discharge)
3. The effluent quality that would be allowed under the proposal
4. The activity's design or maximum production-based flow
5. The appropriate critical flow of the receiving water, or multiple flows for a "flow-tiered" permit situation[7]

All new **regulated activities** or discharges may degrade water quality as they present new pollutant loads added to the receiving water body. Similarly, an expansion or increase of an existing discharge may also cause degradation of water quality. However, degradation may be avoided if, for example, the quality of the new discharge is as good as or better than the receiving-water quality or if the increased loads are offset by companion load-reducing activities.

Existing activities that propose no expansion or existing discharges that propose no change in their discharge upon permit or license renewal will not cause degradation of water quality.[8] Nondegrading activities and discharges are not subject to Tier 2 antidegradation analysis. Thus, once DEQ determines that an activity would not expand or a discharge would not increase, the antidegradation question that remains is whether Tier 1 requirements are met.

[7] Some discharge permits specify limits on effluent quality that vary with categories of receiving stream flow. For these flow-tiered permits there is a critical flow within each tier.

[8] It is possible that water quality could decline even if an activity or discharge does not increase, such as with a decrease in flow and thus the assimilative capacity of the receiving water body. If this change in flow is not due to the activity or discharge under review, then that activity or discharge will not be held responsible with regard to antidegradation requirements. In such a situation, compliance with water quality-based effluent limits may require a reduction in activity or discharge independent of antidegradation requirements.

4.3 Receiving-Water Quality

The change in receiving-water quality caused by an activity or discharge is the concern of antidegradation policy. It may be tempting to view degradation of water quality simply as the change in quality from upstream to downstream. While this comparison works for a new activity or discharge—because it amounts to the same thing as a before and after change in downstream water quality—it does not work for an existing discharge. For existing discharges, there will be a change in water quality from upstream to downstream, but this difference alone does not indicate worsening conditions due to a change in discharge. Antidegradation review is forward-looking, and to fairly judge both new and existing discharges we look at the change in downstream water quality before and after a change in permitted operation.

Although in flowing waters DEQ's focus is on downstream water quality that results from mixing discharge with the receiving stream, to calculate water quality resulting from a new activity or discharge or for an increase in an existing discharge, we need to know the quality of the receiving water body unaffected by the activity or discharge in question (i.e., the upstream portion of the water body for flowing waters). Thus, the quality of receiving water is of interest at two locations:

1. Before/upstream—A location where the water body is not influenced by the source under consideration. This location is either immediately upstream (in a river or stream) or outside the influence of the plume (for lakes or reservoirs) for existing sources or at the place of discharge before new discharge begins.
2. After/downstream—The location where water quality will reflect the addition of pollutants from the proposed activity or discharge. Generally we are interested in the full effect or fully mixed result.

Characterizing Upstream Water Quality

Knowing the upstream water quality is essential to calculating potential degradation caused by new and increased sources as well as remaining **assimilative capacity**. While it is important to adequately characterize upstream water quality, how much data this takes will depend on water quality variability and how much uncertainty can be tolerated in the analysis. Depending upon the quantity of available background data, DEQ will generally use a conservative estimate of pollutant concentrations when calculating degradation.

Upstream water quality can be determined by a number of methods. The method(s) used will depend on the site-specific situation, such as the extent of monitoring data available, existing upstream point source discharges, and the specific characteristics of the pollutant(s) of concern. For some situations, the use of monitoring data may be sufficient, especially where extensive data exist (for example 30 or more measurements to calculate a 95th-percentile concentration). For other situations, calculations or modeling using the appropriate model for the parameter(s) of concern may be needed.

EPA Region 10 typically uses the 95th percentile (i.e., the value that is expected to be exceeded 5% of the time) of measurements as a conservative characterization of **ambient** concentrations

when evaluating permit limits.[9] In particular, EPA uses this value for evaluating limits based on receiving water criteria applicable to relativity short-term effects (e.g., acute and chronic aquatic life criteria). However, getting a reliable estimate of the 95th percentile requires sufficient data. Generally, 30 measurements across the full range of stream flow variation are recommended, although as few as 12 (monthly samples for a year) will be acceptable. If fewer than 12 measurements are available, DEQ will use the maximum value measured during critical conditions, rather than an estimated 95th percentile. If no data are available, DEQ may request that the applicant obtain such data.

For other types of receiving water criteria (e.g., criteria based on longer-term effects such as those applicable to human health or nutrients), a more appropriate assumption for upstream water quality would be a representation of the "central tendency" (such as a mean, geometric mean, or median).[10] In addition, DEQ recognizes that differing time periods will apply to derivation of central tendency values for different types of designated uses and associated criteria. For example, annual averaging would be appropriate for bioaccumulation of mercury in fish, annual or seasonal for nutrients, and summer critical periods for pollutants such as dissolved oxygen and temperature. Such temporal considerations apply not only to upstream concentrations, but to other elements of limits calculations (discussed throughout sections 4.3 and 4.4).

DEQ expects sufficient data will usually be available in the permit or license application and discharge monitoring reports for existing NPDES-permitted discharges. For the latter, DEQ also expects to rely heavily on EPA's calculation of upstream water quality prepared in their drafting of effluent limitations for the permit. Depending on the permitting situations, these calculations may need to address seasonal water flows and a flow-tiered discharge framework.

DEQ recognizes that measurements of upstream water quality are important but may not be sufficient because they may not reflect potential upstream quality that would occur with other sources upstream discharging at their permitted limits. While it is optimal for DEQ to take into account the effect of upstream dischargers discharging at permitted limits, it may not be practical for DEQ to conduct an extensive evaluation given the time period for certification and the level of information available. In general, DEQ will rely upon EPA's evaluation of upstream water quality and encourage EPA to account for upstream discharge impacts on assimilative capacity.

The question of how far upstream to look for other sources affecting water quality at a point downstream is not easy to answer. Since everything flows downstream, it is clearly desirable to consider the entire upstream watershed. Taken to an extreme, however, this could mean looking at distant sources in Wyoming, Montana, and Canada, so as a practical matter, a more limited geographic scope is needed. Furthermore, if there are large increases in flow, or upstream sources are relatively small, the effect of distant sources on further degradation of water quality

[9] Idaho has proposed methods for calculating water quality–based effluent limits (WQBELs), including how to define ambient concentrations, in both a WQBELs guidance document and Board of Environmental Quality rule making (both developed in 2002). EPA has not adopted DEQ's guidance or rule for permitting purposes, so DEQ's antidegradation calculation procedures will need to be consistent with EPA's permitting calculations for as long as EPA retains NPDES primacy.

[10] For example, DEQ's guidance for implementing its criteria for mercury recommends using the mean value for water column or fish tissue concentration as related to the human health criterion and recommends the geometric mean for potential future aquatic life criteria (DEQ 2005). Another example is the Idaho Falls NPDES permit in which EPA evaluated phosphorus limits using a median value for the upstream concentration.

will likely be small. Therefore, DEQ suggests that the upstream limit for considering other permitted sources that may be affecting water quality be the upstream boundary of the 4th-field HUC (i.e., the subbasin) where the discharge is located. If the source under evaluation is closer to the upstream rather than downstream extent of the subbasin in which it is located, the limit should be the upstream boundary of the subbasin upstream of the discharge. If upstream sources are already discharging at their permitted maximum, then they contribute to further degradation only if permitted to increase their discharge.

Most pollutants are not strictly conservative, meaning they do not just accumulate or steadily increase downstream; instead, they are physically, chemically, or biologically active and experience transformation or fractionation with time and travel (see section 4.5, Box 5, for more about conservative versus nonconservative behavior). They may adsorb to sediments, combine with other constituents and precipitate, be converted into a gaseous form and lost to the atmosphere, be taken up by living organisms, or be otherwise lost from the water column. Thus, assimilative capacity is more than mere dilution and downstream concentrations cannot be accurately estimated without accounting for such transformations.

Dissolved oxygen, nutrients, and temperature are examples of very nonconservative parameters. Any estimate of their concentration that is not representative of a physical point near the source of load increase will likely be more accurate if modeled to account for known transformations.

In situations where upstream sources are not currently discharging at their allowed limits, modeling can be quite useful and perhaps necessary. Ultimately, the decision whether to estimate water quality with modeling or with simpler mixing calculations is up to the person analyzing effects on water quality. This decision to model should be driven by the pollutant, acceptable error in the estimates, and whether time and data are available to conduct modeling. Even though monitoring data may not reflect potential upstream water quality, it is valuable in calibrating model predictions.

Simple mixing estimates that ignore pollutant fate and transport are always a starting point and may be sufficient in many instances. There is no point in conducting modeling that will not improve upon simpler estimates.

DEQ makes the following recommendations for modeling:

- Always model dissolved oxygen and temperature
- Seriously consider modeling forms of phosphorus and nitrogen, as suggested by tolerance of uncertainty
- Only model other pollutants if needed to reduce bias in conservative mixing estimates

Recommended references on water quality modeling are the Steve Chapra text (Chapra 1997) and the Council for Regulatory Environmental Modeling's 2009 guidance (CREM 2009).

4.4 Effluent Characteristics

Much of the needed information on effluent quality and quantity will be found in the current and/or proposed permit or license. Additional information may be found in the permit application and, for an existing discharge, in discharge monitoring reports.

For pollutants with quantitative limits in a permit or license, those limits will be used to calculate the discharge's effect on water quality. However, there are two common situations in which data in the permit alone will be inadequate to assess the effect of a new or increased existing discharge on water quality:

- **No permit limits:** In either a new or an increased existing discharge, a pollutant may be known to be present for which there are no effluent limitations (no technology-based effluent limitation requirements) and for which it has been determined there will be no RPTE criteria. In this case, there will be no permit limits in either the new or reissued permit from which to calculate degradation.
- **First-time permit limits**: In the renewal of an existing permit, a pollutant may be added for the first time, either because of new regulations or due to an increase in discharge leading to RPTE. In this situation, there will be a limit in the reissued permit but not a limit in the old permit.

Even pollutants without permit limits can cause degradation of water quality. Thus, it will be necessary to determine both the current and proposed quality of the effluent for pollutants of concern regardless of whether they rise to the level of needing permit limits. For NPDES discharges, this determination is typically limited to information on characteristics of the discharge as described in the permit application.

A first-time permit limit suggests there will be degradation of water quality, but this is not necessarily the case. A new limit could be due solely to a change in regulations (e.g., a new or more stringent criterion or a new effluent limitation guideline) and therefore not result in worsening of water quality. In these situations, it will be necessary to determine the quality of the effluent prior to the limit and compare it to the quality with the proposed new limit. Current effluent quality for a pollutant without a prior limitation must be based on discharge monitoring data or, lacking monitoring data, estimated based on other similar discharges.

Where new limits are a result of RPTE analysis in the absence of any actual increased discharge of pollutants, it is essential to apply the same statistical procedures to characterize the quality of the effluent prior to a new limitation that are used in developing the new limit (e.g., procedures in EPA's *Technical Support Document for Water Quality-Based Toxics Controls* [TSD], EPA 1991).[11] If the same statistical procedures are not used, water quality could appear to change when the change is an artifact of different methodologies. Information on proposed effluent quality with regard to a limited pollutant may be found in the permit application or may be estimated based on other similar discharges.

[11] Citation of the TSD here is used as an example of the statistical procedures that are often used in deriving NPDES permit limits. This is not to say the TSD is appropriate for all pollutants or discharge situations or that other statistical procedures may not be used. The point is that the same statistical procedures should be applied to both the current and future discharge scenarios when judging if discharge has increased.

4.5 Calculating the Change in Water Quality—Will Degradation Result?

Antidegradation policy is concerned with adverse changes in water quality that may occur due to a new or changed activity or discharge.[12] In flowing waters, a discharge cannot affect upstream water quality, so for rivers and streams our focus is at a point downstream of the activity or discharge. In lakes and reservoirs effects are not unidirectional so they must be treated differently (see the Modification for Lakes and Reservoirs section below for modified methods of calculating changes in water quality). The change that is regulated is the difference between potential existing water quality (with discharge at the maximum permitted under the current permit or license) and potential future water quality (with discharge at the maximum permitted under the proposed permit or license).

In determining if changes in water quality are adverse and significant, it is most practical to focus on change near the point of discharge, after appropriate mixing. We make two simplifying assumptions:

1. Near a source, all pollutants can be treated as conservative (Box 5).
2. Fully mixed concentrations provide a fixed reference on which to gauge changes in water quality.

For conservative pollutants, this near-field analysis will not necessarily ensure water quality criteria are not exceeded further downstream and, conversely, may overestimate exceedance for nonconservative pollutants. For accurate assessment of distant effects, a far-field analysis taking into account fate and transport and additional loading that may be occurring downstream is needed. This is generally the province of a TMDL and not permitting.

Box 5. Conservative versus nonconservative pollutant behavior

If a pollutant is conservative, then conservation of mass implies that average cross-section pollutant concentrations where mixing is incomplete will be the same as ultimate fully-mixed conditions. If mass is lost (i.e., a nonconservative pollutant), calculations based on dilution alone will overestimate fully mixed concentrations.

While "near" and "far" are not precise terms, they are useful when estimating the effect of a discharge on water quality. Near the point of discharge (i.e., near field), the time elapsed is generally too short for any significant transformations of pollutants to have occurred. Thus, average cross-section pollutant concentrations may be reasonably calculated considering dilution only, even for nonconservative pollutants such as dissolved oxygen, ammonia, and temperature.

Farther away from the point of discharge (i.e., far field), fate and transport for nonconservative pollutants become increasingly important. At some distance (time of travel) from the point of discharge, accurate estimates of nonconservative pollutant concentrations require accounting for their transformations during transport, in addition to mixing.

[12] An adverse change in water quality is one that moves the concentration of a pollutant closer to the most limiting applicable criterion, thus reducing assimilative capacity.

Below the point where an activity or discharge adds pollutant load to the receiving water body, downstream water quality is in transition, whether rapidly or gradually. Mixing zone characteristics, particularly location and diffuser design, are important in minimizing the physical size of this transition zone and possible adverse effects, and these characteristics often limit the volume that may be used to dilute a discharge. Irrespective of how quickly mixing occurs or the size of a regulatory mixing zone, we can calculate downstream water quality that results from a discharge only if we specify the volume of water it mixes with. From that volume, we can calculate a completely mixed concentration.

Generally downstream receiving water quality will eventually reach a steady, fully mixed state. Even if full mixing is not reached, is interrupted by another discharge, tributary, etc., it provides a useful reference point for calculating changes in water quality. As a practical matter, we recommend assessing changes in water quality for antidegradation purposes based on the full critical stream flow (e.g., 100% mixing) even though the volume allowed for regulatory mixing is likely less. We recommend this because assimilative capacity is based on the full critical flow. We also recommend this because regulatory mixing zones represent partial mixing and may change in size with permit renewal, such as due to a change in diffuser design.[13]

For all activities or discharges, we calculate their effect on downstream water quality using Equation 1:

$C_p - C_c = \Delta C$ *Equation 1. Effect on water quality*[14]

Where:

C_p = proposed downstream water quality, after mixing

C_c = current downstream water quality, after mixing

ΔC = change in downstream water quality, after mixing

DEQ will evaluate the effect on water quality for each pollutant of concern. If ΔC indicates an adverse change for any pollutant (i.e., it moves the concentration closer to a criterion for a particular use), there is degradation of water quality.

To calculate current and proposed water quality for use in Equation 1, we will consider two situations: first, a completely new activity or discharge—more simply a new discharge—and second, an expansion or increase in an existing activity or discharge (i.e., an increased discharge).

[13] Calculated pollutant concentrations resulting from discharge will be less with full mix than partial mix, so too the magnitude of change in those concentrations due to an increase in load. A partial mix point could be used for assessing change, but to be comparable the dilution ratio would need to be the same for existing and future conditions.

[14] The equations presented are general (i.e., without units of measure). In use, consistent measurement units and/or appropriate conversion factors must be used. For example, to get pollutant load expressed in pounds/day from Equation 3 with a flow measured in millions of gallons/day and a pollutant concentration measured in milligrams/liter, the result must be multiplied by a unit conversion factor of 8.34 lb/gallon.

For either situation, the following simple mixing equation (Equation 2) can be used to determine the resulting concentration after full mixing:

$$C = \frac{LR_{up} + LR_{dis}}{Q_{up} + Q_{dis}}$$ *Equation 2. Mixing equation for effect of discharges*

Where:

C = concentration in the receiving water body resulting from discharge after full mixing, generally downstream
LR_{up} = loading rate of receiving water body pollutant, upstream of the discharge
LR_{dis} = loading rate of discharge pollutant
Q_{up} = flow of receiving water body, upstream of the discharge
Q_{dis} = flow of discharge

Loading rates are calculated as the product of flow and concentration (Equation 3), such that:

$LR_{up} = Q_{up} \times C_{up}$, and
$LR_{dis} = Q_{dis} \times C_{dis}$ *Equation 3. Loading rates*

Where:

C_{up} = pollutant concentration in receiving water body, upstream of the discharge
C_{dis} = pollutant concentration in the discharge

Equation 2 is generic and dynamic. It has infinite solutions, but we are interested in a particular pair of solutions for each pollutant of concern: 1) the receiving water concentration allowed by the current permit (C_c) and 2) the receiving water concentration allowed by the proposed permit (C_p).[15] If seasonality or "flow-tiered" permit limits are involved, there will be multiple such pairs. These concentrations are determined using critical flow conditions in the receiving water body and permit conditions associated with those conditions. These critical conditions are described in greater detail in the following section.

Critical Conditions

Critical conditions are typically a combination of the maximum permitted effluent flow, maximum projected effluent concentrations or maximum allowable effluent limits, critical low flow of the receiving stream, and upstream receiving water quality concentrations (as determined by monitoring, calculation, or modeling). If seasonal or "flow-tiered" effluent limits are considered, there will be multiple sets of these critical conditions.

When flow or volume in the receiving water body is low, addition of a pollutant will have a greater effect on its concentration than when flow or volume is high, simply because there is less water to dilute the pollutant load. Therefore, to evaluate what could be a realistic "near worst-

[15] Note that Equation 2 works as well if Q_{dis} were zero and the discharge load a direct input. Upstream load, on the other hand, is always calculated from Equation 3 because receiving stream flow and concentration must be known.

case scenario," we must consider critical conditions for dilution that could occur. The maximum discharge flow is based on the facility design capacity or production-based maximum discharge. This value will be stated in the permit or license for the current discharge and in the permit application for the proposed discharge. The receiving water body critical flow is determined according to the WQS (IDAPA 58.01.02.210.03) for each pollutant evaluated (e.g., for chronic aquatic life criteria, this is the 7-day, 10-year minimum statistical [7Q10] flow). For nutrients, it is recommended that the 30Q10 flow during the growing season (i.e., April–September) be used. For mercury, it is recommended that the annual average flow be used. For temperature and dissolved oxygen, the 7Q10 flow is also useful but flow may be calculated on a monthly basis to account for seasonality.[16]

For the effluent, the critical load is the maximum permitted load stated in the permit or license or, if a load is not stated, the product of the maximum discharge flow, as described above, and the maximum permitted effluent concentration.

There will be at least two sets of critical conditions to be evaluated: one for the current permit or license and a second for the proposed permit or license.[17] These will yield C_c and C_p in Equation 2 for each pollutant evaluated, which are then used in Equation 1. It is possible, but unlikely, that the receiving stream critical conditions used in the analysis will differ between now and the future. An anticipated change in upstream flow regulation or diversion would be one possible cause of a change in critical stream flow.

The receiving water body critical load is the product of the critical flow described above and the potential upstream concentration as described in section 4.3.

Modification for Lakes and Reservoirs

Application of criteria, and thus these procedures, to lakes and reservoirs depends upon how slowly water moves through the water body, also known as the detention time. A lake or reservoir with 15 days or less detention time is treated as flowing (i.e., as a stream or river). Those with more than a 15-day detention time are treated differently, and the calculations described above need to be modified. This modification is necessary because the concept of upstream and downstream loses meaning and there is not sufficient velocity in the receiving water to facilitate rapid mixing. The WQS recognize this with different mixing zone requirements for lakes and reservoirs (IDAPA 58.01.02.060.01.f).

Instead of loading rates as defined above, we will look at total load added over some period of time. And instead of flow rate in the receiving water body, we will look at volume available for mixing, which is limited by rule (Equation 4). Similar to the situation with flowing waters, critical conditions determine the appropriate values for these input variables.

[16] Calculation of low flows for regulated systems should only include flow data from the period of flow regulation. Also, breaking a year up into parts (seasons or months) will alter the annual probabilities of the target flow, and thus water quality criteria, being exceeded. Adjustments may be necessary so as to not exceed criteria more frequently than intended.

[17] There will be even more pairs of conditions to be evaluated if seasonality or flow-tiered effluent limits are involved, one pair of critical conditions for each season or flow tier.

$$C = \frac{L_{10} + L_{dis}}{V_{10} + V_{dis}}$$

Equation 4. Mixing equation for lakes and reservoirs

Where:

C = mixed concentration resulting from discharge

L_{10} = receiving water body pollutant load in V_{10}

L_{dis} = effluent pollutant load delivered over the time it takes to exchange mixed volume of receiving water body at critical inflow

V_{10} = receiving water body volume available for mixing—the volume of the lake or reservoir beneath a circle centered on the point of discharge that encompasses one-tenth the minimum surface area of the water body

V_{dis} = volume of effluent discharged over the time it takes to exchange mixed volume of receiving water body at critical inflow

The modification is based on the limitation in the Idaho WQS that the horizontal extent of a mixing zone in a lake or reservoir is not to take up more than 10% of the surface area (IDAPA 58.01.02.060.01.f). In place of Q_{up} we use V_{10}, the volume of the lake or reservoir beneath a circle centered on the point of discharge that encompasses one-tenth the minimum surface area of the water body. If the water body is stratified, this volume should be limited to the layer (e.g., epilimnion or hypolimnion) to which the discharge occurs. A circle is used as a simplified depiction of the plume, which could instead be modeled or determined through a tracer study if a more accurate assessment is desired. The ambient load is a product of this volume and the ambient concentration outside the influence of the discharge plume.

Whether the water body is stratified at the time of critical low inflow will be based on when that critical flow occurs, which in turn depends on the pollutant. For example, if the pollutant is a metal that is toxic to aquatic life, then the critical low inflow would be the 7Q10 for all inflows combined. If critical inflow occurs the last week of September, then that is the time when presence or absence of stratification would be determined. This critical inflow period is also the time when the volume available for mixing would be determined.

To determine the appropriate volume of discharge, and thus corresponding load to use in Equation 4, we must determine the time period over which the discharge should be evaluated. This is called the renewal time and is described here as the time it would take critical inflow to replace the volume of water allowed for mixing (V_{10}). The volume of effluent discharged during this time is then mathematically mixed with the volume of water in the lake or reservoir allowed for mixing from above.

Ideally, a measurement of the renewal time for the allowed mixing area surrounding the point of discharge would be used. In absence of this, it is recommended that a suitable time be estimated based on the volume of the mixed layer (e.g., epilimnion) for the entire water body divided by the critical inflow for the entire water body; let us call this result the residence time. For example, if the volume of the entire epilimnion of a lake or reservoir is 1,000 acre-feet and the 7Q10 for all inflow is 25 cubic feet per second (cfs), then the residence time would be about 20 days (1,000 acre-ft / (25 cfs × 1.984 ac-ft/day/cfs) ≈ 20). So, in the absence of more specific

information about renewal time in the actual area allowed for mixing, we expect the volume allowed for mixing to exchange at the same rate as the entire water body.[18] In this example, the volume (V_{dis}) and load of effluent (L_{dis}) used in Equation 4 would be that which is discharged in 20 days.

As with streams and rivers, Equation 4 would be calculated for two conditions—existing and proposed. Those paired results would be used in Equation 1 to quantify the proposed change in water quality.

Alternatively, a three-dimensional hydrodynamic model could be used to identify the worst-case water quality conditions at the edge of any authorized mixing zone, with the mixing zone not to exceed 10% of the lake or reservoir's surface area.

Change in Discharge

There must be a change in an existing discharge for that discharge to cause a change in water quality that may be subject to regulation. Therefore, for purposes of antidegradation review, we can conclude an existing discharge is nondegrading if there are no changes in the discharge. Appendix E contains various examples of new or increased discharges and how they would be addressed.

Normally, an existing discharge must increase its pollutant loading in order to degrade the receiving water body's quality.[19] An increase in load may occur through either an increase in concentration at static discharge volume or an increase in the discharge volume with no change in, or possibly even a decrease in, concentration. Concentration changes may be pollutant specific, while changes in discharge volume affect the loads of all pollutants.

While increased loads typically result in worse water quality, it is possible for an increased discharge load to decrease concentrations of a pollutant in the receiving water body. This oddity occurs when effluent quality is better than receiving water quality. It may also occur when flow tiers in a flow-tiered permit are adjusted with no increase is discharged load.

4.6 Other Considerations

In evaluating changes in water quality, there are several other questions to consider. These include whether upstream pollution reductions will offset downstream increases, whether adverse changes are temporary, and whether more information is needed to draw conclusions.

Use of Offsets

The Idaho antidegradation rule allows for the use of offsets as a way to mitigate specific proposed increases in pollutant loading to Tier 2 and 3 waters. (Tier 1 waters are already covered

[18] This is a crude approximation that is unlikely to hold true in portions of lakes and reservoirs that have irregular shorelines and deep bays. In such areas, the exchange rate could be considerably slower than for the water body as a whole and the residence time much longer. This simplifying assumption should be used with caution, and where it is not appropriate, area-specific exchange rates will be evaluated and used.

[19] Although very unusual, it is possible that where effluent discharge dominates water quality the receiving water quality becomes worse even though discharge load decreases (e.g., a decrease in discharge volume coupled with an increase in effluent pollutant concentration).

by pollutant trading.) The rule requires that the offsets occur before an activity or discharge commences and be upstream of any potential degradation. Figure 3 shows degradation resulting from a discharge with no offset. Figure 4 shows no degradation resulting because water quality upstream is improved before the discharge is added—the upstream improvement of water quality offsets the downstream lowering of water quality resulting from the discharge.

For some pollutants (e.g., nutrients), there may be a lag in their effect on water quality, which would appear as a gap between the point of discharge and the water quality degradation shown in Figure 3. In this case, the location of an offset could be below the point of discharge yet upstream of degradation.

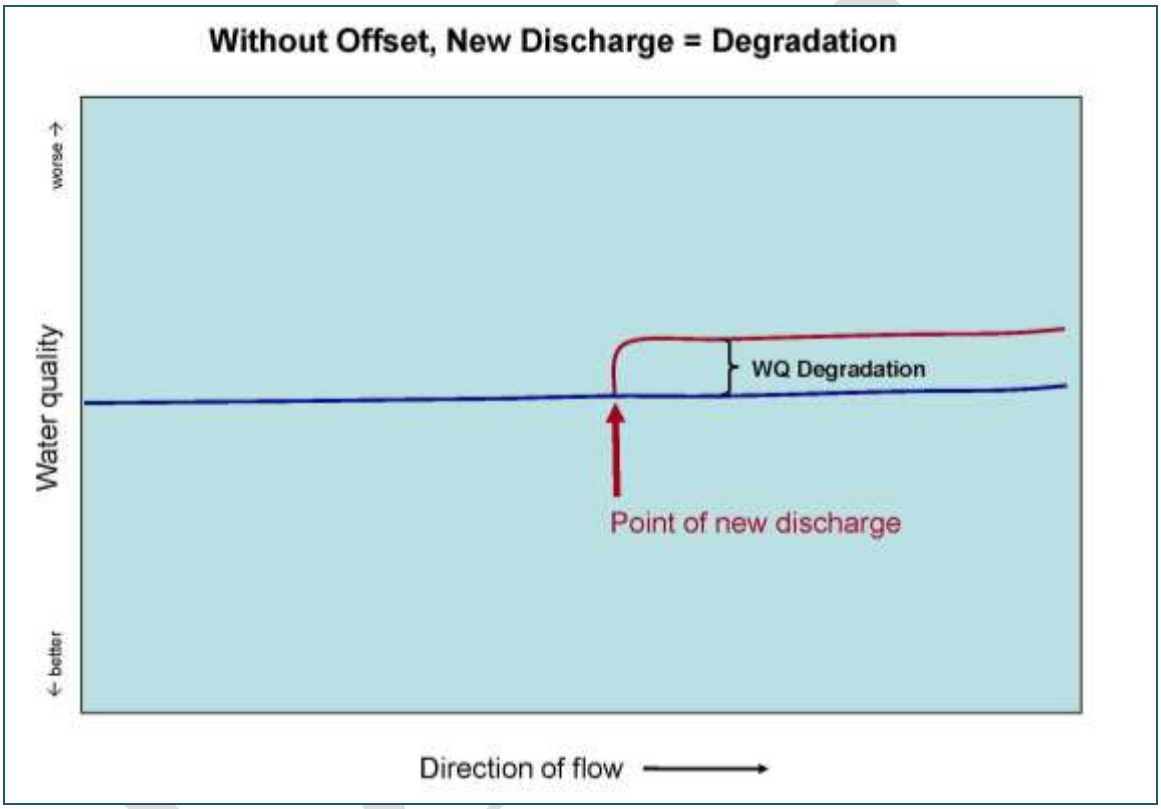


Figure 3. Discharge without offset

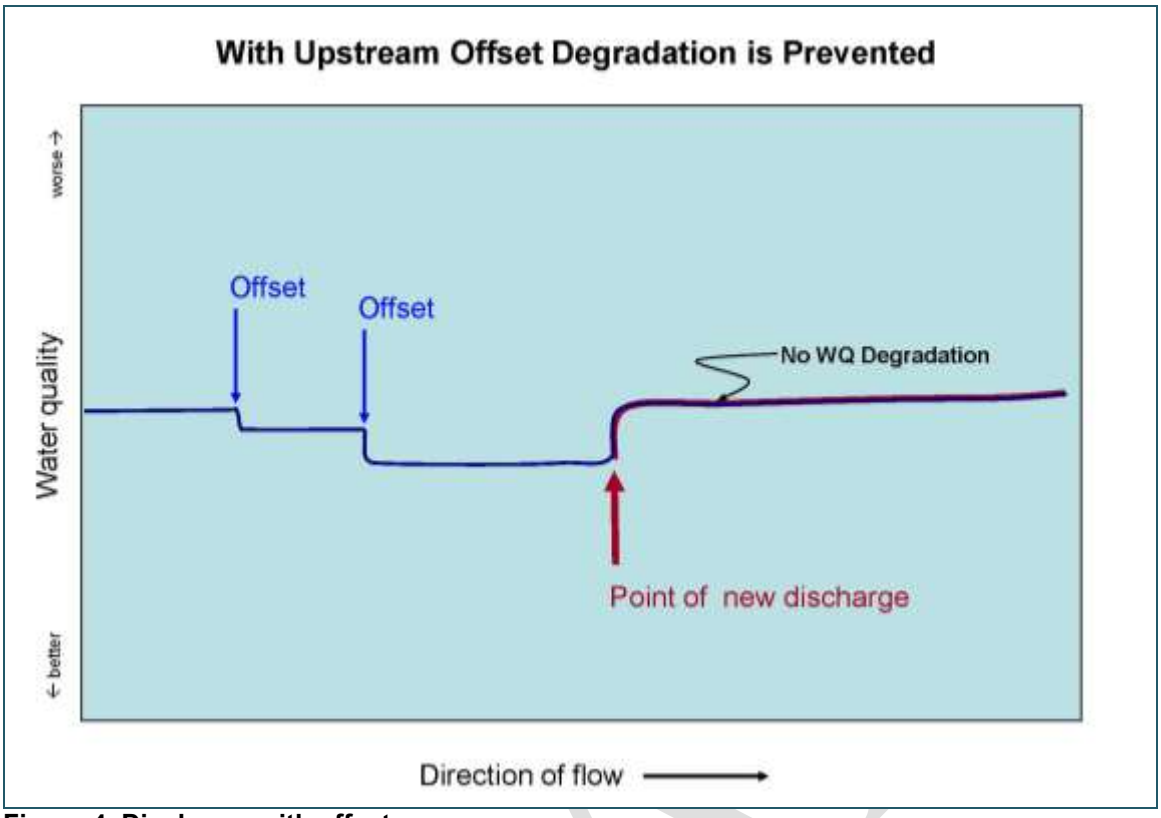


Figure 4. Discharge with offset

Through properly conducted offsets, there will be no net degradation (i.e., lowering) of water quality, not even in a portion of the receiving water, relative to current conditions. There would be, as the diagrams show, upstream to downstream changes in water quality. However, due to placement of the offsets, water quality at all points in the stream would still be at least as good after than before the discharge plus its associated offsets. Degradation is prevented, thus avoiding the need for antidegradation analysis in Tier 2 waters and making it possible to allow new or increased discharge in Tier 3 waters.

Because of placement considerations and lack of flow, the use of offsets in lakes and reservoirs to ensure no degradation is problematic but may be considered by DEQ.

Temporary Activities

For **temporary activities**, DEQ may conclude that because of the limited duration and scope of their effect, no significant degradation of water quality will occur. When evaluating such projects, DEQ may consider the following:

- Duration and extent of water quality impact
- Likelihood for long-term water quality benefits to the water body
- Potential for delayed, cumulative, or long-term effects on existing beneficial uses

DEQ may conclude that no significant, permanent degradation will occur if all appropriate and reasonable BMPs related to erosion and sediment control, project stabilization, and prevention of

both short- and long-term water quality degradation will be applied and maintained (e.g., preserving vegetation, stream bank stability, and basic drainage).

Examples of projects that may result in only temporary water quality impacts include culvert replacements, bridge installations, and streambank restoration. Such projects may cause a temporary increase in sediment. As an example, culvert replacements done in accordance with the Idaho Forest Practices Act (FPA) may be deemed to comply with Idaho's antidegradation implementation rule.

Requests for Additional Information

In evaluating proposed changes to water quality, DEQ may find it necessary to request from the applicant additional information on the proposed activity or discharge. Such information may include details about the proposed project's location or operation, outfall design, and effluent characteristics or monitoring data for the receiving water body. This request is particularly likely if modeling is involved in estimating upstream water quality or plume configuration.

5 Tier 2 Analysis—Is Degradation Necessary and Important?

This section describes how DEQ will determine if degradation is significant and how DEQ will be assured that controls on other sources of pollution to a high-quality water body are being implemented before allowing justifiable degradation. It will also describe the analysis necessary to determine whether significant degradation of high quality (Tier 2) water is **necessary** and justified due to social or economic importance. An example of a Tier 2 antidegradation analysis is provided in Appendix F.

For waters determined to be high-quality (see section 2.2), the rules require that before DEQ allows significant degradation, the degradation must be shown to be:

> …. necessary to accommodate important economic or social development in the area in which the waters are located. (IDAPA 58.01.02.051.02)

This requirement can be broken down into two components: 1) the *necessity* of the degradation in water quality and 2) the *importance* of social or economic development associated with an activity or discharge. Hereafter, we refer to these components simply as "necessary and important." For the latter, the geographic scope—the area in which the waters are located—is a required consideration that must be defined during the analysis. Assuring that degradation of high-quality waters is necessary and important has been part of federal regulation since 1983 and DEQ policy as set in rule since 1993.

While necessity and importance are the core of Tier 2 analysis, federal regulations (40 CFR § 131.12(a)(2)) and Idaho rule (IDAPA 58.01.02.051.02) also require that:

> In allowing such degradation or lower water quality, the Department shall assure water quality adequate to protect existing uses fully. Further, the Department shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and cost-effective and reasonable best management practices for nonpoint source control.

In 2011, Idaho codified in rule antidegradation implementation procedures that address the above longstanding policy requirements and provide details on the determination of necessary and important degradation. The new rules also provide for allowing insignificant discharges to Tier 2 waters without analysis of necessity and importance (IDAPA 58.01.02.051.08.a).[20]

When allowing degradation in Tier 2 waters, it is still necessary to ensure water quality will adequately protect existing uses. That is the purpose of Tier 1 protection, which is provided to all waters and is addressed in section 3. Tier 2 protection is, in effect, an extra level of protection that goes above and beyond Tier 1 protection for high-quality waters.

The remainder of this section details four questions applicable only in Tier 2 antidegradation analysis:

1. Is the discharge insignificant?
2. Are other required controls in place and operating?

[20] This section does not yet appear in rule, as it was modified by legislative action. Incorporation of the legislative changes into the rule is pending and has been adopted by the Board of Environmental Quality. This clean-up of the rule will be final and effective upon adjournment of the 2012 legislative session if approved by the Idaho Legislature.

3. Is the degradation necessary?
4. Does the activity bring important social or economic development to the affected community?

These questions apply only to scenarios that meet all three of the following conditions:

- Activities or discharges will cause degradation
- Degradation will occur in high-quality water where Tier 2 protection is assigned
- An applicant applies for a new or renewed permit or license

5.1 Insignificant Degradation

Although the federal regulations make no mention of insignificant degradation, court cases have allowed for activities or discharges that are "*de minimis*," that is, too trivial to warrant governmental regulatory concern.[21] The purpose of determining whether some degradation is insignificant is to ensure that limited state resources are focused where they can provide the most good. A determination of insignificance simply means that Idaho is willing to overlook degradation that has little effect in order to focus on discharges or activities that create a larger amount of degradation. Determining that a discharge or activity is significant does not mean that the activity or discharge cannot take place, only that the discharge or activity will need to be justified as necessary and important before it can be permitted. Offsets may be used to prevent what would otherwise be significant degradation (see section 4.6).

Idaho's antidegradation rule provides guidance for determining if a discharge is insignificant. Specifically, Idaho's rule at IDAPA 58.01.02.052.08.a provides the following guidance:[22]

> a. Insignificant Activity or Discharge. The Department shall consider the size and character of an activity or discharge or the magnitude of its effect on the receiving stream and shall determine whether it is insignificant. If an activity or discharge is determined to be insignificant, then no further Tier II analysis for other source controls (Subsection 052.08.b.), alternatives analysis (Subsection 052.08.c.) or socioeconomic justification (Subsection 052.08.d.) is required.
>
> i. The Department shall determine insignificance when the proposed change in an activity or discharge, from conditions as of July 1, 2011 will not cumulatively decrease assimilative capacity by more than ten percent (10%).
>
> ii. The Department reserves the right to request additional information from the applicant in making a determination a proposed change in discharge is insignificant.

Assimilative capacity is the difference between ambient concentration and the concentration allowed by the controlling criterion. Allowing multiple insignificant regulated sources to collectively use all the assimilative capacity without going through a Tier 2 analysis is prevented by having a cap on cumulative degradation in water quality that is considered insignificant. Idaho bases its cap on assimilative capacity.

[21] In the specific case of antidegradation, the courts have accepted a loss of up to 10% of a water body's assimilative capacity as *de minimis*, as long as there is a cumulative cap on excused degradation (Kentucky Waterways Alliance v. EPA, 540 F.3d 466 [6th Circuit] Decided Sept. 3, 2008). A 10% threshold for significance is also stated in an August 10, 2005, EPA memo (King 2005).

[22] This section does not appear in rule as of January 2012, as it was modified by 2011 legislative action. A pending rule incorporating the 2001 legislative changes was adopted by the Board of Environmental Quality in November 2011. This rule will be final and effective upon adjournment of the 2012 legislative session if approved by the Idaho Legislature.

Idaho set a cumulative cap at 10% of assimilative capacity and established water quality conditions as of July 1, 2011, as the baseline. Without a cumulative cap, a series of insignificant discharges over time could cumulatively consume a significant share, or all, of the assimilative capacity and ultimately degrade water quality down to the level of the criterion without necessity and importance ever being questioned. A cumulative cap merely prevents the lack of analysis that could occur through a series of incremental steps, none of which are significant in themselves.

Insignificance of water quality degradation works as depicted in Figure 5, so that the greatest amount of change in a pollutant concentration that can be dismissed as insignificant would occur when the ambient concentration of that pollutant as of July 1, 2011, is lowest. This can also be tabulated as shown in Table 4.

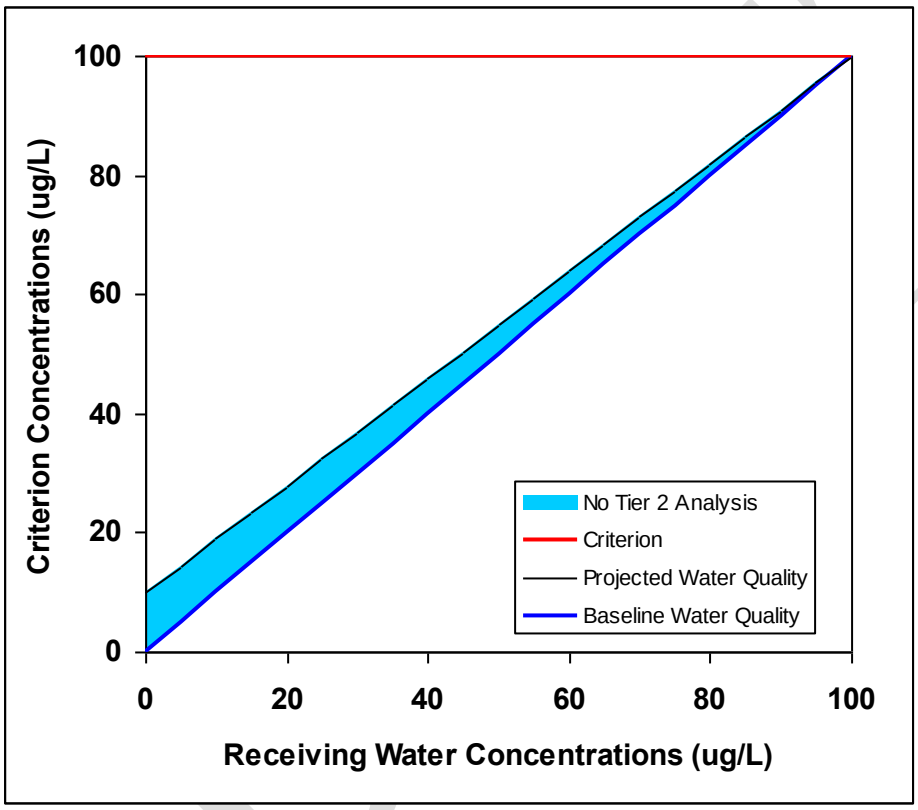


Figure 5. Insignificant discharge—This graph illustrates what would be considered "insignificant" when examining a single new/increased discharge in a high-quality water without consideration of a cumulative cap. First, you determine the applicable baseline water quality. Then you compare that to the criterion to determine the remaining assimilative capacity. Ten percent of the remaining assimilative capacity is the basis for an insignificance determination. The blue shaded area is the change in water quality considered insignificant in this example.

Applying this concept for parameter concentrations regulated by narrative criteria, such as sediment and nutrients, requires determining a numeric value applicable to the receiving water body in question.

As an example, consider pollutant "Y" with a criterion of 100 µg/L and an ambient concentration of 20 µg/L as of July 1, 2011. The assimilative capacity for Y in the water is 80 µg/L and the threshold based on assimilative capacity would be 8.0 µg/L with a cumulative cap of 28.0 µg/L (10% of 80 µg/L = 8 µg/L added to the ambient concentration of 20 µg/L = 28 µg/L).

Table 4. Example of assimilative capacity and associated significance thresholds (all values in µg/L)

Ambient Concentration (July 1, 2011)	Assimilative Capacity (July 1, 2011)	10% of Assimilative Capacity	Threshold Water Quality Change for Significance
10	90	9.0	9.0
20	80	8.0	8.0
30	70	7.0	7.0
40	60	6.0	6.0
50	50	5.0	5.0
60	40	4.0	4.0
70	30	3.0	3.0
80	20	2.0	2.0
90	10	1.0	1.0
100	0	0.0	0.0

Now consider a series of discharges, or increases in a single discharge, over time to the same water body. Example 1 (Table 5) illustrates how this would work for a series of four proposed changes in discharge for a pollutant with an ambient concentration of 20 µg/L as of July 1, 2011, and a criterion of 100 µg/L. Initially—that is, as of July 1, 2011—the remaining assimilative capacity is 80 µg/L, of which 10% or 8 µg/L, can be lost before the change in water quality becomes significant.

Only the final increase on January 1, 2023, would be considered a significant change in water quality, because the cumulative change would exceed the allowable 10% loss in assimilative capacity. The first three cases of increased discharge are all insignificant because the cumulative loss of assimilative capacity does not exceed 10% (8 µg/L) of the initial value (80 µg/L) on July 1, 2011.

Table 5. Example 1 of significance determinations for a series of changes in discharge

Date of Change in Discharge	Receiving Water Concentration After Mixing (µg/L)	Remaining Assimilative Capacity (µg/L)	Cumulative Cap (µg/L)	Used Assimilative Capacity (µg/L)	Water Quality Change Significant?
(Baseline, as of July 1, 2011)	20.0	80.0	8.0	n/a	—
Sept 30, 2011	21.0	79.0	8.0	1.0	No, ≤10% of starting assimilative capacity used
Nov 30, 2015	26.5	73.5	8.0	6.5	No
Dec 16, 2020	28.0	72.0	8.0	8.0	No
Jan 1, 2023	29.5	70.5	8.0	9.5	Yes, cumulative change in receiving water concentration exceeds 10% of starting assimilative capacity

Now consider a second example for the same pollutant (criterion of 100 µg/L) in another water body where the initial ambient concentration is 80 µg/L as of July 1, 2011. The assimilative capacity for the pollutant in the water would be 20 µg/L, and thus, the threshold for cumulative loss based on this initial assimilative capacity would be 2.0 µg/L (10% of 20 µg/L = 2 µg/L).

Example 2 (Table 6) illustrates how this would work for the same series of proposed discharge changes in Example 1. Only the first discharge could claim insignificance. All subsequent discharges are over the cumulative cap and are thus significant, even though the incremental change for the third and fourth discharges is less than 2.0 µg/L.

Table 6. Example 2 of significance determinations for a series of changes in discharge

Date of Change in Discharge	Receiving Water Concentration After Mixing (µg/L)	Remaining Assimilative Capacity (µg/L)	Cumulative Cap (µg/L)	Used Assimilative Capacity (µg/L)	Water Quality Change Significant?
(Baseline, as of July 1, 2011)	80.0	20.0	2.0	n/a	—
Sept 30, 2011	81.0	19.0	2.0	1.0	No, ≤10% of starting assimilative capacity used
Nov 30, 2015	86.5	13.5	2.0	6.5	Yes, cumulative change in receiving water concentration exceeds 10% of starting assimilative capacity
Dec 16, 2020	88.0	12.0	2.0	8.0	Yes
Jan 1, 2023	89.5	10.5	2.0	9.5	Yes

Analysis of insignificance is necessarily done by pollutant. Thus, it is possible that some proposed changes in pollutant discharge will be found insignificant while others significant for the same discharge. When this is the case, even one pollutant causing significant change in water quality will trigger the need to take Tier 2 analysis further for that pollutant. If the proposed

change in all pollutants evaluated is insignificant, then the discharge as a whole is insignificant and further Tier 2 analysis as described in section 5.3 is not needed.

If a proposed activity or discharge is determined significant, it only means further Tier 2 analysis is required; it does not automatically mean the discharge is not allowed or must be modified. It is possible that no changes in the discharge as proposed will be needed before allowing the discharge, but that determination is the subject of **alternatives analysis** (AA).

Baseline Water Quality as of July 1, 2011

Baseline water quality as of July 1, 2011, does not mean the conditions exactly on that date and that date alone, but rather the water quality under critical conditions that would exist given authorized discharges and nonpoint source activities as of that date. Furthermore, it is the water quality that would be present if other sources of pollutants that affect water quality for the parameter under question were to be discharging at their full permitted load. This is the baseline water quality for judging loss of assimilative capacity and whether new or increased activity or discharge after July 1, 2011, will cause significant degradation of water quality.

Where ambient monitoring data is available, such as from discharge monitoring reports (DMRs), DEQ recommends that the 95th percentile from at least one year of monthly data be used to characterize baseline water quality (see also section 4.3 for alternative statistical approaches for characterizing water quality). If there are upstream sources that contribute to baseline water quality, their potential contribution to baseline quality (i.e., full permitted loads if that is not what they were discharging at as of July 1, 2011) will need to be added in. In situations where new or increased upstream sources have contributed to degradation of water quality since July 1, 2011, their contribution will need to be subtracted out.

For many water bodies, there will likely be insufficient monitoring data to document the baseline water quality as of July 1, 2011, especially for new sources, a new process, or a new pollutant of concern. In these situations, DEQ will try to anticipate the need for data and work with dischargers to acquire the data needed. With new data, it will be necessary for DEQ to do its best to estimate water quality under critical conditions by starting with measurements of present water quality then subtracting increases in pollutant loads authorized since July 1, 2011, to determine baseline water quality. A decision tree for various scenarios in determining baseline water quality as of July 1, 2011, is provided in Appendix G.

See section 4.3 for more on determining baseline water quality.

5.2 Assuring Other Controls Are Achieved

Federal regulations (40 CFR § 131.12(a)(2)) and Idaho's policy in rule (IDAPA 58.01.02.051.02) require that degradation of high-quality water cannot be allowed unless measures to control other sources of water quality degradation will be achieved. In the WQS Idaho's policy regarding protection of high quality waters, this is stated as follows:

> In allowing such degradation or lower water quality, the Department shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and cost-effective and reasonable best management practices for nonpoint source controls. In providing such assurance, the Department may enter together into an agreement with other state of Idaho or federal agencies in accordance with Sections 67-2326 through 67-2333, Idaho Code. (IDAPA 58.01.02.051.02)

This analysis is specific to the pollutants/parameters that are determined to be significant in the proposed or increased activity or discharge. It is also limited to other sources in the same watershed that could affect water quality affected by the discharge under review.

The WQS define "**cost-effective** and reasonable best management practices (BMPs) for nonpoint sources" as approved BMPs specified in the Idaho WQS and "highest statutory and regulatory requirements for point sources" as:

> All applicable effluent limits required by the Clean Water Act and other permit conditions. It also includes any compliance schedules or consent orders requiring measures to achieve applicable effluent limits and other permit conditions required by the Clean Water Act. (IDAPA 58.01.02.010.47)[23]

Generally, DEQ will review point source and nonpoint source controls on a water body unit basis (including those areas upstream and downstream of the discharge) unless it is determined that a larger spatial extent is necessary for a particular pollutant. While no additional pollutant control action is required of other sources than already is required before a new activity or discharge is proposed, this rule language does require DEQ to investigate other sources, in the context of proposed degradation of water quality, and verify they are meeting their respective control requirements or have an enforceable mechanism in place to achieve those requirements.

For other point sources with NPDES permits, this verification means looking at permit compliance reports and identifying any matters of noncompliance that indicate the pollutant(s) or parameter(s) of concern are being discharged at a level greater than permitted. If information is lacking, such as any failure to monitor effluent as required, DEQ will not be able to determine compliance.

For nonpoint sources with approved BMPs, cost-effective and reasonable BMPs are identified in rules pertaining to the Idaho Forest Practices Act, Stream Channel Alteration Rules, and Rules Governing Exploration and Surface Mining and the Idaho Agricultural Pollution Abatement Plan.

DEQ will make efforts to contact, work with, and generally rely on other agencies to verify all required pollution controls for point sources and cost-effective and reasonable BMPs for nonpoint sources are in place and operating.

If noncompliance with required pollutant discharge controls or BMPs is identified for the pollutant(s) or parameter(s) of concern, then DEQ will determine if an enforceable agreement is in place with the appropriate regulatory authority to achieve compliance. For situations where noncompliance is occurring and no enforceable agreement is in place, DEQ will notify the applicant that the requirements for potentially allowing degradation are not met. DEQ may provide options on how to resolve such a situation for the applicant's consideration, including contacting designated management agencies.

5.3 Assuring Necessity through Analysis of Alternatives to Degradation

As stated at the outset of this section, federal and state regulations require that for DEQ to allow degradation of high-quality water, the activity must be *necessary **and** important*. This section

[23] This citation reflects anticipated numbering following final rule approval by the Idaho Legislature.

describes the process for determining whether an activity is necessary. The process for determining importance is described in the next section.

Determining whether the proposed pollution is necessary requires an analysis of the various alternatives that are available to the discharger to identify the least-degrading alternative that is reasonable to reduce or eliminate the pollutant(s) or parameter(s) of concern associated with the discharge. This AA identifies feasible alternatives, evaluates the reasonableness of implementing them, considers costs, and selects one that contributes the least amount of significant pollutant(s) possible under reasonable circumstances.

The Idaho antidegradation implementation rule (IDAPA 58.01.02.052.08) establishes principles to be followed in identifying alternatives and selecting the least-degrading alternative that is reasonable:[24]

> **c.** Alternatives Analysis. Degradation will be deemed necessary only if there are no reasonable alternatives to discharging at the levels proposed. The applicant seeking authorization to degrade high water quality must provide an analysis of alternatives aimed at selecting the best combination of site, structural, managerial and treatment approaches that can be reasonably implemented to avoid or minimize the degradation of water quality. To identify the least degrading alternative that is reasonable, the following principles shall be followed:
>
> i. Controls to avoid or minimize degradation should be considered at the earliest possible stage of project design.
>
> ii. Alternatives that must be evaluated as appropriate, are:
>
> (1) Relocation or configuration of outfall or diffuser;
>
> (2) Process changes/improved efficiency that reduces pollutant discharge;
>
> (3) Seasonal discharge to avoid critical time periods for water quality;
>
> (4) Non-discharge alternatives such as land application; and
>
> (5) Offsets to the activity or discharge's effect on water quality.
>
> iii. The Department retains the discretion to require the applicant to examine specific alternatives or provide additional information to conduct the analysis.
>
> iv. In selecting the preferred alternative the applicant shall:
>
> (1) Evaluate economic impacts (total cost effectiveness, incremental cost effectiveness) of all technologically feasible alternatives;
>
> (2) Rank all technologically feasible treatment alternatives by their cost effectiveness at pollutant reduction;
>
> (3) Consider the environmental costs and benefits across media and between pollutants; and
>
> (4) Select the least degrading option or show that a more degrading alternative is justified based on Subsections 052.08.c.iv.(1), 052.08.c.iv.(2), or 052.08.c.iv.(3) above.

Thus, consideration of alternatives that would still allow the desired development with less or no pollution is a required part of the Tier 2 demonstration of necessity.[25]

Timing and Integration of Alternatives Analysis

DEQ believes it is of paramount importance to consider alternatives that will reduce or eliminate pollutant discharge at the earlier possible opportunity in order to minimize project delay or

[24] This citation and the citations within the rule text reflect anticipated numbering following final rule approval by the Idaho Legislature.

[25] See Advance Notice of Proposed Rulemaking (ANPRM), 63 Federal Register, pp. 36742 and 36784 (1998).

redesign during water quality permitting and ultimately to meet the intent of antidegradation to maintain **high water quality**.

It is not DEQ's intent to create a whole separate AA in project design. Rather, to the extent there is a proposed discharge of pollutants that could degrade water quality, DEQ believes it is prudent to consider the implication of water quality degradation and the Idaho antidegradation requirements at the outset and integrate them into project design. To this end, DEQ encourages early communication between project designers, EPA or ACOE permit writers, other federal agencies involved in complying with the National Environmental Policy Act (NEPA), and DEQ staff responsible for application review.

Identifying Nondegrading and Less-Degrading Alternatives

Minimizing degradation involves evaluating waste generation, treatment, and disposal. This process can involve changes in location or timing of discharge to surface water, as well as alternatives to the direct discharge to surface waters, such as land application, ground water injection, or reuse. An entity considering new or increased discharge of pollutants could also work with other dischargers upstream in the same watershed to reduce pollutant loads upstream of the degradation and thereby offset their proposed adverse effect on water quality.

For facilities that have an outfall, relocation or reconfiguration of an outfall or diffuser must be considered, where appropriate. While this action alone will not reduce pollutant loads, it can be effective in reducing receiving water pollutant concentrations and thus the effect on high quality water. This is particularly true where a larger stream nearby offers greater assimilative capacity and will be most useful when siting a new facility. For existing discharges, it could be beneficial to extend pipe to a larger stream. Diffusers, which do not alter fully mixed concentrations, are effective in altering the extent and distribution of elevated pollutant concentrations and thus minimizing degradation of high-quality water.

Generation of waste that needs to be treated and discharged might be reduced through changes in industrial processes or greater efficiency in raw material utilization. The latter will save material costs and reduce waste. Sometimes a substitution in materials is worthwhile if more costly raw materials create even greater savings in waste treatment costs. For a municipality, waste reduction could include such things as hazardous-waste education and collection to reduce loads at the source. Other examples might be recovery of heat from an effluent, water conservation, or reuse.

Usually there is a critical or limiting time for waste discharge, typically during seasonal low flows when assimilative capacity of flowing waters is at a minimum. If wastewater can be stored and discharged seasonally (e.g., through land application or irrigation use during the summer), the critical time for aquatic life and recreational use may be avoided, thus reducing overall degradation of water quality and the need for load reduction.

Ways to avoid discharge to surface water are to land apply it, inject it into ground water, or use a closed-loop reuse system. These methods all have their limitations, such as potential impacts to ground water and indirectly to surface water, and their own permitting requirements. But for some processes in some settings, such no-discharge alternatives can be viable. With the increasing shortage of water in many areas and overall increase in the value of water as a

resource, some form of reuse, even if not in the original process, will likely become more attractive and commonplace with time and therefore could become more cost-effective to implement.

Often there are multiple sources of pollution, especially for any sizeable receiving water body. Some sources may have been operating for a long time, and although they are discharging legally, redesigning their facilities or processes may provide for greater pollution reduction than better design of a new source would. This possibility creates an opportunity for the operator of a proposed new or increased discharge to join forces with other dischargers and forge a binding agreement that would reduce their combined pollutant loads and improve the water quality of the water body as a whole compared to what may otherwise be the case.

With advances in pollution control technology, pollution-reduction strategies that were once unreasonable or not even considered have become possible, then reasonable, and eventually the norm. This is the likely progression for future water use and treatment. New efficiencies and treatment technologies are almost certain to arise, driven in part by society's values and also made **affordable** by society's relative values. But these innovations cannot be predicted beyond general terms. To account for this unpredictability, DEQ has reserved the right to require an applicant to examine specific alternatives.

The overall goal of AA is to find ways to minimize or eliminate the detrimental effect on water quality by whatever means can be reasonably implemented for the pollutant(s) or parameter(s) of concern. This analysis may result in identifying multiple reasonable alternatives. While some cost savings may ensue from some of the alternatives, steps to discharge less pollution are usually going to cost more and therefore raise the question of whether it is reasonable to implement more costly pollution-control alternatives.

Evaluating Alternatives and Making a Choice

While only **technologically feasible** alternatives should be considered, they will likely vary in their level of pollutant loading and may not all be reasonable. They may vary widely and nonlinearly in the cost-effectiveness of pollution reduction and involve competing environmental costs and benefits. Discharge alternatives will also be ranked according to cost to the discharger and at some point will not be reasonable to implement. Choosing the preferred alternative becomes a matter of balancing cost of pollution reduction versus overall environmental gain, while remaining affordable. The type of pollution controls that are reasonable to implement will be pollutant- and process-specific.

In some cases, treatment costs can be and are passed on to the consumer (e.g., ratepayers in the case of a publicly owned sewage treatment plant). Who will ultimately bear the cost is important to consider when fairly assessing whether an alternative can be reasonably implemented.

To make the selection process more systematic, a four-step winnowing of alternatives is recommended, in which the following are determined:

1. Amount of degradation caused
2. Cost-effectiveness of pollutant removal
3. Environmental cost-benefit tradeoffs
4. Affordability of alternatives

Because steps are described for both the AA and the analysis of social and economic importance, the alternative analysis steps are labeled AA (the socioeconomic importance steps, in the next section, are labeled SEJ).

AA Step 1—Ranking Alternatives from Least to Most Degrading

First, all feasible alternatives should be ranked from least to most degrading of water quality. The applicant may bypass further AA (AA steps 2–4) by selecting the least-degrading alternative feasible for the pollutant(s) or parameter(s) of concern at this step.

If the applicant opts for the least-degrading alternative, the test of degradation necessity is met and analysis to determine social and economic importance should be conducted. If the least-degrading option is not preferred, then the next least-degrading alternative may be justified as reasonable on the basis of cost-effectiveness of improved pollutant reduction, environmental trade-offs, or affordability. In this case, AA steps 2–4 are optional, needed only if the applicant wishes to justify that an alternative other than the least-degrading alternative is reasonable.

AA Step 2—Ranking Alternatives by Cost-Effectiveness

If necessary, step 2 is to rank alternatives by their pollutant-reduction cost-effectiveness. Cost-effectiveness looks at the cost per unit mass of pollutant removed, such as dollars per pound ($/lb). Most processes generate an effluent stream measured in volume per day; therefore, cost-effectiveness can be unitized as $/lb/million gallons per day (MGD), or other comparable units.

Greater pollution reduction will typically cost more, but economies of scale and alternate technologies can result in nonlinear per-unit costs.[26] It is not within the scope of this guidance to go into detail about treatment costing and the amortization of initial capital costs versus ongoing operation and maintenance costs. Suffice it to say that if alternatives are ranked by their per-unit pollutant-reduction costs, the marginal cost of improved pollutant reduction can be simply compared. Doing so may allow the justification of a more-degrading alternative if the incremental cost of improved treatment far outweighs the incremental gain in pollutant reduction.

For example, if the least-degrading alternative removes 100 lb of a pollutant for $10,000 per MGD, the unit cost is $100/lb/MGD. If the second-least-degrading alternative removes 90 lb of the pollutant for only $900 per MGD, its unit cost is only $10/lb/MGD. The latter is much more cost-effective as there is a sharp jump in per-pound cost for removing the additional 10 lb/MGD, a marginal cost of $910/lb/MGD ($10,000 − $900) / 10 lb). In this case, it would be easy for the discharger to argue that the marginal cost of removing 10 more pounds of pollutant was unreasonable, so the next best alternative should be accepted as the preferred alternative. In this way, alternatives that impose a cost that is disproportionate to the possible environmental gain may be eliminated from further consideration.

[26] Some costs of treatment will be scalable. For example, power costs and cost of reagents such as alum go up in proportion to the volume treated. However, differing treatment alternatives have differing costs that aren't always proportional to volume. Instead, a doubling of pollutant reduction may cost more or less than twice as much. Therefore, options are best compared on a per unit basis, taking into account all various costs and their timing.

Consider the previous example further. If the third-least-degrading alternative could achieve pollutant reduction of 50 lb at a cost of $450 per MGD, the cost per pound of treatment would be only slightly better at $9/lb/MGD, and the marginal cost of nearly doubling pollutant removal compared to using the second-least-degrading alternative would be $11.25/lb/MGD ($900 − $450 / 40 lb).

AA Step 3—Considering Environmental Trade-Offs

The example above, comparing cost-effectiveness, looks at only one pollutant in isolation. There are almost always multiple pollutants in a discharge, and what may be the best alternative for one may not be the best for another. In these situations, much judgment is involved.

As a hypothetical example, a discharge may involve adding heat as well as phosphorus to a receiving water. Some of the treatment processes and alternatives may be quite different (e.g., chilling for temperature and ultrafiltration for phosphorus); maximizing one will do nothing for the other, and treatment costs will be additive. Finding the optimum environmental solution in this situation may involve some intermediate level of treatment of both phosphorus and temperature. Such a compromise in treatment may especially be warranted if one of the pollutants is more limiting to the support of beneficial uses. In the latter case, it would make more environmental sense to favor the treatment of the limiting pollutant—in this example, favoring temperature reduction over phosphorus reduction. This decision could be further complicated if costs of treating temperature are substantially greater than the cost of treating phosphorus. In that case, phosphorus treatment may offer more environmental benefit per unit cost of pollutant reduction, even though temperature is judged the more limiting pollutant overall. Another alternative for treating both may avoid such a trade-off (e.g., land application could deal with both temperature and phosphorus at once, without additive costs for each pollutant), but a trade-off may occur in that there would be less water in the receiving water body.

Another form of environmental trade-off is between media—that is, reducing discharge to water may create more air pollution or solid waste to be disposed of. In addition to the direct effects of increased pollutant loads to other media, increased air pollution or solid waste may eventually affect water quality as well. For example, one might question the virtue of using electricity to run chillers to cool effluent temperatures (to keep streams cooler) when we have reason to believe the release of carbon dioxide from thermo-electric power generation contributes to global warming and thus to warming stream temperatures.

The choices may be difficult to delineate and hard to illuminate. It may be difficult to quantify such trade-offs in a common currency such as $/lb/MGD, but efforts to do so will be useful and will help reduce the amount of judgment otherwise required. No easy answers can be given, but nonetheless, DEQ believes that thinking about and considering such trade-offs is important if not necessary. The applicant is encouraged to raise issues of environmental trade-offs, and may, but is not required to, quantify them.

One thing is certain: the less pollution discharged to the environment, the better environmental quality will be. Finding the best place or medium in which to discharge that pollution, and determining the most economically efficient way to treat and handle waste considering both

public and environmental health versus public or private economic health, is an ongoing challenge.

AA Step 4—Judging Affordability

Following an analysis of pollutant-reduction cost-effectiveness and environmental trade-offs, the affordability of the best remaining alternatives will be assessed by the applicant. This assessment may be used to determine if an alternative is too expensive to reasonably implement. This approach might result in the selection of the next-least-degrading alternative, while maintaining affordability to the public or private entity. Alternatives identified as technologically feasible are considered affordable if the applicant does not supply an affordability analysis.

Cost-effectiveness alone should not rule; it should be tempered by consideration of affordability and standard practice in the industry. In our ongoing example, the second-best alternative is only slightly less cost effective than the third-best ($11.25/lb/MGD versus $10/lb/MGD) but offers a large improvement in pollutant load reduction. While overall treatment costs double, they may still be quite reasonable—both affordable and worthwhile given their cost-effectiveness. Furthermore, if the $900 per MGD second-best alternative is commonly implemented by similar facilities, then the argument for the cheaper option is less compelling.

If the applicant determines that the least-degrading remaining alternative is affordable, then it is the preferred alternative. If it is not affordable, then the affordability of the next alternative should be evaluated until an alternative is chosen that is practicable, economically efficient, and reasonable overall.

A demonstration that an alternative is not affordable should be clearly documented and should show that it would have a substantial adverse economic impact that would preclude its use for the activity/discharge under review.

If, after appropriate discussions with the discharger, DEQ determines that the necessity of the preferred alternative has not been demonstrated, DEQ shall either request more information or deny certification of the activity as proposed.

5.4 Justification of Social or Economic Importance

If the preferred alternative will result in degradation to the receiving waters, then the applicant must demonstrate that this activity or discharge will result in important economic or social development in the area in which the waters are located. A social *or* economic justification (SEJ) entails showing that the social or economic benefits occurring from an activity are important to the affected community. An activity needs to be either socially or economically important, not both, and depending on the nature of the project, it may be prudent to focus on one or the other.

The Idaho antidegradation implementation rule (IDAPA 58.01.02.052.08)[27] establishes principles to be followed in showing socioeconomic justification of an activity that will cause significant degradation:

> d. Socioeconomic Justification. Degradation of water quality deemed necessary must also be determined by the Department to accommodate important economic or social development. Therefore, the

[27] This citation reflects anticipated numbering following final rule approval by the Idaho Legislature.

applicant seeking authorization to degrade water quality must at a minimum identify the important economic or social development for which lowering water quality is necessary and should use the following steps to demonstrate this:

i. Identify the affected community;

ii. Describe the important social or economic development associated with the activity, which can include cleanup/restoration of a closed facility;

iii. Identify the relevant social, economic and environmental health benefits and costs associated with the proposed degradation in water quality for the preferred alternative. Benefits and costs that must be analyzed include, but are not limited to:

(1) Economic benefits to the community such as changes in employment, household incomes and tax base;

(2) Provision of necessary services to the community;

(3) Potential health impacts related to the proposed activity;

(4) Impacts to direct and indirect uses associated with high quality water, e.g., fishing, recreation, and tourism; and

(5) Retention of assimilative capacity for future activities or discharges.

iv. Factors identified in the socioeconomic justification should be quantified whenever possible but for those factors that cannot be quantified, a qualitative description of the impacts may be accepted; and

v. If the Department determines that more information is required, then the Department may require the applicant to provide further information or seek additional sources of information.

A project that is socially justified is one that is important to the social development of the local community in at least one aspect (e.g., population growth or job growth) or helps meet important community service needs (e.g., sewage treatment or transportation infrastructure). Socially justified projects may include publicly owned treatment works that provide additional capacity for wastewater treatment, reclamation of mine sites, and cleanup of historical sites—such projects provide added environmental benefits. Socially justified projects would need to demonstrate some local need for the project (i.e., identify the social conditions and relate how the project would fulfill those needs).

A project that is economically justified is a project that is important to the economic development of the local community. Economic development projects would include those that increase the economic base of the local community. An analysis of the economic importance of a project would likely require more in-depth analysis than a social justification and cover how the costs of the proposed degradation (including downstream effects) are equaled or exceeded by benefits to the community. Such an analysis would be a simplified cost-benefit analysis.

The applicant should use the following three steps to show the SEJ:

1. Identify the affected community.
2. Describe the important social or economic development associated with the activity.
3. Identify the relevant factors that characterize the environmental and social or economic impacts to the affected community.

SEJ Step 1—Identify the Affected Community

The affected community is the community in the geographical area where the waters are located. This area should be large enough to include both the people living near the site of the proposed activity and those in the community who are expected to directly or indirectly benefit from the activity. Once the affected community is identified, a description of the current economic and

environmental conditions will help identify those areas that will be evaluated in steps 2 and 3. For example, residents of a small town with a wastewater treatment plant that is proposing a change in its effluent discharge would be affected by the degradation of water. Others who may be affected by this change would include any nearby downstream users such as other towns that rely on that water body as a drinking water supply.

An evaluation of the current economic conditions may include a description of the overall economic health of the community, including any pertinent information on household incomes, general employment rates, and growth. Descriptions of current water quality and biological health would help to accurately reflect the current state of the environmental conditions. A complete description of the affected community would include some aspects of these two condition factors (i.e., economic and environmental).

SEJ Step 2—Describe Important Social or Economic Development Associated with the Activity

The applicant must describe the benefits the activity will have on the economic or social development of the affected community. The purpose of this step is to describe why the *activity* proposing to discharge is important to the overall social or economic health of the community. Once the current condition of the affected community is established from step 1, estimates of benefits to the community based on the effects of the proposed activity (e.g., construction of a wastewater treatment plant) can be made. The applicant should make every effort to quantify these changes, but DEQ recognizes that not all social indicators can be easily quantified, and a qualitative assessment of changes to these indicators is acceptable.

Some benefits that may accrue from proposed activities include job growth, ability to serve a larger area or greater population, increases to property values or the tax base in the affected community, a decrease in household expenses for services, and retention of assimilative capacity for future growth.

SEJ Step 3—Identify Environmental and Social or Economic Impacts Associated with the Discharge

Steps 1 and 2 focused on the affected community and the importance of the proposed activity to that community. The purpose of step 3 is to determine the overall environmental, social, and economic impacts associated with the proposed project and accompanying degradation of water quality. This step will allow a comparison of the benefits associated with the *activity* as identified in step 2 to the impacts associated with the *discharge* as identified here. The applicant should discuss the environmental, social, and economic factors that best characterize the affected community, which may include the following:

- Changes in employment rate
- Changes in personal or household income
- Changes in property values / community tax base
- Provision of necessary public services (e.g., fire department, school, infrastructure)
- Current or potential public health or safety problems (e.g., levels of lead in people's blood)
- Impacts to uses based on water quality (e.g., fishing, recreation, tourism)

- Amount of assimilative capacity for future industry and development
- Environmental benefits associated with reclamation and other restored property

The environmental, social, and economic measures identified above do not constitute a comprehensive list. Nor will all be relevant to all activities or discharges. Each situation and community is different and will require an analysis of unique factors. The applicant is encouraged to consider analyzing additional factors that characterize the specific community under consideration. As with step 2, the applicant should make every effort to quantify these changes when possible.

SEJ Considerations: Public versus Private Entities

Public and private sector entities often operate under differing practices and with different goals. They may also have a different sector of the community that they affect. Therefore, it is likely that these two types of activities will have slightly different SEJ evaluations.

Public sector developments encompass publicly owned treatment works, public utilities, and other entities that are owned and/or operated by a governmental (local, state, or federal) agency or an entity that is controlled by the government. Public sector entities typically do not operate on a for-profit basis and generally gain most of their capital for expenses from user fees and obligation or revenue bonds. Evaluating impacts to public entities may include looking at financial impacts to the public entity and socioeconomic conditions of the surrounding community. However, the impact of those pollution-control costs often may affect a wider community, and the general financial and economic health of the community will determine if the impacts are important.

Private developments typically are owned and operated on a for-profit basis. These private entities use profits or investments from shareholders to raise the capital needed for pollution-control costs and may pass along those costs to the end user in the form of higher prices for the goods or services they provide. For these private entities, measuring substantial impacts may require estimating the financial impacts on their balance sheet and analyzing the overall impact on the surrounding community (e.g., the impact of lost employment on the community or the increased cost of goods or services).

The line between public and private entities may be blurred when the public entity provides a service to significant numbers of private entities (e.g., a wastewater treatment plant that services a mainly industrial area or a private, for-profit hospital that provides a substantial benefit to the public). In this case, the methods to evaluate public entities and those for private entities may both need to be employed to determine an overall economic impact.

SEJ Evaluation

After weighing all relevant factors, the project will be considered to provide important social or economic development if the applicant demonstrates that the project will lead to overall beneficial changes in the factors presented (i.e., increased jobs, employment, housing, or other appropriate factors balanced against the benefits associated with maintaining a higher level of water quality). This determination will be made on a case-by-case basis using information provided with the application and obtained during public comment. Activities that provide

necessary public services—such as a wastewater treatment plant, hospital, or school—or their expansion may be determined *a priori* to be socially important.

When information available to DEQ is not sufficient to make a determination regarding the social or economic benefits or environmental impacts associated with the proposed activity, DEQ may request that the applicant submit additional information.

If, after appropriate discussions with the discharger, DEQ determines that the SEJ of the proposed activity has not been demonstrated, DEQ shall deny certification of the proposed activity. If DEQ makes such a determination, DEQ will provide a written explanation to the applicant of the deficiencies in the analysis.

5.5 Summary of the Justification for Degrading Water Quality

The preceding discussion (sections 5.3 and 5.4) describes the approach the applicant shall follow for determining whether less- or nondegrading alternatives to the proposed activity will be required to prevent degradation of Idaho surface waters. The following steps summarize the AA process and other relevant actions conducted during Tier 2 antidegradation analyses:

- If it is determined that significant degradation would likely occur due to the proposed activity, an analysis of less-degrading and nondegrading alternatives to the proposed activity will be required for the significant pollutant(s) or parameter(s).
- The applicant will be required to identify feasible pollution-control alternatives, including those that would result in no degradation and other less-degrading alternatives as appropriate, in addition to the minimum level of pollution control required.
- If the applicant prefers the least-degrading feasible alternative, the AA is complete.
- To justify a more-degrading alternative as reasonable, the applicant must evaluate the pollutant-reduction cost-efficiency, environmental trade-offs, and affordability associated with each alternative or mix of alternatives.
- The applicant will identify the least-degrading alternative—or mix of alternatives—that is reasonable based on the above evaluation. This will be the preferred alternative.
- If the preferred alternative will not result in significant degradation of the receiving water segment, DEQ will certify the activity without any further SEJ.
- If the preferred alternative will result in significant degradation of the receiving water, the applicant will be required to conduct an analysis of economic or social benefit.
- If the activity is deemed to be socially or economically important, DEQ will provide certification.

6 Tier 3 Designation—Protecting Outstanding Resource Waters

High-quality water bodies considered to be of exceptional recreational or ecological significance (e.g., waters in national or state parks, wild and scenic rivers, or wildlife refuges) may be nominated for designation as ORWs. These waters may not necessarily have high water quality. Only water bodies designated by the state legislature as ORWs are given the Tier 3 level of protection and are protected from the impacts of point and nonpoint source activities under antidegradation regulations.

Water quality in ORWs is granted the highest level of protection, Tier 3. This means that water quality in these waters will be maintained and no person shall conduct a new or substantially modify an existing activity if that activity is expected to lower or degrade water quality. The only allowed exception is for those activities that are short-term or temporary and do not alter the essential character or special uses of a segment, allocation of water rights, or the operation of water diversions or impoundments.

6.1 Point Source Activities

Tier 3 protections applying to ORWs require that the water quality be maintained and protected from impacts of both point and nonpoint source activities. This typically means point source discharges to the ORW will not be allowed to expand nor will new point sources be allowed to discharge into the ORW.

However, point source discharges that may cause degradation to an ORW may be allowed if the proposed degradation is offset by reductions from other sources that are tied to the proposed point source activity as described in IDAPA 58.01.02.052.04.c. These offsets must occur prior to the beginning of the activity and upstream of the degradation that the discharge may cause. Allowed offsets are described in greater detail in section 4.6.

To show that the degradation caused by a point source discharge to an ORW is being offset by reductions from other sources, the point source discharger may submit documentation on both the proposed degradation due to the discharge and the reductions proposed to offset this reduction. Calculations showing the change in ambient water quality downstream of the offsets and also downstream of the proposed discharge would demonstrate the overall net impact of the offsets and the proposed discharge to the ORW. A net improvement in water quality is the most desirable outcome of these proposed offsets to the discharge, especially in these water bodies considered to be of exceptional significance, but a full offset is the minimum requirement. If the calculations demonstrate that the degradation of the ORW is not fully and completely offset by reductions upstream of the degradation, the point source discharge will not be allowed (IDAPA 58.01.02.052.07.g).

The point source discharger is also encouraged to submit documentation of scheduled timelines for the proposed reductions and for the proposed activity to demonstrate that the offsets are occurring prior to the proposed degradation. It is recommended that this documentation also

shows how the discharger is capable of ensuring that the reductions proposed to offset the degradation will be accomplished.

Point source activities that discharge to tributaries of ORWs are not subject to the same limitations as those that discharge directly to ORWs. However, these activities are subject to the antidegradation protections for the water body they discharge to, provided that water quality of the ORW (below the appropriate or designated mixing zone) is not lowered and that antidegradation requirements for the tributary (i.e., Tier 1 or 2) are addressed.

6.2 Nonpoint Source Activities

Tributaries to ORWs are not subject to restrictions of nonpoint source activities in the same manner as ORWs are. As with point sources, a person or organization may conduct a new or substantially modify an existing nonpoint source activity that may lower or degrade water quality in the tributary to an ORW provided that water quality of the ORW is not lowered and that antidegradation requirements for the tributary are addressed.

Nonpoint source activities that took place prior to the designation of the water as an ORW may continue and shall be conducted in a manner that protects and maintains the current water quality of the ORW. However, these existing nonpoint source activities may not be substantially modified in a way that may be reasonably expected to lower or degrade the quality of water once the water has been designated as an ORW.

7 General NPDES Permits, Dredge and Fill Permits, and FERC Licenses

Most of sections 3–6 are specific to individual NPDES permits where a great deal is known about a particular discharge. A number of relatively similar discharges to surface waters may be authorized under a single general NPDES permit issued by EPA Region 10. Such discharges include aquaculture facilities, stormwater runoff from industrial facilities, mining and processing facilities, concentrated animal feeding operations, and construction sites that are 1 acre or larger. Much less is known about the particulars of pollutant discharge authorized by a general permit, and thus antidegradation review of these permits requires different considerations as discussed in this section. As with individual NPDES permits, general permits are currently issued by EPA and also subject to §401 certification by the State of Idaho.

In addition, §401 certification is required for individual and general §404 dredge and fill permits and FERC operation licenses. These permits and licenses must meet antidegradation requirements. Because they differ substantially from individual NPDES permits they are addressed here as well.

Except as described below, regulated activities authorized by existing general permits (that are currently in effect, not expired) are not required to undergo a Tier 2 antidegradation analysis as part of the **Notice of Intent** process. New and reissued general permits after July 1, 2011, must be evaluated to consider the potential for degradation as a result of any new or expanded permitted discharges they cover.

7.1 General NPDES Permits

All NPDES general permits require that permit conditions be met, including the general requirement that permitted discharges must ensure that water quality standards are not violated and BMPs contained in the permit are implemented. Compliance with the terms of the general permits issued by EPA and certified by DEQ is required to maintain authorization to discharge under the general permit. Discharges that might be covered by a general permit but cannot comply with general permit conditions or antidegradation requirements will be required to seek coverage under an individual permit.

Existing General Permits

Regulated activities currently authorized by general permits issued prior to July 1, 2011, are not required to undergo a Tier 2 antidegradation analysis as part of the NOI process. However, such a discharge would need to comply with the existing general permit conditions and any associated antidegradation requirements that were put in place when the general permit was issued. This includes new or expanded activities or discharges regulated by existing general permits.

For example, an NOI being submitted for a new discharge covered by the existing construction stormwater general permit would not undergo a Tier 2 antidegradation analysis. Where DEQ has denied water quality certification, a Tier 2 antidegradation analysis may be necessary to obtain individual certification. As of January 11, 2011, there were 11 general permits in Idaho. Table 7

summarizes whether a Tier 2 antidegradation analysis would be required for new or increased discharges or activities seeking coverage under the existing general NPDES permits.

Table 7. Summary of whether new or increased discharges are required to undergo a Tier 2 antidegradation analysis when seeking coverage under existing and draft NPDES and §404 general permits in Idaho

Federal Agency	Existing General Permit	Tier 2 Analysis Required?[a]
EPA—NPDES	Aquaculture facilities in Idaho subject to wasteload allocations under selected total maximum daily loads	No
	Coldwater aquaculture facilities in Idaho (not subject to wasteload allocations)	No
	Fish processors associated with aquaculture facilities	No
	Ground water remediation facilities	No
	Concentrated animal feeding operations	No
	Construction stormwater	No
	Industrial stormwater	Potentially. The decision is at EPA's discretion per Section 2.2.3 of the permit.
	Vessel discharges	No
	Small suction dredge mining	No
	Pesticide general permit	No
ACOE—§404	Nationwide permits (NWP)	Yes for activities covered under NWPs denied certification (NWP 12, 14, 16, 17).
	Regional general permit 27	No
	Regional permit	No

[a] While this is the state of affairs with these permits as they exist at the time of writing this guidance, this could change with reissued permits.

New or Reissued General Permits

For general permits issued or reissued after July 1, 2011, antidegradation reviews will be conducted for the entire class of general permittees at the time DEQ reviews the permit to decide whether or not to certify that the general permit complies with state water quality standards. Antidegradation reviews will focus on pollutants that may contribute to water quality degradation and will examine whether water quality criteria are met, degradation is likely to occur, and the permit conditions and permit record satisfy the requirements of the Tier 2 analysis. This review will also determine whether or not the potential activity or discharge will have an insignificant effect on water quality and as such be an insignificant activity or discharge. If DEQ finds that the general permit adequately addresses antidegradation at the time the permit is issued, then DEQ will not need to include conditions specific to antidegradation in its §401 certification of the permit.

However, if DEQ cannot determine that the general permit adequately addresses antidegradation at the time the permit is issued, DEQ must include conditions in the §401 certification that provide reasonable assurance that activities covered under the general permit will comply with

the antidegradation policy. Depending on the type of activities covered under the general permit and the conditions and requirements of the general permit, DEQ may incorporate the following conditions into the §401 certification:

- Requiring additional or more-stringent effluent limits and any other limitations and monitoring requirements necessary to ensure compliance with the antidegradation provisions
- Retaining DEQ's authority to, after reviewing submitted NOIs, require all or a subset of new or expanding discharges to undergo a Tier 2 analysis if it is determined that degradation may occur as a result of cumulative impacts from multiple discharges to a water body, impacts from a single discharger over time, or other individual circumstances

Existing activities or discharges currently covered under an effective general permit will be deemed to comply with Tier 2 of the antidegradation policy when seeking coverage under a reissued general permit as long as the activity or discharge is not expanding. Such activities or discharges will not be required to undergo a Tier 2 antidegradation analysis as part of the NOI process. However, if the activity or discharge is expanding, it must comply with any new antidegradation requirements of the reissued general permit.

Existing activities or discharges that are required to be permitted for the first time under a new general permit and that are not proposing to expand will be deemed to not cause degradation. This determination is due to the mere fact that becoming regulated will limit their discharge for the first time and will be a step toward reducing water quality degradation.

New or increased activities or discharges seeking coverage under a new or reissued general permit for the first time will be required to comply with the antidegradation requirements of that general permit and associated §401 certification.

7.2 §404 Dredge and Fill Permits

Section 404 of the CWA regulates the placement of dredged or fill material into "waters of the United States." The ACOE administers the §404 permit program dealing with these activities (e.g., wetland fills, instream sand/gravel work, etc.) in cooperation with the EPA and in consultation with other public agencies.

To ensure that antidegradation and other water quality protection requirements are considered, reviewed, and met in a comprehensive and efficient manner, these requirements will be addressed and implemented through DEQ's §401 water quality certification processes. Under this approach, applicants who fulfill the terms and conditions of applicable §404 permits and the corresponding §401 water quality certification will have fulfilled the antidegradation requirements. Additional antidegradation considerations may be incorporated into §404 permits and the corresponding §401 certifications at the time of permit issuance.

For activities covered under §404 general permits (e.g., "nationwide" or "regional" permits), the antidegradation review will be conducted at the time DEQ is reviewing the general permit for §401 certification (Table 7). Similar to the process for general NPDES permits, the antidegradation review will focus on pollutants that may contribute to water quality degradation and will examine whether water quality criteria are met, degradation is likely to occur, and the

permit conditions or the permit **administrative record** satisfies the requirements of any required Tier 2 analysis

For discharges of dredged or fill material covered under an individual §404 permit, the ACOE must ensure that the §404(b)(1) guidelines have been met (40 CFR Part 230). These guidelines require that all appropriate alternatives to avoid and minimize degradation be evaluated. DEQ will coordinate with the ACOE and the applicant to ensure that the analysis conducted to fulfill the §404(b)(1) guidelines will also fulfill the antidegradation review requirements.

7.3 FERC Licenses

Among other things, FERC licenses the operation of hydroelectric dams. Applicants for these licenses are required to obtain §401 water quality certification. DEQ's certification will look at conditions that are necessary to comply with Idaho water quality standards, including antidegradation provisions.

Although dams merely impound water rather than add anything to it, they may affect water quality in the impoundment and downstream. As such, water quality certification and antidegradation review are focused not on the effect of a traditional discharge but on the changes in water quality that may result from the dam and its impoundment and how operations may alter that quality.

DEQ may place conditions on operations or require other actions to ensure compliance with the antidegradation provisions. Applicants who fulfill the terms and conditions of an applicable FERC license and the corresponding §401 water quality certification will have fulfilled antidegradation requirements. Where significant degradation will occur, DEQ will evaluate whether the project is necessary to accommodate important social or economic development.

Antidegradation is concerned with any adverse change in water quality that may occur due to an activity or discharge. When a project undergoes relicensing with FERC, the relicensing certification process will compare the calculated water quality under the current FERC license with calculated water quality in the future under the proposed FERC license. If this comparison shows no degradation in water quality, then no Tier 2 antidegradation analysis is necessary.

8 Public and Intergovernmental Participation in Antidegradation Review

Intergovernmental coordination and public review ensures that a full range of alternatives is considered. Public review is essential to a legitimate determination of social and economic importance.

Although the regulations lay out a linear process of intergovernmental coordination, public comment, and then DEQ review and decision, experience has shown there is often significant interaction between DEQ and the applicant earlier in the process that precedes an antidegradation review suitable for public notice. Intergovernmental coordination may take place at this early stage but is also part of the formal review once a review is publically noticed.

Once the intergovernmental coordination and public notice requirements outlined here are satisfied, DEQ will review the results of public comment.

8.1 Intergovernmental Coordination

Intergovernmental coordination is required of DEQ prior to approving a regulated activity that would degrade Tier 2 surface water. This requirement seeks to ensure that all relevant public entities at the local, state, and federal levels are aware of any proposal to degrade high water quality and are provided with an opportunity to review, seek additional information, and comment on the proposal. In addition, intergovernmental coordination is needed to collect information regarding whether other source controls shall be achieved. An applicant may contact other government agencies to solicit their input, but if they do not, DEQ will.

Agencies to be consulted, as appropriate, include the following:

- EPA Region 10
- US Forest Service, Bureau of Land Management, Idaho Department of Lands, and other land management agencies in the affected watershed
- Idaho Department of Fish and Game, US Fish and Wildlife Service, and National Marine Fisheries Service
- The district health department serving the county where the facility or activity discharges
- Municipal governments of communities affected by the discharge
- The environmental agencies of other states whose waters may be affected by permit issuance
- Any other interested governmental organization, upon request

The intergovernmental coordination and review process should ideally occur before the AA and SEJ review are finalized, but it may occur later, in tandem with the public notice procedures outlined in the next section.

8.2 Public Notification and Review

DEQ must provide public notice and opportunity for public comment on the AA and the SEJ review. DEQ intends to provide public review of all antidegradation analyses in conjunction with

the public review of DEQ's draft §401 water quality certifications. These typically occur at the same time as public review of NPDES or §404 permits, which include a comment period lasting at least 30 days. If DEQ does not provide a draft water quality certification at the time of permit review, a draft certification will be made available for review on DEQ's website and the public will be given 30 days to submit comments. Because FERC does not provide public notice, DEQ will issue its own public notice regarding certification decisions. Notices will be posted on DEQ's website at: *http://www.deq.idaho.gov/news-public-comments-events.aspx*. A copy of the public notice shall also be sent to the relevant government agencies listed in section 8.1.

The notice will identify the action being considered, list all beneficial uses identified for the surface water, and call for comments from the public regarding the proposed activity. It shall clearly state the time frame for submitting comments, the methods by which comments may be submitted, and to whom comments must be directed.

An applicant may also engage the public before the AA and SEJ review is finalized. This approach is recommended as it may lead to fewer questions later during formal public comment, but it is not required. If choosing to engage the public of its own accord, the applicant should provide DEQ with a summary of public comments received and the applicant's responses.

9 Antidegradation Review Decisions

Regulated activities that may result in degradation of Tier 2 waters can only be approved after DEQ makes all of the following findings:

- The level of water quality necessary to protect applicable beneficial uses is fully maintained. Water quality shall not be degraded to a level that does not comply with the applicable WQS.
- The highest statutory and regulatory requirements for new and existing point sources are achieved.
- All cost-effective and reasonable BMPs for nonpoint source pollution control are implemented.
- Allowing degradation of water quality is necessary and accommodates important social or economic development in the area where the surface water is located.

DEQ will then make a final determination concerning the proposed activity. If the decision is that degradation is justified, then implementation of the preferred alternative will become a condition of the §401 certification to be incorporated in the permit or license. When information submitted to DEQ is not sufficient to justify the proposed degradation, DEQ may request additional information.

All antidegradation review decisions, including determinations to deny certification, shall be documented by DEQ and made part of the permit or license issuer's Administrative Record of Decision. Review documents, including existing water quality assessments, determinations of degradation, analyses of public comments, alternatives analyses, demonstrations of SEJ, and any other decisions or findings are public records.

To the extent allowed under Idaho Code §§ 9-340D(1) and 9-342A, any information submitted pursuant to the rules of the Board of Environmental Quality that contains trade secrets shall be kept confidential by DEQ if notice of the existence of a trade secret appears on the information and DEQ determines the information constitutes a trade secret pursuant to the process provided in Idaho Code § 9-342A and the Rules Governing the Protection and Disclosure of Records in the Possession of the Department of Environmental Quality (IDAPA 58.01.21).

10 Conclusion

DEQ developed these procedures to guide implementation of its antidegradation policy as required by the federal water quality standards (40 CFR 131.12). Idaho's antidegradation policy is found in the Idaho water quality standards (IDAPA 58.01.02). These rules were updated in spring 2011 and approved by EPA in August 2011. This guidance document elaborates on the requirements of these new rules, describing in greater detail how antidegradation is to be implemented in Idaho. This guidance presents recommended procedures that may be modified in the future as needed.

DEQ solicited the input and participation of various other entities, both public and private, while developing this guidance. A total of nine antidegradation guidance development meetings were held between December 2010 and August 2011. Numerous opportunities for public comment on individual sections of the document were available through DEQ's website. The public will also have the opportunity to comment on this antidegradation procedures document in its entirety.

Frequently asked question from public comments and DEQ's responses to those comments will be available in Appendix H in the final document.

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Water Quality Standards. Title 58, Chapter 01.02, *Idaho Administrative Code (IDAPA)*, 2011 ed. Antidegradation addressed in sections 051 and 052.

Water Quality. Title 39, Chapter 36, *Idaho Code (IC)*. 2010 ed. Antidegradation addressed in sections 39-3603, and 39-3617 to 39-3620.

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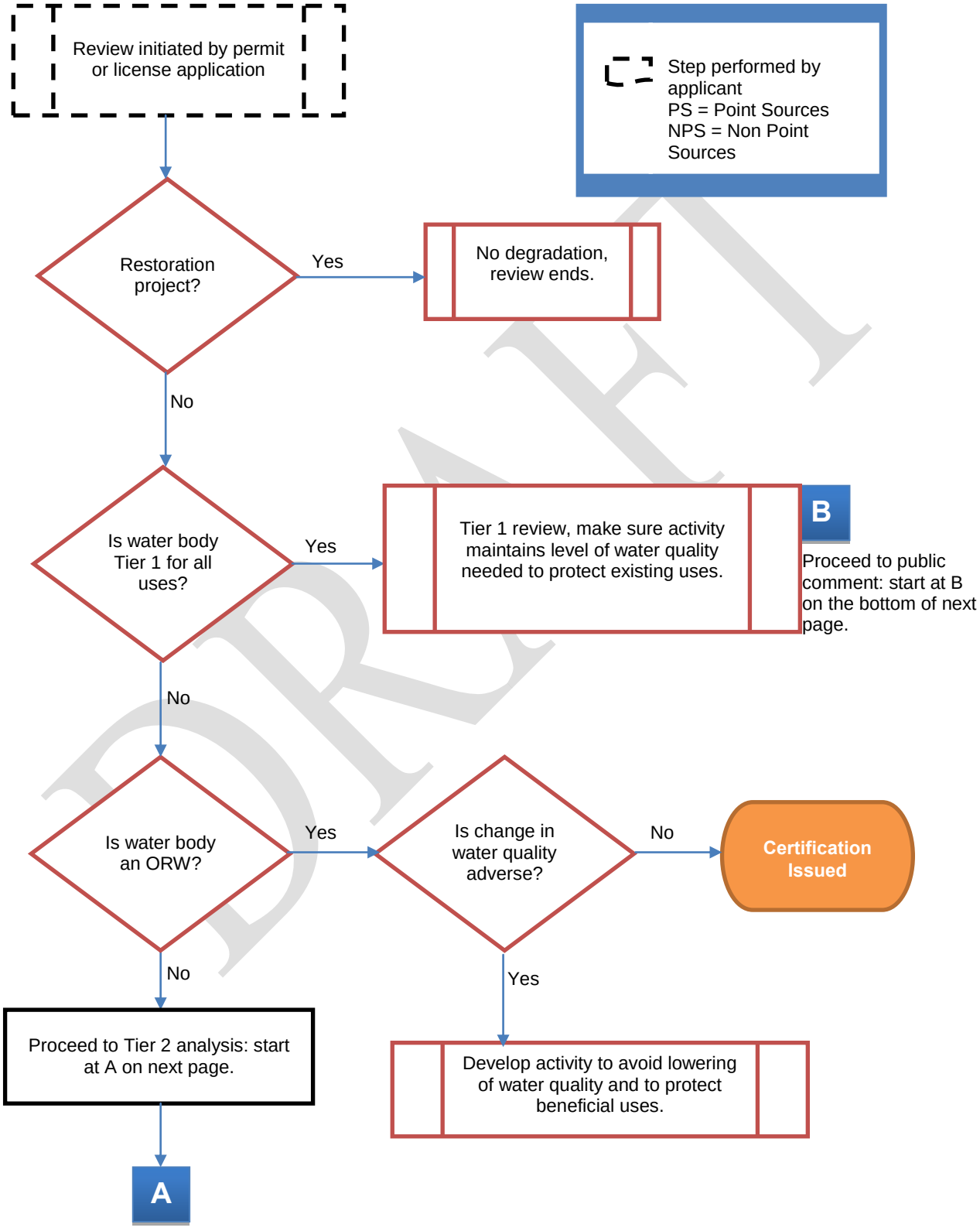
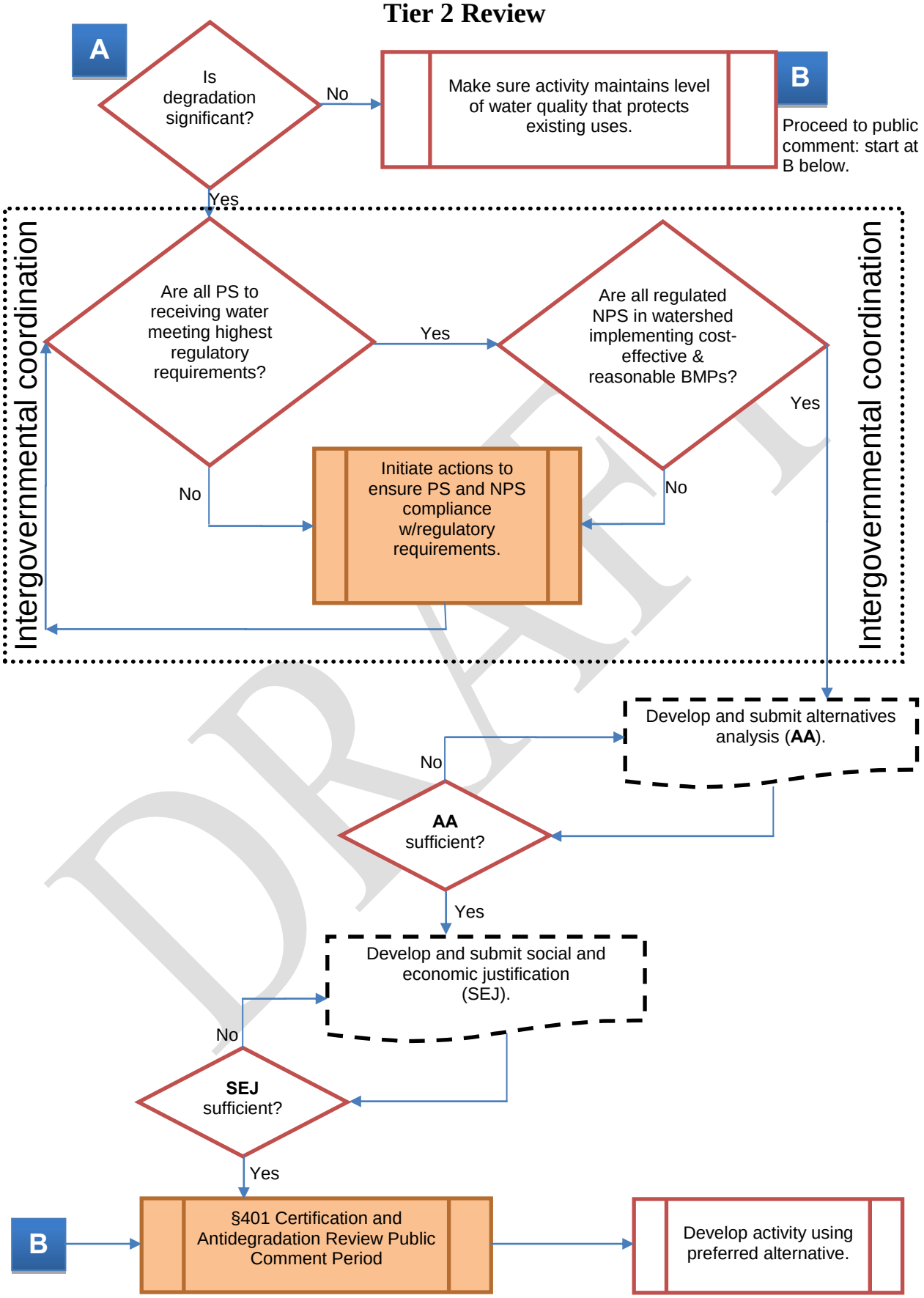
Appendix A. Antidegradation Review Flow Chart



Tier 2 Review



Appendix B. Antidegradation Review Template

The following template is provided as an overview of the antidegradation review process and accompanying document. However, it is subject to change as needs or additional considerations arise in the future.

ANTIDEGRADATION REVIEW

NPDES Permit # [insert number]
[Insert name of facility/permit]

Idaho Department of Environmental Quality
[Insert date]

{TEMPLATE INSTRUCTIONS

1. The highlighted language in the beginning of sections of the text includes instructions for filling in the template. Please delete these instructions and later highlighted instructions before issuing the document.
2. Bolded italics in the text indicates places where site-specific information needs to be inserted, e.g., the name of the facility, the receiving water body or pollutants of concern.
3. There are comments in the margin which provide additional instructions for filling out the template. Please read these comments carefully. Note: you will need to view this document in Final: Show Markup to see the comments. Please delete the comments when ready to finalize your review.}

Antidegradation Overview

This is general information that shouldn't be changed at this time.

In March 2011, Idaho incorporated new provisions addressing antidegradation implementation in the Idaho Code. The new antidegradation provisions are in Idaho Code § 39-3603. At the same time, Idaho adopted antidegradation implementation procedures in the Idaho water quality standards (WQS). The Idaho Department of Environmental Quality (DEQ) submitted the antidegradation implementation procedures to the US Environmental Protection Agency (EPA) for approval on April 15, 2011. On August 18, 2011, EPA approved the implementation procedures.

The WQS contain an antidegradation policy providing three levels of protection to water bodies in Idaho (IDAPA 58.01.02.051). The first level of protection applies to all water bodies subject to Clean Water Act jurisdiction and ensures that existing uses of a water body and the level of water quality necessary to protect the existing uses will be maintained and protected (Tier 1 protection) (IDAPA 58.01.02.051.01; 58.01.02.052.01). Additionally, a Tier 1 review is performed for all new or reissued permits or licenses (IDAPA 58.01.02.052.05). The second level of protection applies to those water bodies considered high quality and ensures that no lowering of water quality will be allowed unless deemed necessary to accommodate important economic or social development (Tier 2 protection) (IDAPA 58.01.02.051.02; 58.01.02.052.06). The third level of protection applies to water bodies that have been designated outstanding resource waters and requires activities to not cause a lowering of water quality (Tier 3 protection) (IDAPA 58.01.02.051.03; 58.01.02.052.07).

DEQ is employing a water body by water body approach to implementing Idaho's antidegradation policy. This approach means that any water body fully supporting its beneficial uses will be considered high quality (Idaho Code § 39-3603(2)(b)(i)). Any water body not fully supporting its beneficial uses will be provided Tier 1 protection for that use, unless specific circumstances warranting Tier 2 protection are met (Idaho Code § 39-3603(2)(b)(iii)). The most

recent federally approved Integrated Report (IR) and supporting data are used to determine support status and the tier of protection (Idaho Code § 39-3603(2)(b)).

Pollutants of Concern

*This section describes the pollutants of concern and which ones have effluent limits and should be modified as appropriate for the discharger. **Bold Italic** text is to be replaced with particulars for the activity or discharge you are working on.*

The ***[name of facility]*** discharges the following pollutants of concern: ***[pollutants of concern, e.g., temperature, biological oxygen demand (BOD), total suspended solids (TSS)]***. Effluent limits have been developed for ***[pollutants with effluent limits]***. No effluent limits are proposed for **[*pollutants without limits, if applicable]***.

Receiving Water Body Level of Protection

*This section describes the designated/presumed beneficial uses, and where appropriate, includes the statement "There is no available information indicating the presence of any existing beneficial uses aside from those that are already designated." It also describes how DEQ determined the appropriate level of antidegradation protection. **Bold Italic** text is to be replaced with particulars for the activity or discharge you are working on.*

The ***[name of facility]*** discharges to the ***[receiving water body]*** (assessment unit ***[assessment unit of receiving water body]***). This assessment unit (AU) has the following designated beneficial uses: ***[list all designated beneficial uses, e.g., cold water aquatic life, contact recreation, water supply uses, wildlife habitat and aesthetics]***. *or* ***[name of receiving water body]*** is undesignated. DEQ presumes undesignated waters in the state will support cold water aquatic life and primary and secondary contact recreation beneficial uses; therefore, undesignated waters are protected for these uses. (IDAPA 58.01.02.101.01.a). There is no available information indicating the presence of any existing beneficial uses aside from those that are already designated.

Comment [DE1]: Depending on the situation you need to use either the previous sentence OR the following two sentences.

Comment [DE2]: If this statement is not true then it needs to be replaced with language naming the undesignated but existing use: e.g. **In addition to these designated uses, salmonid spawning has been determined to be an existing use [reference supporting data, e.g. Smith and Jones, 2012].**

The cold water aquatic life use in this ***[receiving water body]*** AU is not fully supported due to excess ***[list causes for impairment]*** (2010 IR). The primary contact recreation beneficial use is fully supported. As such, DEQ will provide Tier 1 protection only for the aquatic life use and Tier 2 protection, in addition to Tier 1, for the recreation beneficial use (Idaho Code § 39-3603(2)(b)).

Protection and Maintenance of Existing Uses (Tier 1 Protection)

*This section describes how Tier 1 antidegradation protection is ensured. The language in the first paragraph provides background information and shouldn't be changed unless you want to remove the water quality limited discussion because your water body is not impaired. **Bold Italic** text is to be replaced with particulars for the activity or discharge you are working on.*

As noted above, a Tier 1 review is performed for all new or reissued permits or licenses, applies to all waters subject to the jurisdiction of the CWA, and requires a showing that existing uses and the level of water quality necessary to protect existing uses shall be maintained and protected. In order to protect and maintain designated and existing beneficial uses, a permitted discharge must

comply with narrative and numeric criteria of the Idaho WQS, as well as other provisions of the WQS such as Section 055, which addresses water quality limited waters. The numeric and narrative criteria in the WQS are set at levels that ensure protection of designated beneficial uses. The effluent limitations and associated requirements contained in the ***[name of facility]*** permit are set at levels that ensure compliance with the narrative and numeric criteria in the WQS.

The following pollutants of concern are without effluent limits: ***[name pollutants]***. This is because there is either no reasonable potential to exceed criteria (RPTE) or insufficient information to make such a determination. Monitoring requirements are included in the permit for ***[name pollutants with monitoring requirements only, no effluent limits].*** The lack of RPTE or inclusion of monitoring requirements ensures compliance with the narrative and numeric criteria in the WQS for pollutants of concern without effluent limits.

Comment [DE3]: If there are no pollutants of concern without effluent limits this whole section can be replaced with a simple statement **"There are no pollutants of concern without effluent limits."**

Because there is no available information indicating the presence of any existing uses other than the designated uses discussed above, the permit ensures that the level of water quality necessary to protect both designated and existing uses is maintained and protected, in compliance with IDAPA 58.01.02.051.01, IDAPA 58.01.02.052.05, and 40 CFR § 131.12(a)(1).

Comment [DE4]: This language may need to be modified to fit your situation. For example: "Data from Smith and Jones (2012) indicates salmonid spawning is an existing use in the ***Snake River***. This will require lower effluent temperatures during the spawning period of Nov 1st through may 31st."

Water bodies not supporting existing or designated beneficial uses must be identified as water quality limited, and a total maximum daily load (TMDL) must be prepared for those pollutants causing impairment. A central purpose of TMDLs is to establish wasteload allocations for point source discharges, which are set at levels designed to help restore the water body to a condition that supports existing and designated beneficial uses. Discharge permits must contain limitations that are consistent with wasteload allocations in the approved TMDL.
The EPA-approved ***[name and date reference of appropriate TMDL]*** establishes wasteload allocations for ***[pollutants with wasteload allocations]***. These wasteload allocations are designed to ensure the ***[receiving water body]*** will achieve the water quality necessary to support its existing and designated aquatic life beneficial uses and comply with the applicable numeric and narrative criteria. The effluent limitations and associated requirements contained in the ***[name of facility*** permit are set at levels that comply with these wasteload allocations.

In sum, the effluent limitations and associated requirements contained in the ***[name of facility]*** permit are set at levels that ensure compliance with the narrative and numeric criteria in the WQS and the wasteload allocations established in the ***[name of TMDL]***. Therefore, DEQ has determined the permit will protect and maintain existing and designated beneficial uses in the ***[receiving water body]***.

High-Quality Waters (Tier 2 Protection)
This section describes how Tier 2 antidegradation protection is ensured. The first paragraph identifies the use or uses for which the water body is high quality, warranting Tier 2 antidegradation protection. In the second paragraph, the pollutants relevant to the use for which the water is afforded Tier 2 protection must be listed. For example, bacteria will be relevant to recreational uses, but temperature will not. In the third paragraph, language is set out for either reissued permits or new permits. Then the various situations that may occur are set out—not all of these may apply to the particular permit being worked on. We have been including a table of current limits and proposed limits so people can see how they compare. You should highlight

those limits that are relevant to the use for which Tier 2 protection is afforded. We then go on to describe the comparison. If fecal coliform vs. E. coli is of issue, then we include a paragraph or two explaining this. The paragraph below has a lot of detail because we were trying to build a case for removing the fecal limits because EPA did not do so (atypical). ***Bold Italic*** *text is to be replaced with particulars for the activity or discharge you are working on.*

The ***[receiving water body]*** is considered high quality for ***[list beneficial uses that are to be given Tier 2 protection]***. As such, the water quality relevant to ***[beneficial uses to be protected under Tier 2]*** uses of the ***[receiving water body]*** must be maintained and protected, unless a lowering of water quality is deemed necessary to accommodate important social or economic development.

To determine whether degradation will occur, DEQ must evaluate how the permit issuance will affect water quality for each pollutant that is relevant to ***[beneficial uses to be protected under Tier 2]*** uses of the ***[receiving water body]*** (IDAPA 58.01.02.052.04). These include the following pollutants: ***[pollutants of concern for the beneficial use that is given Tier 2 protection, e.g., bacteria, total phosphorus and mercury for recreational uses].*** Effluent limits are set in the proposed and existing permit for all these pollutants except ***[pollutants relevant to the protected use without permit limits]***.

For a reissued permit or license, the effect on water quality is determined by looking at the difference in water quality that would result from the activity or discharge as authorized in the current permit and the water quality that would result from the activity or discharge as proposed in the reissued permit or license (IDAPA 58.01.02.052.04.a). For a new permit or license, the effect on water quality is determined by reviewing the difference between the existing receiving water quality and the water quality that would result from the activity or discharge as proposed in the new permit or license (IDAPA 58.01.02.052.04.a).

<u>Pollutants with Limits in the Current and Proposed Permit</u>
For pollutants that are currently limited and will have limits under the reissued permit, the current discharge quality is based on the limits in the current permit or license (IDAPA 58.01.02.052.04.a.i), and the future discharge quality is based on the proposed permit limits (IDAPA 58.01.02.052.04.a.ii). For the ***[name of facility]*** permit, this means determining the permit's effect on water quality based upon the limits for ***[pollutants with limits in both current and proposed permits]*** in the current and proposed permits. Table 1 provides a summary of the existing permit limits and the proposed reissued permit limits.

Table 1. Comparison of proposed and current permit limits for the pollutants of concern.

		Proposed Permit			Current Permit			
Pollutant	Units	Average Monthly Limit	Average Weekly Limit	Single Sample Limit	Average Monthly Limit	Average Weekly Limit	Single Sample Limit	Change[a]
Pollutants with limits in both the current and proposed permit								
Five-Day BOD	***mg/L***	***45***	***65***	***-***	***45***	***65***	***-***	***nc***
	lb/day	***200***	***430***	***-***	***200***	***430***	***-***	
	% removal	***65%***	***-***	***-***	***65%***	***-***	***-***	
TSS	***mg/L***	***45***	***65***	***-***	***70***	***105***	***-***	***D***
	lb/day	***170***	***290***	***-***	***290***	***440***	***-***	
	% removal	***65%***	***-***	***-***	***65%***	***-***	***-***	
pH	***standard units***	***6.5–9.0 all times***			***6.5–9.0 all times***			***nc***
E. coli	***no./100 mL***	***126***		***406***	***126***		***406***	***nc***
Fecal coliform[b]	***no./100 mL***	***50***	***200***	***-***	***50***	***200***	***-***	***---***
Total Residual Chlorine (final)	***mg/L***	***0.5***	***0.75***	***-***	***0.5***	***0.75***	***-***	***nc***
	lb/day	***2.1***	***3.1***	***-***	***2.1***	***3.1***	***-***	
Pollutants with new limits in the proposed permit								
Total Phosphorus	***lb/day (May-Sept)***	***12***	***18***		***-***	***-***	***Report***	***New, TMDL***
Temperature	***°C***	***72***	***-***	***23***	***-***	***-***	***-***	***New, TMDL***
	Btu (million)/day	300	-	-	-	-	-	
Pollutants with no limits in both the current and proposed permit								
Total Ammonia	***mg/L***	***-***	***-***	***Report***	***-***	***-***	***Report***	***nc***
Mercury	***ng/L***	***-***	***-***	***Report***	***-***	***-***	***Report***	***nc***

[a] nc = no change, I = increase, D = decrease.

[b] DEQ is requesting EPA remove the fecal coliform limits. See Discussion

The existing permit for the ***[name of facility]*** contains effluent limits for fecal coliform as well as *E. coli*. In 1986, EPA updated its criteria to protect recreational use of water by recommending an *E. coli* criterion as a better indicator than fecal coliform of bacteria levels that may cause gastrointestinal distress in swimmers. In 2000, DEQ changed its bacteria criterion from fecal coliform to *E. coli*. The *E. coli* limits were in the existing permit to reflect the bacteria criterion that DEQ adopted to protect the contact recreation beneficial use (IDAPA 58.01.02.251.01). The fecal coliform limits were in the current permit because at the time the permit was issued, IDAPA 58.01.02.420.05 established a disinfection requirement for sewage wastewater treatment plant effluent. This requirement specified that fecal coliform concentrations not exceed a geometric mean of 200/100 mL based on a minimum of five samples in one week. This section of the Idaho WQS was revised in 2002 to reflect the change in the bacteria criterion from fecal coliform to *E. coli* in 2000. The *E. coli* limits are as or more protective of water quality than the old fecal coliform limits. The proposed final permit contains both fecal coliform and *E. coli* effluent limits that comply with previous and current numeric "end-of-pipe" criteria.

Because the fecal coliform criteria have been replaced with *E. coli* criteria, DEQ is requesting that EPA remove the fecal coliform effluent limits, consistent with how EPA has handled other NPDES permits for wastewater treatment plants in Idaho. Furthermore, retaining the *E. coli* limits will ensure that the receiving water quality will not be degraded even when the fecal

coliform limits are removed. Even with the omission of fecal coliform limits, DEQ believes the discharge will not cause or contribute to a violation of the bacteria criteria because the permit incorporates "end-of-pipe" limits for *E. coli*. Thus, removal of the fecal coliform limits complies with both the Tier 1 and Tier 2 components of Idaho's antidegradation policy.

Comment [DE5]: This whole paragraph may not be applicable, and should become unnecessary with time as all permits are updated.

The proposed permit limits for other pollutants of concern that have limits in Table 1, ***[pollutants from Table 1 with proposed limits]***, are the same as, or more stringent than, those in the current permit ("nc" or "D" in change column). Therefore, no adverse change in water quality and no degradation will result from the discharge of these pollutants.

New Permit Limits for Pollutants Currently Discharged

When new limits are proposed in a reissued permit for pollutants in the existing discharge, the effect on water quality is based upon the current discharge quality and the proposed discharge quality resulting from the new limits. Current discharge quality for pollutants that are not currently limited is based upon available discharge quality data (IDAPA 58.01.02.052.04.a.i). Future discharge quality is based upon proposed permit limits (IDAPA 58.01.02.052.04.a.ii).

The proposed permit for ***[name of facility]*** includes new limits for ***[pollutants getting permit limits for the first time]*** (Table 1). These limits were included in the permit to be consistent with the wasteload allocations in the approved ***[name of appropriate TMDL]***. The ***[name pertinent pollutants]*** limits in the proposed permit reflect a maintenance or improvement in water quality from current conditions. Therefore, no adverse change in water quality and no degradation will occur with respect to these pollutants.

Pollutants with No Limits

There is one pollutant of concern ***[name pollutant, (i.e., mercury in this example)]*** relevant to Tier 2 protection of recreation that currently is not limited and for which the proposed permit also contains no limit (Table 1). For such pollutants, a change in water quality is determined by reviewing whether there will likely be changes in production, treatment or operation that will increase the discharge of these pollutants (IDAPA 58.01.02.052.04.a.ii). With respect to mercury, there is no reason to believe this pollutant will be discharged in quantities greater than those discharged under the current permit. This conclusion is based upon the fact that there have been no changes in the design flow, influent quality, or treatment processes that would likely result in an increased discharge of these pollutants. Because the proposed permit does not allow for any increased water quality impact from this pollutant, DEQ has concluded that the proposed permit should not cause a lowering of water quality for the pollutant with no limit. As such, the proposed permit should maintain the existing high water quality in ***[receiving water body]***.

Comment [DE6]: There may be more than one, edit as need be. If there are no pollutants in this category this whole section can be replaced with a simple statement **"There are no pollutants of concern without effluent limits."**

Appendix C. Antidegradation Tier for Waters with NPDES Discharge

The table in this appendix was created using information from the 2010 Integrated Report, BURP monitoring data from 2003 to 2007 (years identified as appropriate in the WBAG), GIS coverages of Idaho's §305(b) streams, 1:24,000 National Hydrography Dataset streams, NPDES dischargers, and permit information gleaned from EPA Region 10's website (http://yosemite.epa.gov/r10/water.nsf/NPDES+Permits/Current+ID1319#permits) and EPA's Envirofacts website. The antidegradation tier for the appropriate assessment unit (AU) was determined according to the proposed rule (IDAPA 58.01.02.052.05.c). The biological and aquatic habitat index score (i.e., index rating) is listed to provide a reference for Tier 1 versus Tier 2 for aquatic life tiers. *The antidegradation tiers identified in this table are* ***preliminary only*** *and are subject to change as more information is identified and gathered from sources other than the BURP database used in creating this table per WBAG assessment processes.*

All permits were screened to determine the receiving water identified in the permit. This was then checked against the shapefile provided containing locations of the various dischargers. If the GIS stream that the point fell upon or was closest to matched the receiving water in the permit, that was the AU used to determine the antidegradation tier. If the GIS stream that the point was closest to did not match the receiving water on the permit, a visual inspection of the National Agricultural Imagery Program (NAIP) 2009 aerial photography and the US Geological Survey 1:24,000 quadrangle map was done to determine if the discharge was to the GIS stream identified or to the receiving water listed on the permit. If a visual inspection could not identify the discharge source, a comment was logged saying that the discharge could not be verified. In these cases, a more in-depth evaluation of the true discharge location would be necessary before determining the antidegradation tier. For the purposes of this preliminary table only, this further evaluation was not completed due to time and resource constraints. Comments are made where appropriate to identify problems either with the shapefile or the coordinates provided on the permits.

For those AUs appearing in either Category 4 or 5 of the Integrated Report, the comments field lists those pollutants for which the water body is listed. There were 128 discharges to aquatic life Tier 1 water bodies, 16 to aquatic life Tier 2 water bodies, 1 discharge to a water with aquatic life uses removed, and 45 to waters that require more information before assigning an antidegradation tier. There were 56 discharges to contact recreation Tier 1 water bodies, 45 to contact recreation Tier 2 water bodies, and 89 to waters that require more information before assigning an antidegradation tier for contact recreation. There are 27 water bodies where the contact recreation and aquatic life tiers are different. These are highlighted by boldface type in the table.

The table below summarizes the number of dischargers in various antidegradation tiers. The beneficial uses of aquatic life and contact recreation are summarized concurrently, and in a number of cases, they are the same for aquatic life and contact recreation uses (e.g., there are 50 dischargers to waters that are classified Tier 1 for both aquatic life and contact recreation).

Aquatic Life Tier	Contact Recreation Tier	Number of Dischargers in Category
Tier 1	Tier 1	50
Tier 1	Tier 2	27
Tier 1	Case by Case	51
Tier 2	Tier 2	16
Tier 2	Case by Case	1
Case by Case	Tier 1	6
Case by Case	Tier 2	2
Case by Case	Case by Case	37

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
Aberdeen (WWTP), City of	ID0020176	ADC	Aberdeen Drain to American Falls Reservoir	4/5	ID17040206SK025_02a	Case by Case	Tier 1	1.5	Combined biota/Habitat
Ahsahka Water & Sewer Dist.	ID0025224	ADC	Clearwater River	3	ID17060306CL021_06	Case by Case			
Amalgamated Sugar Co. LLC	ID0000230	ADC	ID-002666-2 Main Drain	4/5	ID17040209SK001_02	Case by Case	Tier 1		Total phosphorus
American Falls (WWTP), City of	ID0020753	ADC	Snake River	4/5	ID17040209SK011_02	Case by Case	Tier 1		Combined biota
Ashton (WWTP), City of	ID0023710	EXP	Spring Creek Trib to Henrys Fork	3	ID17040203SK012_02	Case by Case			
Bennett Lumber Products, Inc.	ID0020532	EFF	Palouse River	2	ID17060108CL016_04	Tier 2			
Blackfoot (WWTP), City of	ID0020044	ADC	Snake River	4/5	ID17040206SK022_04	Tier 1	Tier 1		Mercury

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
Boise (Lander St. WWTP), City of	**ID0020443**	**ADC**	**Boise River**	**4/5**	**ID17050114SW011a_06**	**Tier 2**	**Tier 1**		**Low flow, Habitat, Temperature**
Boise (West Boise WWTP), City of	ID0023981	ADC	Boise River	4/5	ID17050114SW005_06	Tier 1	Tier 1		Temperature, Sediment, Low flow, Habitat, Fecal coliform
Boise, City of	**ID0025488**	**ADC**	**Boise River**	**4/5**	**ID17050114SW011a_06**	**Tier 2**	**Tier 1**		**Temperature, Sediment, Habitat, Low flow**
Bonners Ferry (WWTP), City of	ID0020451	EFF	Kootenai River	4/5	ID17010104PN029_08	Case by Case	Case by Case		Temperature
Bonners Ferry (WWTP), City of	ID0020222	ADC	Kootenai River	4/5	ID17010104PN029_08	Case by Case	Case by Case		Temperature
Bovill (WWTP), City of	**ID0022861**	**EFF**	**Potlatch River**	**4/5**	**ID17060306CL048_04**	**Tier 2**	**Tier 1**		**Temperature, Other flow regime, Habitat**
Buhl (WWTP), City of	ID0020664	EFF	Drainage ditch (N42:36:55 W 114:46:45)		canal	Tier 1			

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
Burley (WWTP), City of	ID0020095	ADC	Snake River	4/5	ID17040209SK001_02	Case by Case	Tier 1		Total phosphorus
Burley (WWTP), City of	ID0000663	EFF	Snake River (Milner Pond)	4/5	ID17040209SK001_07	Case by Case	Tier 1		Nutrients, Sediment
Cabinet Gorge Power Station	ID0027995	ADC	Clark Fork River	4/5	ID17010213PN005_08	Case by Case	Tier 1		Zinc, Cadmium, Temperature, Copper, Dissolved gas saturation
Caldwell (WWTP), City of	ID0021504	ADC	Boise River	4/5	ID17050114SW005_06	Tier 1	Tier 1		Sediment, Temperature, Low flow, Habitat, Fecal coliform
Caldwell Housing Authority Farmway Village	ID0025453	ADC	Farmers Cooperative Sebree Canal		canal	Tier 1			
Cambridge (WWTP), City of	ID0021806	EFF	Weiser River	4/5	ID17050124SW007_05	Tier 2	Case by Case		Temperature
Carey, City of	**ID0025747**	**EXP**	**Little Wood River**	**4/5**	**ID17040221SK002_05**	**Tier 2**	**Tier 1**		**Temperature, Total phosphorus, Sediment**
Cascade (WWTP), City of	ID0023167	ADC	North Fork Payette River	4/5	ID17050123SW001_06	Case by Case	Tier 1		Sediment, Temperature

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
Central Shoshone County Water Dist.	ID0020567	EXP	Big Creek	3	ID17010302PN007b_03	Case by Case			
Central Shoshone County Water Dist.	**ID0022071**	**EXP**	**McFarren Creek**	**4/5**	**ID17010302PN001_02**	**Tier 2**	**Tier 1**		**Sediment, Zinc, Cadmium, Lead, Temperature**
Clarkia Water & Sewer District	ID0025071	ADC	West Fork Saint Maries River	4/5	ID17010304PN017_04	Case by Case	Tier 1		Temperature, Sediment
Clearwater Forest Industries, Inc.	**ID0027707**	**NON**	**South Fork Clearwater R**	**4/5**	**ID17060305CL001_02**	**Tier 2**	**Tier 1**		**Temperature, Sediment, Habitat**
Clearwater Paper Corp. Lewiston mill	ID0001163	EFF	Snake River	4/5	ID17060103SL001_08	Case by Case	Case by Case		Temperature
Coeur d'Alene (WWTP), City of	ID0022853	ADC	Spokane River	4/5	ID17010305PN004_04	Case by Case	Tier 1		Cadmium, Lead, Zinc, Total phosphorus

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
Cottonwood, City of	ID0021849	ADC	Cottonwood Creek	4/5	ID17060305CL003_02	Tier 1	Tier 1	1.5	Ammonia, Nutrients, Dissolved oxygen, Sediment, Temperature, Habitat, Fecal coliform
Council (WWTP), City of	ID0020087	EXP	Weiser River	4/5	ID17050124SW007_05	Tier 2	Case by Case		Temperature
Country Homes Mobile Park (WWTP)	ID0025305	PND		3	ID17060108CL002_02	Case by Case			
Craigmont (WWTP), City of	ID0021288	EFF	John Dobbs Creek	4/5	ID17060306CL024_02	Tier 1	Tier 1		Oil & grease, Temperature, Sediment, Dissolved oxygen, Nutrients, Ammonia, Flow alteration, Habitat, Fecal coliform. Shapefile incorrect. Coordinates not provided on permit, cannot find John Dobbs Creek on USGS 1:24K map or in 1:24K National Hydrography Dataset.
Culdesac, City of	ID0024490	ADC	Lapwai Creek	2	ID17060306CL008_03	Tier 2			
Darigold Westfarm Foods	ID0024953	ADC	Boise River	4/5	ID17050114SW005_06	Tier 1	Tier 1		Temperature, Sediment, Low flow, Habitat, Fecal coliform

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
Deary (WWTP), City of	ID0020788	ADC	Mount Deary Creek to Big Bear Creek	3	ID17060306CL056_02	Case by Case			Shapefile incorrect
Dover, City of	ID0027693	ADC	Pend Oreille River	4/5	ID17010214PN002_08	Case by Case	Tier 1		Dissolved gas saturation, Temperature
Driggs (WWTP), City of	ID0020141	ADC	Woods Creek	4/5	ID17040204SK050_02	Tier 1	Case by Case		*E. coli*
Elk City Water & Sewer Association (WWTP)	ID0022012	ADC	Big Elk Creek	4/5	ID17060305CL056_03	Case by Case	Case by Case		Temperature
Elk River, City of	ID0020362	ADC	Elk Creek	2	ID17060308CL030_03	Tier 2			
Elk Valley Subdivision (WWTP)	ID0027979	EFF	South Fork Boise River	2	ID17050113SW013_05	Tier 2			
Emmett (WWTP), City of	ID0020311	ADC	Payette River	4/5	ID17050122SW001_06	Tier 1	Case by Case		Temperature, *E. coli*
Epicenter Aquaculture	ID0028266	EFF	Warm Springs Hydro-Canal		canal	Tier 1			N 44 23 30 W 114 6 40 Cannot locate facility at these coordinates.
Fairfield (WWTP), City of	**ID0024384**	**ADC**	**Tributary to Soldier Creek**	**4/5**	**ID17040220SK011_02**	**Tier 2**	**Tier 1**		**Sediment, Temperature, Other flow regime. Shapefile incorrect**

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
Filer (WWTP), City of	ID0020061	EFF	Cedar Draw Creek	4/5	ID17040212SK012_02	Tier 1	Tier 1		Total phosphorus, Sediment, Fecal coliform
Firth, City of	ID0024988	EXP	Snake River	4/5	ID17040206SK022_04	Tier 1	Tier 1		Mercury
Franklin (WWTP), City of	**ID0025569**	**EXP**	**Cub River**	**4/5**	**ID16010202BR002_04**	**Tier 2**	**Tier 1**		**Total phosphorus, Sediment, Other flow regime**
Franklin United Oil	ID0027383	NON	Indian Creek	4/5	ID17050114SW002_04	Tier 1	Tier 1		Temperature, Sediment, Fecal coliform
Fruitland (Payette WWTP), City of	ID0021199	ADC	Payette River	4/5	ID17050122SW001_06	Tier 1	Case by Case		Temperature, *E. coli*
Fruitland (Snake River WWTP), City of	**ID0020338**	**ADC**	**Snake River (N44:2:20.4 W116:55:25)**	**4/5**	**ID17050115SW001_08**	**Tier 2**	**Tier 1**		**Total Phosphorus, Sediment, Temperature, Cause unknown. Shapefile incorrect.**
Genesee (WWTP), City of	**ID0020125**	**EFF**	**Cow Creek**	**4/5**	**ID17060108CL001_03**	**Tier 2**	**Tier 1**		**Nutrients, Temperature, Habitat**
Georgetown (WWTP), City of	ID0025143	PND	Unnamed spring-fed creek	4/5	ID16010201BR022_03a	Tier 1	Tier 1		Total phosphorus, Sediment, *E. Coli*
Glanbia Foods, Inc.	ID0027421	PND	Rock Creek	4/5	ID17040212SK013_05	Tier 1	Tier 1		Total phosphorus, Sediment, Other flow regime, Fecal coliform
Glanbia Foods, Inc.	ID0027006	PND	Little Wood River	3	ID17040221SK000_02	Case by Case			

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
Glanbia Foods, Inc. Gooding Plant	ID0027120	NON	Little Wood River	3	ID17040221SK001_05a	Case by Case			
Glenns Ferry (WWTP), City of	ID0022004	ADC	Snake River	4/5	ID17050101SW005_07	Case by Case	Tier 1		Total phosphorus, Sediment
Gooding (WWTP), City of	ID0020028	ADC	Little Wood River	3	ID17040221SK001_05b	Case by Case			
Grace, City of	ID0023825	ADC	Grace Dam Impoundment	4/5	ID16010202BR009_06	Case by Case	Tier 1		Sediment, Total phosphorus, Other flow regime
Grangeville (WWTP), City of	ID0020036	EFF	Threemile Creek	4/5	ID17060305CL010_02	Tier 1	Tier 1		Dissolved oxygen, Sediment, Temperature, Nutrients, Habitat, Other flow regime, *E. coli*
Greenleaf (WWTP), City of	ID0028304	PPND	Boise River		canal	Tier 1			Permit says Boise River, but GIS coverage suggests canal.
Hagerman (WWTP), City of	ID0025941	EFF	Snake River		canal	Tier 1			
Hailey (Woodside WWTP), City of	ID0020303	ADC	Big Wood River	4/5	ID17040219SK007_05	Case by Case	Tier 1		Other flow regime

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
Hansen (WWTP), City of	ID0022446	EFF	unnamed canal		canal	Tier 1			Coordinates on permit are incorrect. They land outside of Hailey, not Hansen, Idaho
Harrison (WWTP), City of	ID0021997	EFF	Coeur d'Alene River	4/5	ID17010303PN007_06	Case by Case	Tier 1		Lead, Zinc, Cadmium, Temperature, Sediment, Habitat
Hayden Area Regional Sewer Board (WWTP)	ID0026590	ADC	Spokane River	4/5	ID17010305PN004_04	Case by Case	Tier 1		Total phosphorus, Zinc, Lead, Cadmium
Hecla Mining Co. Lucky Friday Mine Unit	ID0000175	ADC	South Fork Coeur d'Alene River	4/5	ID17010302PN011_03	Case by Case	Tier 1		Cause unknown (metals suspected)
Hecla Mining Co. Star Phoenix Unit	ID0000167	ADC	South Fork Coeur d'Alene River	4/5	ID17010302PN011_03	Case by Case	Tier 1		Cause unknown (metals suspected)
Hecla Mining, Co. Grouse Cr. Unit	ID0026468	ADC	Jordan Creek	2	ID17060201SL042_03	Tier 2			Jordan Creek is a Tier 2, the two unnamed tributaries that flow through the mine are unassessed.
Henggeler Packing Co. Inc.	ID0027901	PND	Drainage ditch upstream/Payette River	3	ID17050122SW001_02	Case by Case			

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
Heyburn (WWTP), City of	ID0020940	ADC	Snake River	4/5	ID17040209SK001_02	Case by Case	Tier 1		Total phosphorus
Homedale (WWTP), City of	**ID0020427**	**EXP**	**Snake River**	**4/5**	**ID17050103SW001_07**	**Tier 2**	**Tier 1**		**Temperature, Nutrients, Other flow regime**
Horseshoe Bend (WWTP), City of	ID0021024	ADC	Payette River	2	ID17050122SW003_06	Tier 2			
Idaho Cobalt Project	**ID0028321**	**EFF**	**Big Deer Creek**	**4/5**	**ID17060203SL005_03**	**Tier 2**	**Tier 1**		**Copper**
Idaho DEQ Sand Cr. Petroleum Remediation	ID0027456	PND	Sand Creek	4/5	ID17010214PN048_03a	Case by Case	Tier 1		Sediment. Cannot verify.
Idaho Falls (WWTP), City of	ID0021261	ADC	Snake River	3	ID17040201SK001_04	Case by Case			
Idaho Lava Foundation	ID0027171	PND	Portneuf River	4/5	ID17040208SK016_03	Tier 1	Tier 1		Temperature, Total nitrogen, Oil & grease, Total phosphorus, Sediment, Low flow, Fecal coliform
Independent Meat Co.	ID0000388	EXP	Rock Creek	4/5	ID17040212SK013_05	Tier 1	Tier 1		Total phosphorus, Sediment, Flow alteration, Fecal coliform

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
Inkom (WWTP), City of	ID0020249	EFF	Portneuf River	4/5	ID17040208SK001_05	Tier 1	Tier 1		Oil & Grease, Sediment, Habitat, Temperature, Nutrients, Dissolved oxygen, Fecal coliform
Jerome (WWTP), City of	ID0020168	ADC	J8 Canal		canal	Tier 1			
Jerome Cheese Co.	ID0027600	ADC	Lateral 12 (N42:42:35 W 114:31:10)		canal	Tier 1			Shapefile incorrect
Joint School Dist. #71	ID0023914	ADC	Grasshopper Creek	4/5	ID17060306CL036_02	Tier 1	Tier 1		Nutrients, Temperature, Other flow regime, Habitat, Fecal coliform
Jug Mountain Ranch Co.	**ID0028029**	**EFF**	**Cold Creek (tributary to Boulder Cr. to Cascade Reservoir)**	**4/5**	**ID17050123SW011_02**	**Tier 2**	**Tier 1**	**0.5**	**Total phosphorus, Combined biota**
Juliaetta (WWTP), City of	**ID0023761**	**ADC**	**Potlatch River**	**4/5**	**ID17060306CL044_06**	**Tier 2**	**Tier 1**		**Sediment, Temperature, Physical habitat alteration, Other flow regime alterations**
Kamiah (WWTP), City of	ID0028002	ADC	Clearwater River	3	ID17060306CL022_06	Case by Case			
Kamiah, City of	ID0027545	PND	Lawyer Creek	2	ID17060306CL024_04	Tier 2			

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
Kendrick (WWTP), City of	ID0024554	EFF	Potlach River	3	ID17060306CL044_02	Case by Case			
Ketchum (WWTP), City of	ID0020281	ADC	Big Wood River	4/5	ID17040219SK007_05	Case by Case	Tier 1		Other flow regime
Kooskia (WWTP), City of	**ID0021814**	**ADC**	**South Fork Clearwater River**	**4/5**	**ID17060305CL001_05**	**Tier 2**	**Tier 1**		**Sediment, Temperature, Physical habitat alteration**
Kootenai County Water Dist #1 (WWTP)	ID0024627	EXP	Lake Coeur d'Alene	4/5	ID17010303PN001L_0L	Case by Case	Tier 1		Cadmium, Lead, Zinc
Kootenai River Nutrient Site	ID0028291	EFF	Kootenai River	4/5	ID17010104PN031_08	Case by Case	Case by Case		Temperature
Kootenai-Ponderay Sewer Dist. (WWTP)	ID0021229	ADC	Boyer Slough	4/5	ID17010214PN018_02b	Case by Case	Tier 1		Benthic macroinvertebrates
Kuna (WWTP), City of	**ID0028355**	**ADC**	**Indian Creek**	**4/5**	**ID17050114SW003_04**	**Tier 2**	**Tier 1**	**0.67**	**Temperature**
Laclede Water Dist. (WWTP)	ID0027944	PND	Pend Oreille River	4/5	ID17010214PN002_08	Case by Case	Tier 1		Dissolved gas saturation, Temperature

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
Lava Hot Springs (WWTP), City of	ID0021822	EFF	Portneuf River	4/5	ID17040208SK016_03	Tier 1	Tier 1		Total nitrogen, Oil & grease, Total phosphorus, Sediment, Temperature, Low flow, Fecal coliform
Lewiston (WWTP), City of	ID0022055	ADC	Clearwater River	4/5	ID17060306CL001_07	Case by Case	Tier 1		Dissolved gas saturation
Lewiston (WWTP), City of	ID0026531	EFF	Clearwater River	4/5	ID17060306CL001_07	Case by Case	Tier 1		Dissolved gas saturation
Mackay (WWTP), City of	ID0023027	ADC	Big Lost River	3	ID17040218SK011_02	Case by Case			
Magic Valley Produce Inc.	ID0026654	EXP	Main Drain		canal	Tier 1			
Marsing (WWTP), City of	**ID0021202**	**ADC**	**Snake River**	**4/5**	**ID17050103SW006_07b**	**Tier 2**	**Tier 1**		**Total phosphorus, Temperature**
McCain Foods USA Inc.	ID0000612	EFF	Snake River	4/5	ID17040209SK001_07	Case by Case	Tier 1		Nutrients, Sediment
McCall (WWTP), City of	ID0020231	ADC	North Fork Payette River	2	ID17050123SW016_04	Tier 2			

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
Meadow Gold Dairies, Inc.	ID0027162	PND	Portneuf River	4/5	ID17040208SK001_05	Tier 1	Tier 1		Oil & grease, Temperature, Sediment, Nutrients, Total phosphorus, Total nitrogen, Dissolved oxygen, Low flow, Habitat, Fecal coliform
Meridian (WWTP), City of	ID0020192	ADC	Fivemile Creek	4/5	ID17050114SW010_03	Case by Case	Tier 1	0.67	Sediment
Meridian Beartrack Co. Beartrack Mine	ID0027022	ADC	Napias Creek	2	ID17060203SL025_02	Tier 2			
Middleton (WWTP), City of	ID0021831	ADC	Boise River	4/5	ID17050114SW005_06	Tier 1	Tier 1		Sediment, Temperature, Low flow, Physical Substrate Habitat Alterations, Fecal coliform
Montpelier (WWTP), City of	**ID0025585**	**EFF**	**Bear River**	**4/5**	**ID16010201BR002_05**	**Tier 2**	**Tier 1**		**Total phosphorus, Sediment, Low flow, Temperature**
Moscow (WWTP), City of	ID0021491	ADC	Paradise Creek	4/5	ID17060108CL005_02	Tier 1	Tier 1	1	Temperature, Sediment, Nutrients, Ammonia, Habitat, Other flow regime, *E. coli*, Fecal Coliform
Nampa (WWTP), City of	ID0022063	ADC	Indian Creek	4/5	ID17050114SW002_04	Tier 1	Tier 1		Temperature, Sediment, Fecal coliform

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
New Meadows (WWTP), City of	ID0023159	EXP	Little Salmon River	4/5	ID17060210SL007_04	Case by Case	Case by Case		Temperature
New Plymouth (WWTP), City of	ID0020389	ADC	Payette River	4/5	ID17050122SW001_06	Tier 1	Case by Case		Temperature, *E. coli*
Nez Perce (WWTP), City of	ID0020397	ADC	Long Hollow Creek	3	ID17060306CL020_02	Case by Case			This AU is listed as not supporting agricultural water supply: Cause unknown. This reflects an error in listing that is being corrected in future reports.
Noranda Mining Inc. Blackbird Project	**ID0025259**	**ADC**	**Blackbird Creek**	**2**	**ID17060203SL012b_02**	**Tier 2**	**Tier 1**		**This AU is assessed for secondary contact recreation and fully supports this use. This AU has an aquatic life designation of NONE and is not assessed for aquatic life.**
North Idaho Correctional Institute	ID0025887	EXP	Trib to Lawyer Creek	4/5	ID17060306CL024_02	Tier 1	Tier 1		Temperature, Dissolved oxygen, Sediment, Oil & grease, Nutrients, Ammonia, Other flow regime, Habitat, Fecal coliform

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
Northwest Gas N Go	ID0027731	PND	Sand Creek	4/5	ID17010214PN048_03a	Case by Case	Tier 1		Sediment. Cannot verify.
Notus (WWTP), City of	ID0021016	EXP	Conway Gulch	4/5	ID17050114SW001_06	Tier 1	Tier 1		Total phosphorus, Temperature, Sediment, Low flow, Physical substrate habitat alteration, Fecal coliform
Orofino (WWTP), City of	ID0001058	EFF	Clearwater River	3	ID17060306CL021_06	Case by Case			
Orofino, City of	ID0020150	ADC	Clearwater River	3	ID17060306CL021_06	Case by Case			
P4 Production LLC	ID0001198	ADC	Soda Creek	4/5	ID16010201BR023_02a	Case by Case	Tier 1	1	Total phosphorus, Sediment
Parma, City of	ID0021776	ADC	Sand Hollow Creek	4/5	ID17050114SW017_03	Tier 1	Tier 1		Sediment, Fecal coliform
Paul Housing Authority	ID0025267	ADC	Lateral 185		canal	Tier 1			
Payette (WWTP), City of	ID0020672	ADC	Payette River	4/5	ID17050122SW001_06	Tier 1	Case by Case		Temperature, *E. coli*
Pierce (WWTP), City of	ID0020206	EXP	Orofino Creek	3	ID17060306CL039_04	Case by Case			

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
Pierce (WWTP), City of	ID0020893	EFF	Canal Creek	2	ID17060306CL039_02	Tier 2		2.33	
Plummer (WWTP), City of	ID0022781	EFF	Plummer Creek	3	ID17010304PN002_03	Case by Case			
Pocatello (WWTP), City of	ID0021784	ADC	Portneuf River	4/5	ID17040208SK001_05	Tier 1	Tier 1		Sediment, Total Nitrogen, Total Phosphorus, Temperature, Oil & grease, Nutrients, Dissolved oxygen, Habitat, Fecal coliform
Post Falls (WWTP), City of	ID0025852	ADC	Spokane River	4/5	ID17010305PN003_04	Case by Case	Tier 1		Cadmium, Lead, Zinc, Total phosphorus
Potlatch (WWTP), City of	ID0022501	EFF	Palouse River	3	ID17060108CL010_04	Case by Case			
Potlatch Corp. St. Maries Complex	ID0000019	EXP	Saint Joe River	3	ID17010304PN005_06	Case by Case			
Preston (WWTP), City of	**ID0020214**	**EFF**	**Worm Creek**	**4/5**	**ID16010202BR005_02b**	**Tier 2**	**Tier 1**		**Total phosphorus, Sediment**
Priest River (WWTP), City of	ID0020800	ADC	Pend Oreille River	4/5	ID17010214PN002_08	Case by Case	Tier 1		Temperature, Dissolved gas saturation

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
Rescue Mine	**ID0026077**	**PND**		**4/5**	**ID17060207SL007_03a**	**Tier 2**	**Tier 1**	**2.25**	**Physical substrate habitat alteration, 305(b) hydrography GIS layer says this is Warren Creek**
Rexburg (WWTP), City of	ID0023817	ADC	South Fork Teton River	2	ID17040204SK001_05	Tier 2			
Richfield (WWTP), City of	**ID0021211**	**EFF**	**Little Wood River**	**4/5**	**ID17040221SK001_05**	**Tier 2**	**Tier 1**		**Total phosphorus, Sediment, Temperature**
Rigby, City of	ID0020010	EFF	Dry Bed Canal	3	ID17040201SK004_06	Case by Case			
Riggins (WWTP), City of	ID0020931	EXP	Salmon River	3	ID17060209SL019_07	Case by Case			
Rings Hotel Therapeutic Pool	ID0025194	PND	Portneuf River	4/5	ID17040208SK016_03	Tier 1	Tier 1		Temperature, Total phosphorus, Sediment, Oil & grease, Total nitrogen, Low flow, Fecal coliform
Ririe (WWTP), City of	ID0026174	ADC	Dry Bed Canal and Enterprise Canal		canal	Tier 1			
Riverdale Resort	**ID0026085**	**ADC**	**Bear River**	**4/5**	**ID16010202BR005_02b**	**Tier 2**	**Tier 1**		**Total phosphorus, Sediment**

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
Riverside Water & Sewer Dist. (WWTP)	ID0024503	ADC	Clearwater River	4/5	ID17060306CL013_07	Case by Case	Tier 1		Dissolved gas saturation
Riverside Water & Sewer Dist. Municipal Water Plant	ID0021237	EFF	Clearwater River	3	ID17060306CL021_06	Case by Case			
Roaring Springs Water Park	ID0027952	EFF	Tenmile Creek	4/5	ID17050114SW008_03	Tier 1	Tier 1		Sediment, Fecal coliform
Roberts (WWTP), City of	ID0026913	ADC	Roberts Slough		canal	Tier 1			
Rockland (WWTP), City of	ID0022047	ADC	Rock Creek	4/5	ID17040209SK008_04	Case by Case	Tier 1		Sediment
Salmon (WWTP), City of	ID0020001	EFF	Salmon River	4/5	ID17060203SL041_07	Case by Case	Tier 1		Cause Unknown
Sand Creek (WWTP)	**ID0024350**	**EFF**	**Little Sand Creek**	**4/5**	**ID17010214PN053_02**	**Tier 2**	**Tier 1**	**2**	**Sediment. Believe shapefile is incorrect.**
Sandpoint (WWTP), City of	ID0020842	ADC	Pend Oreille River	4/5	ID17010214PN002_08	Case by Case	Tier 1		Temperature, Dissolved gas saturation

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
Santa-Fernwood Sewer Dist. (WWTP)	**ID0022845**	**ADC**	**Saint Maries River**	**4/5**	**ID17010304PN012_05**	**Tier 2**	**Tier 1**		**Sediment, Temperature**
Seneca Foods Corp.	ID0000213	EXP	Payette River	4/5	ID17050122SW001_06	Tier 1	Case by Case		Temperature, *E. coli*
Shelly (WWTP), City of	ID0020133	ADC	Snake River	4/5	ID17040206SK022_04	Tier 1	Tier 1		
Shoshone (WWTP), City of	ID0023728	EFF	Little Wood River	3	ID17040221SK001_05a	Case by Case			
Silver Valley	ID0000027	ADC	Lake Creek	4/5	ID17010302PN009b_02	Case by Case	Tier 1		Cause unknown (metals suspected)
Silver Valley Inc., Caladay Mine	ID0025429	ADC	Lake Creek	4/5	ID17010302PN009b_02	Case by Case	Tier 1		Cause unknown (metals suspected)
Silver Valley Inc., Caladay Mine	ID0025429	ADC	South Fork Coeur d'Alene River	4/5	ID17010302PN001_03	Case by Case	Tier 1	1	Cadmium, Lead, Zinc, Sediment
Simplot Meat Products, LLC	ID0026964	ADC	Indian Creek	4/5	ID17050114SW002_04	Tier 1	Tier 1		Temperature, Sediment, Fecal coliform
Smelterville (WWTP), City of	ID0020117	EXP	South Fork Coeur d'Alene River	4/5	ID17010302PN001_04	Case by Case	Tier 1		Cadmium, Lead, Zinc, Sediment

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
Soda Springs (WWTP), City of	ID0020818	ADC	Bear River	4/5	ID16010201BR001_0L	Case by Case	Tier 1		Total phosphorus, Sediment
Sorrento Lactalis, Inc. Swiss Village	ID0028037	EFF	Purdam Drain		canal	Tier 1			
South Fork Coeur d'Alene River Sewer Dist. Mullan (WWTP)	ID0021296	EXP	South Fork Coeur d'Alene River	4/5	ID17010302PN011_03	Case by Case	Tier 1		Cause unknown (metals suspected)
South Fork Coeur d'Alene River Sewer Dist. Page (WWTP)	ID0021300	EXP	South Fork Coeur d'Alene River	4/5	ID17010302PN001_04	Case by Case	Tier 1		Cadmium, Lead, Zinc, Sediment
St. Anthony (WWTP), City of	ID0020401	ADC	Henrys Fork	3	ID17040203SK002_06	Case by Case			
St. Maries (WWTP), City of	ID0022799	EFF	Saint Joe River	3	ID17010304PN005_06	Case by Case			
Star Water & Sewer Dist.	ID0023591	EXP	Lawrence Kennedy Canal		canal	Tier 1			

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
Sun Valley Co.	ID0027928	EFF	Big Wood River	4/5	ID17040219SK007_05	Case by Case	Tier 1		Other flow regime
Sunshine Mine	ID0000060	ADC	South Fork Coeur d'Alene River	4/5	ID17010302PN001_03	Case by Case	Tier 1	1	Cadmium, Lead, Zinc, Sediment
Sunshine Precious Metals, Inc	ID0000159	ADC	South Fork Coeur d'Alene River	4/5	ID17010302PN001_03	Case by Case	Tier 1	1	Cadmium, Lead, Zinc, Sediment
Tensed (WWTP), City of	ID0025101	ADC	Hangman Creek	3	ID17010306PN001_03a	Case by Case			
The Meadows, LLC Mobile Home Park	ID0024422	EXP	Big Wood River	4/5	ID17040219SK007_05	Case by Case	Tier 1		Other flow regime
Thompson Creek Mining Co.	ID0025402	ADC	Thompson Creek	2	ID17060201SL028_03	Tier 2			
Thompson Creek Mining Co.	ID0025402	ADC	Thompson Creek	2	ID17060201SL028_03	Tier 2			
Thompson Creek Mining Co.	ID0025402	ADC	Salmon River	2	ID17060201SL031_05	Tier 2			
Thompson Creek Mining Co.	ID0025402	ADC	Squaw Creek	2	ID17060201SL021_04	Tier 2			

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
Troy (WWTP), City of	ID0023604	EXP	West Fork Little Bear Creek	4/5	ID17060306CL061_03	Tier 1	Tier 1		
Twin City Foods, Inc.	ID0025607	ADC	Clearwater River	4/5	ID17060306CL001_07	Case by Case	Tier 1		Dissolved gas saturation
Twin Falls (WWTP), City of	ID0021270	ADC	Snake River	4/5	ID17040212SK019_07	Case by Case	Tier 1		Total phosphorus, Sediment, Other flow regime
University of Idaho Aquaculture Lab	ID0027154	ADC	Paradise Creek	4/5	ID17060108CL005_02	Tier 1	Tier 1	1	Ammonia, Nutrients, Sediment, Temperature, Other flow regime, Habitat, *E. coli*, Fecal Coliform
US Air Force, Mountain Home AFB (WWTP)	ID0027642	ADC	Trib to Canyon Creek (N43:3:19 W115:53:28)		canal	Tier 1			
US Army Corps. of Eng. Albeni Falls Dam	ID0020681	ADC	Pend Oreille River	4/5	ID17010216PN002_08	Case by Case	Tier 1		Temperature, Dissolved gas saturation
USFS Fenn Ranger Station	ID0020711	EXP	Selway River	3	ID17060302CL001_06	Case by Case			
USFS Red River Ranger Station	ID0020699	ADC	Red River	4/5	ID17060305CL045_03	Case by Case	Tier 2	3	Temperature

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
USFS Slate Creek Ranger Station, WWTP	ID0020737	EXP	Salmon River	3	ID17060209SL011_07	Case by Case			
Van Waters & Rogers, Inc	ID0027855	PND	Finch Lateral		canal	Tier 1			Cannot verify - likely map error.
Viola Water & Sewer Dist.	ID0026310	ADC	Fourmile Creek	3	ID17060108CL007b_02	Case by Case			
Walla Walla Shopping Center Assoc.	ID0027511	PND	South Slough		canal	Tier 1			Cannot verify.
Weippe (WWTP), City of	ID0020354	ADC	Jim Ford Creek	4/5	ID17060306CL035_03	Tier 1	Tier 1	0.67	Nutrients, Flow alteration, Habitat, Sediment, Temperature, Fecal coliform. Shapefile incorrect
Weiser (WWTP), City of	ID0001155	EFF	Snake River	4/5	ID17050201SW004_08	Case by Case	Tier 1		Dissolved oxygen, Total phosphorus, Temperature, Sediment
Weiser (WWTP), City of	ID0020290	ADC	Snake River	4/5	ID17050201SW004_08	Case by Case	Tier 1		Dissolved oxygen, Total phosphorus, Sediment, Temperature
Wilder (WWTP), City of	ID0020265	EFF	Wilder Ditch Drain (N43"40"39 W 116:54:06)		canal	Tier 1			

Facility Name	NPDES ID	Status[a]	Permit Stream	IR Cat	Assessment Unit (AU)	Contact Recreation Tier[b]	Aquatic Life Tier[b]	Index Rating[c]	Comments
Wilderness Ranch (WWTP)	**ID0028312**	**PND**	**Mores Creek (N43:54:14 W 115:59:18)**	**4/5**	**ID17050112SW009_06**	**Tier 2**	**Tier 1**	**0.67**	**Temperature, Sediment. Shapefile and coordinates from permit suggest discharge is to Clear Creek (Tier 2).**
Winchester (WWTP), City of	ID0020184	EXP	Lapwai Creek	2	ID17060306CL008_03	Tier 2			Cannot verify location of discharge on map.
Worley, City of	ID0022713	EXP	Rock Creek	3	ID17010306PN005_02	Case by Case			
XL Four Star Beef, Inc.	**ID0000787**	**ADC**	**Indian Creek**	**4/5**	**ID17050114SW003_04**	**Tier 2**	**Tier 1**	**0.67**	**Temperature**

Note: WWTP – Wastewater Treatment Plant

[a] ADC – Administratively Continued; EXP – Expired; EFF – Effective; NON – Not Needed

[b] This table was prepared looking only at BURP data and does not take into account all data that may be available and relevant to making a water body tiering determination.

[c] An average index rating of 2 or greater means biological and aquatic habitat data indicate a water body supports its aquatic life uses. See the *Water Body Assessment Guidance* (Grafe et al. 2002) for more information on index scores.

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Appendix D. Examples of Water Body–Specific Classification

These examples draw on information contained in Table 1 (page 8) that explains the categories of the Integrated Report and Table 2 (page 13) that translates Integrated Report category to tier of antidegradation protection.

Water Body Classification

1. If water is listed in Category 1 or 2 of the Integrated Report, then it receives Tier 2 protection for all uses.

   Examples of assessment units (AUs) in this category include: ID17060306CL008_03 Lapwai Creek, ID17050123SW016_04 North Fork Payette River, ID17060108CL016_04 Palouse River, ID17060306CL039_02 Canal Creek, ID17050122SW003_06 Payette River, ID17040204SK001_05 South Fork Teton River, ID17060201SL028_03 Thompson Creek, and ID17060201SL031_05 Salmon River.

2. If water is listed in Category 3 of the Integrated Report, then case-by-case evaluation is necessary.

   Examples of AUs in this category include: ID17060306CL022_06 Clearwater River, ID17050122SW011_02 Payette River, ID17040221SK000_02 Little Wood River, ID17040221SK001_05a Little Wood River, and ID17060108CL007b_02 Fourmile Creek.

3. If water is listed in Category 4 or 5 of the Integrated Report, the following questions must be addressed:

   a. Are recreational uses supported?

      i. If no, water is Tier 1 for recreation.

         An example of this would be ID17040204SK050_02 Woods Creek – source to mouth. This AU is listed as not supporting contact recreation uses due to E. coli violations. The aquatic life uses are unassessed.

      ii. If yes, water is Tier 2 for recreation.

         An example of this would be ID16010202BR005_02b Worm Creek. This AU fully supports its contact recreation use and is listed in Category 4a of the Integrated Report for not supporting cold water aquatic life uses.

      iii. If unassessed, water is evaluated on a case-by-case basis.

         An example of this would be ID17010302PN001_04 South Fork Coeur d'Alene River. This AU is unassessed for recreation and is therefore a case-by-case determination.

   b. Are aquatic life uses supported?

      i. If yes, water body receives Tier 2 protection for aquatic life.

      ii. If no, is the water body listed for anything other than temperature, pH, or dissolved oxygen?

         1) If yes, water body is Tier 1 for aquatic life.

An example of this would be ID17010302PN001_04 South Fork Coeur d'Alene River. It is in Categories 4a and 5 of the Integrated Report for not supporting the cold water aquatic life beneficial use. The causes for listing include cadmium, lead, zinc, and sediment. Because this AU is listed for pollutants other than the three outlined in the rule, it is provided Tier 1 protection.

2) If no (i.e., the water body is listed for only temperature, pH, or dissolved oxygen), then does biological assessment indicate a healthy and balanced community?

   a. If yes, water body is Tier 2 for aquatic life.

   b. If no, water body is Tier 1 for aquatic life.

   c. If no DEQ bioassessment data are available, then water body is Tier 1 for aquatic life.

      An example of this would be ID17060201SL021_04 Squaw Creek. It is listed in Category 5 as not supporting its aquatic life use due to temperature. There are no current biological data available to evaluate the health of the biological community; therefore, it would be evaluated as a Tier 1 water body.

iii. If unassessed, water body is evaluated on a case-by-case basis.

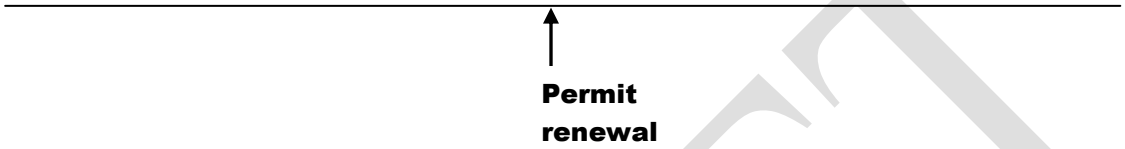
An example of this would be ID17040216SK001_04 Birch Creek-Reno Ditch to playas. This AU is unassessed for aquatic life and is therefore determined on a case-by-case basis.

Appendix E. Examples of New and Increased Discharge

In each of the following examples, the line represents the level of discharge with time; the beginning of the line indicates commencement of the discharge.

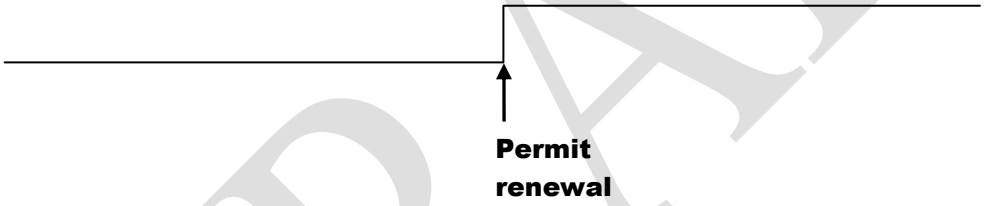
Examples of New and Increased Discharge

Discharge A—Existing permitted discharge, no increase



In this situation, permitted discharge does not increase with permit renewal; thus, there is no degradation of water quality. Discharge receives Tier 1 review only.

Discharge A2—Existing permitted discharge, permitted discharge increases



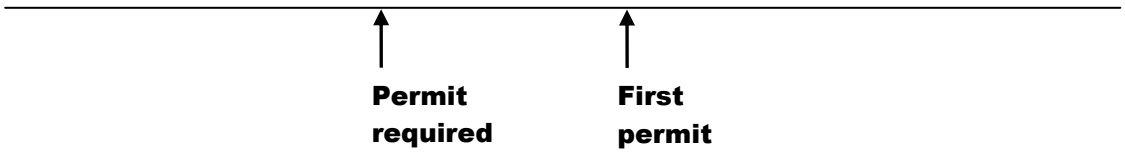
In this situation, permitted discharge increases with permit renewal; thus, there is degradation of water quality. *If* this degradation is significant and of a Tier 2 water body, then there will be Tier 2 analysis in addition to Tier 1 review.

Discharge B—New permitted discharge

In this situation, there will likely be degradation of water quality. *If* this degradation is significant and of a Tier 2 water body, then there will be Tier 2 analysis in addition to Tier 1 review.

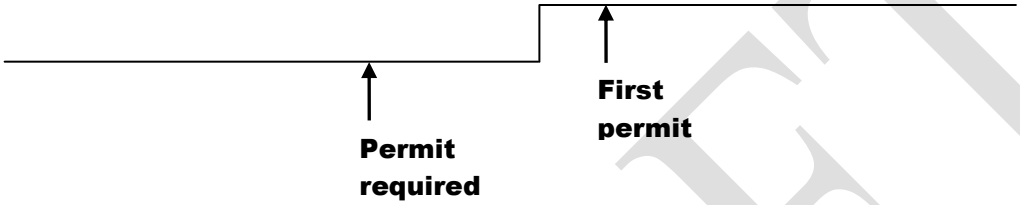
Examples of Existing Discharge without a Previous Permit

Discharge C—Change in regulation, existing discharge with no permit required when discharge commenced, no increase in discharge since permit required



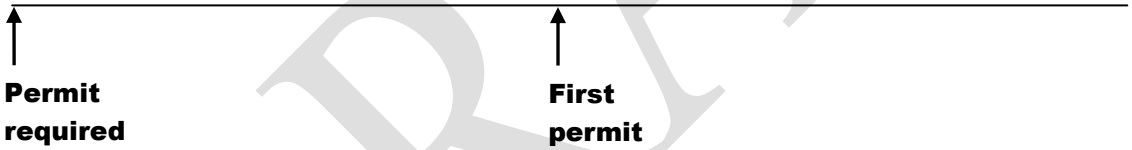
In this situation, discharge does not increase with the first permit; thus, there is no degradation of water quality. Discharge receives Tier 1 review only.

Discharge C2—Change in regulation, existing discharge with no permit required when discharge commenced, discharge increases since permit required



In this situation, discharge increases with first permit; thus, there is degradation of water quality. *If* this degradation is significant and of a Tier 2 water body, then there will be Tier 2 analysis in addition to Tier 1 review.

Discharge D—Illegal discharge, existing discharge without required permit



In this situation, a permit was required when the discharge commenced. When permitted for the first time, this discharge will be treated as a new discharge (Discharge B above). Baseline will be water quality without discharge (i.e., upstream water quality). Thus, there will be degradation of water quality. *If* this degradation is significant and of a Tier 2 water body, then there will be Tier 2 analysis in addition to Tier 1 review.

Appendix F. Example of Tier 2 Antidegradation Review

ANTIDEGRADATION REVIEW
Army Corps of Engineers Northwestern Division, Walla Walla District (NWW)
Application #NWW-043200012
Blackfoot Bridge Phosphate Mine

Idaho Department of Environmental Quality

May 4, 2011

Overview

In conducting this antidegradation review, the Idaho Department of Environmental Quality (DEQ) considered information presented in various documents including but not limited to the following:

- Application for Section 404 Permit, Blackfoot Bridge Project;
- Army Corps of Engineers Public Notice (August 27, 2009);
- *Final Environmental Impact Statement, Blackfoot Bridge Mine* (BLM, March 2011);
- *Final Water Management Plan, Proposed Blackfoot Bridge Mine* (AMEC Geomatrix November 2010);
- *Final Compensatory Mitigation Plan for Waters of the U.S., Blackfoot Bridge Project* (AMEC Geomatrix, August 2010);
- *Blackfoot Bridge Mine Environmental Monitoring Plan* (P4 Production, LLC [P4], September 2010);
- *Final Adaptive Management Plan for Water Management System, Blackfoot Bridge Project* (P4, September 2010);
- *Supplemental 404(b)(1) Analysis for Least Environmental Damaging Practicable Alternatives for Wetlands and Other Waters of the U.S. Blackfoot Bridge Project* (P4, January 2010); and
- *Compliance with Idaho Antidegradation Policy* (AMEC Geomatrix, July 2010).

Antidegradation Policy

The Idaho Water Quality Standards (WQS) contain an antidegradation policy providing three levels of protection to water bodies in Idaho (IDAPA 58.01.02.051). The first level of protection (Tier 1 protection) applies to all water bodies and assures that existing uses of a water body will be maintained. The second level of protection (Tier 2 protection) applies to those water bodies that are considered high quality and assures that no lowering of water quality will be allowed unless it is deemed to be necessary to accommodate important economic or social development. The third level of protection (Tier 3 protection) applies to water bodies that have been designated outstanding resource waters and requires activities to not cause a lowering of water quality.

In March 2011, Idaho incorporated additional sections addressing antidegradation implementation in the Idaho Code. At the same time, Idaho adopted antidegradation implementation procedures in its WQS. DEQ submitted the antidegradation implementation

procedures to EPA for approval on April 15, 2011. DEQ is employing a water body-by-water body approach to implementing Idaho's antidegradation policy. This approach to antidegradation implementation means that any water body fully supporting its beneficial uses will be considered high quality. Any water body not fully supporting its beneficial uses will be provided Tier 1 protection for the impaired use, unless specific circumstances warranting Tier 2 protection are met. The most recent federally approved Integrated Report and supporting data are used to determine support status and the tier of protection.

Description of the Project

P4 is proposing to develop a new open pit phosphate mine (approximately 1469 acres) in a small tributary drainage to the Blackfoot River. The proposed project will be comprised of several open pits, external overburden piles, a haul road, an ancillary ore loading and handling area, and water management ponds and associated drainage ditches. The phosphate ore will be crushed and screened on-site; chemical processing of the ore will occur off-site at the Soda Springs elemental phosphorus plant.

This project will involve the discharge of dredge and fill material into 9.43 acres of waters of the U.S., of which 6.11 acres are wetlands and the remaining 3.32 acres are non-wetlands. In conducting its review of compliance with Idaho WQS, DEQ looked at the potential impacts of the activity as a whole on water quality in the receiving water bodies potentially affected by the project. Those water bodies include the Blackfoot River, the unnamed tributary to the Blackfoot River, State Land Creek, and Wetlands X and M (as defined in the project documentation).

Pollutants of Concern

Based on experiences with similar mining activities as well as information provided by P4, the primary pollutants of concern for this proposed Blackfoot Bridge Phosphate Mine are: sediment, phosphorus, pH, cadmium, chromium, copper, iron, lead, mercury, nickel, selenium, and zinc.

Receiving Water Body Level of Protection

According to the most recent EPA-approved Integrated Report (DEQ, 2008), the Blackfoot River is not fully supporting its cold water aquatic life beneficial use due to sedimentation, elevated concentrations of selenium and temperature, and low dissolved oxygen concentrations. The Blackfoot River has an EPA-approved sediment total maximum daily load (TMDL), which describes how the river can achieve water quality standards and fully support its beneficial uses. State Land Creek is also not fully supporting its cold water aquatic life and salmonid spawning beneficial uses due to sedimentation and elevated concentrations of selenium. There are no EPA-approved TMDLs for State Land Creek. Because these waters are not fully supporting their aquatic life beneficial uses, DEQ will provide a Tier 1 level of protection for the aquatic life beneficial uses. DEQ has not assessed the support status of recreational uses in these water bodies; therefore, DEQ must determine the appropriate level of antidegradation protection for recreation on a case-by-case basis. Because no data is currently available, the applicant has agreed to consider these water bodies high quality for recreational uses for the purposes of this antidegradation review in order to prevent further delays in the issuance of this certification. Thus, DEQ has provided Tier 2 antidegradation protection to recreational uses in the Blackfoot River and State Land Creek. DEQ will reevaluate the level of antidegradation protection

afforded to recreational uses based on available information when preparing future 401 certifications for federally-permitted activities that may affect these water bodies.

The unnamed tributary and its associated wetlands are part of assessment unit ID17040207SK010_02. This assessment unit is included in Category 2 of the EPA-approved 2008 Integrated Report (DEQ, 2008), and is fully supporting its cold water aquatic life and contact recreation beneficial uses. Therefore, the unnamed tributary and associated wetlands are considered high quality and DEQ will provide a Tier 2 level of protection.

Protection and Maintenance of Existing Uses

The Blackfoot River, State Land Creek, and unnamed tributary are designated (IDAPA 58.01.02.150.09) for the following beneficial uses: coldwater aquatic life, primary contact recreation, salmonid spawning, agricultural water supply, industrial water supply, domestic water supply, wildlife habitat, and aesthetics (IDAPA 58.01.02.100.03.b.c, 04, and 05). There is no additional information that suggests there are existing uses other than those already designated or presumed in this reach of the Blackfoot River. The segment of the Blackfoot River adjacent to the project is also considered a Special Resource Water (SRW).

Three main types of discharges, or potential discharges to waters of the U.S. are associated with this project: discharge of dredge or fill material, discharge of stormwater, and potential discharge of seepage water. P4 is proposing to implement a water management system and associated adaptive management plan and environmental monitoring plan that will greatly reduce the potential for contaminated stormwater or seepage water from entering into waters of the U.S. Contaminated stormwater, collected seepage water, and water from the mine pit will be pumped to water management ponds where the water will evaporate over time. Water that meets water quality standards will be discharged to waters of the U.S.

Numeric and narrative criteria are set at levels designed to protect existing beneficial uses. In order to protect and maintain designated and existing beneficial uses, the activity must comply with these criteria. Implementation of the project will be done in a manner that does not violate numeric or narrative water quality criteria in waters of the state that are in or adjacent to the project area.

A TMDL for sediment was developed for the Blackfoot River by DEQ and approved by EPA in 2002. The TMDL sets a target of 80% stream bank stability to reduce sediment impacting the Blackfoot River. In addition, the 2006 Implementation Plan for the Blackfoot River Sediment TMDL provides that mining activities implement appropriate and approved BMPs to minimize erosion and sediment delivery to adjacent water bodies. An "Assessment of Potential Mitigation Sites and Preliminary Design – Blackfoot Bridge Project, Caribou County, Idaho" was prepared by AMEC Geomatrix for P4 Production, LLC (December 2009) to identify areas and methods where wetland habitat would be restored to offset the loss of 9.43 acres associated with the proposed Blackfoot Bridge Mine. This plan proposes streambank and wetland restoration on the mainstem Blackfoot River within the Fox Hills Ranch (owned by Monsanto Corporation) in close proximity to the Blackfoot Bridge Project. Approximately 7 miles of the Blackfoot River meanders through the Fox Hills Ranch. Preliminary data would suggest that of the ~74,000 feet of streambank in this reach, ~5500 feet or roughly 7-8% are in a degraded condition and would

lend themselves to restoration. Given this information and the observations of DEQ field staff it would appear that streambank conditions within the Fox Hills Ranch is likely meeting the 80% streambank target and will improve to near reference if the restoration activities proposed by P4/Monsanto are successful. Moreover, it is DEQ's opinion that BMPs identified in the DEIS and to be detailed in the Storm Water Pollution Prevention Plan, including the monitoring that will be required by the Environmental Monitoring Plan provide appropriate BMPs to minimize erosion and sediment delivery to adjacent water bodies. Therefore, the project will be consistent with the approved sediment TMDL and its implementation plan.

In sum, because the Blackfoot Bridge Project will comply with applicable narrative and numeric criteria, will be consistent with the approved sediment TMDL, the existing beneficial uses of all potentially affected waters of the U.S. will be maintained and protected.

Protection of High Quality Waters

As indicated previously, the unnamed tributary and adjacent wetlands are considered high quality. Blackfoot River and State Land Creek are also considered high quality waters for recreational uses. As such, according to IDAPA 58.01.02.051.02, that:

> "quality shall be maintained and protected unless the Department finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the Department's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the Department shall assure water quality adequate to protect existing uses fully. Further, the Department shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and cost-effective and reasonable best management practices for nonpoint source control."

Based on the information provided by P4, DEQ concluded the project would not result in a lowering of water quality in the Blackfoot River and State Land Creek. However, because modeling data indicates that concentrations of selenium in the unnamed tributary have the potential to reach 0.8 ug/L, DEQ concluded that the project does have potential to significantly degrade water quality in the unnamed tributary and adjacent wetlands. Because of this conclusion, DEQ requested that P4 provide documentation summarizing the alternatives considered and the social or economic justification for the project. In addition, DEQ examined whether existing point source discharges in the drainage were complying with the highest statutory and regulatory requirements and whether nonpoint sources were achieving all required cost-effective and reasonable best management practices (BMPs).

Alternatives Analysis

P4 examined at least eighteen different alternatives for implementing the project. These alternatives were evaluated in the Final Environmental Impact Statement (BLM, 2011) or the Supplemental Alternatives Analysis (P4, 2010). In choosing the least environmental damaging practicable alternative, P4 considered the following factors: whether the alternative was

practicable (e.g. achieve the project purpose), the impacts on the aquatic ecosystem, and other environmental impacts.

P4 has selected an alternative that balances practicality and minimization of environmental impacts. P4 selected an alternative that couples placement of a geosynthetic clay laminate liner cover system over the core Meade Peak materials in the EOP and overburden in the pits with installation of a mine water management system. The water management system will encompass an overburden seepage management system, stormwater management system, and a groundwater underdrain system. DEQ considers this to be the least degrading alternative that is reasonable.

Social or Economic Justification
The Blackfoot Bridge Mine will allow P4 to continue operations in Caribou Country for another 17 years. As described in the *Compliance with Idaho Antidegradation Policy* (AMEX Geometrix, 2010), implementation of this project "would maintain continued mining employment opportunities in Caribou and surrounding counties, enhance community stability, and provide for continued payment of local, state, and federal taxes by the P4 and its employees." DEQ considers the Blackfoot Bridge Mine an important social or economic development for the area.

Point and Nonpoint Source Controls
P4 is the only known point source in the unnamed tributary drainage. P4 is currently conducting exploration activities and stormwater discharges associated with the activity are covered under the 2003 construction stormwater general permit. EPA has not conducted any compliance inspections on P4's exploration activities. Because P4 has coverage under the CGP, DEQ believes that the highest statutory and regulatory requirements are in place. Current nonpoint source activities in the watershed are primarily agricultural; however, these activities are not expected to occur in the drainage once the Project begins. The mine will be the only nonpoint source activity occurring in the drainage and will be implementing all required cost-effective and reasonable BMPs.

Summary
This antidegradation review summarizes DEQ's findings based upon review of the documents identified in the "Overview" section above. Based on its review of these referenced documents, DEQ has concluded that the potential degradation of water quality in the unnamed tributary and adjacent wetlands that may result from the Blackfoot Bridge Mine operation is necessary to accommodate important social or economic development in the area. Additionally, DEQ has concluded that all cost-effective and reasonable BMPs that are required of NPS activities are being implemented. Furthermore, as long as P4 complies with the terms and conditions of the certification, federal Record of Decision, and the federal 404 permit, then the activity is expected to protect existing and designated beneficial uses in the waters of the U.S. within and adjacent to the project area.

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Appendix G. Decision Tree for Baseline Water Quality

Baseline Water Quality as of July 1, 2011

Baseline water quality is that which is permitted to occur as of July 1, 2011, but may not actually be observable on July 1, 2011, because permitted sources are not discharging at permit limits.

1) There are water quality data for pollutant(s) of concern (i.e., an existing source with appropriate discharge monitoring report [DMR] data) upstream of discharge.
   A. There are no sources of pollutant(s) of concern upstream.

      Instream data above source being evaluated will be characteristic of water quality (WQ) on July 1, 2011, whether collected before or after that date.

      Use ambient upstream WQ measurements to characterize baseline (e.g., the 95th percentile or other statistic appropriate to the pollutant of concern based on at least a year of monthly data) closest to or including to July 1, 2011, if possible.
   B. There are other sources of pollutant(s) of concern upstream.
      I. If there have been no changes in discharge between the time of WQ measurements and July 1, 2011, then data will be characteristic of July 1, 2011.

         Use ambient upstream WQ measurements, as in 1-A above (e.g., 95th percentile) *and* take into account changes in load (e.g., due to existing upstream sources) **as if they were discharging at their permitted maximum**. Determining changes in load should be a matter of consulting the permitting records.
      II. There have been new or increased discharges between the time of WQ measurements and July 1, 2011, so data are not characteristic of WQ on July 1, 2011.

         It will be necessary to estimate baseline WQ taking into account changes in load due to new or increased upstream sources **as if they were not discharging** *and* any existing sources **as if they were discharging at their permitted maximum**. Determining changes in load should be a matter of consulting the permitting and DMR records.
2) There are not water quality data for pollutant(s) of concern as of July 1, 2011, (i.e., working with a new source or inadequate data from an existing source).
   A. Ask discharge applicant to acquire 1 year of monthly data for pollutant(s) of concern, and then proceed as above.

For conservative pollutants, taking into account changes in loading that have been permitted to occur but may not yet be realized may entail simply subtracting out the changes in pollutant loading that have occurred since July 1, 2011 (i.e., assume no loss of mass in transport). Nonconservative pollutants (e.g., ammonia, DO, nutrients, and temperature) will require modeling of pollutant fate and transport.

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Appendix H. Questions and Answers

[To be added after public comment.]

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Glossary

In this glossary, terms are not defined so much as explained. Each term is explained the way it is used in this guidance and the way it should be understood for purposes of antidegradation analysis. Several of the terms also have specific definitions in statute or rules, and where that is the case, those definitions are provided here as well.

Adverse: A change in water quality to conditions that are worse for support of a beneficial use (e.g., an increase in temperature is adverse to cold water aquatic life, as is a decrease in dissolved oxygen).

Administrative Record: Documents and information that support an administrative action.

Affordable: Pollution-control alternatives being within the financial means of most dischargers or activities of the same industrial classification (e.g., Standard Industrial Classification (SIC) code) or size for a publically owned treatment works (POTW) (major or minor). If a wastewater treatment alternative is not affordable, it is not a reasonable alternative for purposes of Tier 2 antidegradation analysis.

Alternatives Analysis (AA): An evaluation of reasonable alternatives for regulated activities or discharges that might degrade water quality, including less-degrading alternatives, nondegrading alternatives, and no-discharge alternatives. Examples of such alternatives include treatment process changes, relocated discharge facilities, land application, reuse, and subsurface discharges.

Ambient: The prevailing water quality conditions in a water body, as opposed to effluent quality.

Antidegradation: A regulatory policy and implementation procedure to protect existing and designated uses of surface waters and to specify how DEQ will determine whether and to what extent existing surface water quality may be degraded.

Applicant: Applicant means an applicant for a permit or license subject to certification under section 401 of the Clean Water Act.

Assessment Unit (AU): The geographic unit for reporting water quality in Idaho's Integrated Report. AUs are a subdivision of water body identification units (identified by water body identification numbers, or WBIDs), are based on stream size, and bound an area of water more likely to be of similar quality than the larger WBID they are a part of.

Assimilative Capacity: Assimilative capacity is the ability of a water body to handle added pollutants without causing a failure to support a beneficial use. It is the amount (load) of a pollutant that can be added to a specific water body under critical conditions without causing the concentration to exceed water quality criteria associated with a beneficial use. It is calculated as the difference between the criterion level and the ambient level of a pollutant.

Beneficial Uses: All existing and designated uses on or in surface waters of the state. This term is often shortened to just use(s). This term is defined in rule (IDAPA 58.01.02) as:

> Any of the various uses which may be made of the water of Idaho, including, but not limited to, domestic water supplies, industrial water supplies, agricultural water supplies, navigation, recreation in and on the water, wildlife habitat, and aesthetics. The beneficial use is dependent upon actual use, the ability of the water to support a nonexisting use either now or in the future, and its likelihood of being used in a given manner. The use of water for the purpose of wastewater dilution or as a receiving water for a waste treatment facility effluent is not a beneficial use.

Cost-Effectiveness: The cost per unit mass of pollutant removal achieved in wastewater treatment (e.g., dollars per pound); a greater cost per pound means lower cost-effectiveness. In comparing alternative treatment methods, if there is a large jump in cost per unit mass for a relatively small gain in pollutant removal it may be determined that the alternative offering greater pollutant removal but at significantly lower cost-effectiveness is not reasonable. Treatment methods with differences of less than 10% in cost per unit mass of pollutant removed may be considered equally.

Degradation or Lower Water Quality: This term is defined in statute (Idaho Code § 39-3602(6)) as:

> For purposes of antidegradation review, a change in a pollutant that is adverse to designated or existing uses, as calculated for a new point source, and based upon monitoring or calculated information for an existing point source increasing its discharge. Such degradation shall be calculated or measured after appropriate mixing of the discharge and receiving water body.

Designated Use: A beneficial use assigned to a specific water body unit as tabulated in the water quality standards (IDAPA 58.01.02.110–160), as well as the beneficial uses that apply to all waters of the state per IDAPA 58.01.02.100. This term is defined in rule (IDAPA 58.01.02) as:

> Those beneficial uses assigned to identified waters in Idaho Department of Environmental Quality Rules, IDAPA 58.01.02, "Water Quality Standards and Wastewater Treatment Requirements," Sections 110 through 160, whether or not the uses are being attained.

Discharge: This term is defined in rule (IDAPA 58.01.02) as:

> When used without qualification, any spilling, leaking, emitting, escaping, leaching, or disposing of a pollutant into the waters of the state. For purposes of antidegradation review, means "discharge" as used in Section 401 of the Clean Water Act.

Existing Use: Beneficial uses actually attained in or on a surface water body on or after November 28, 1975, whether or not the uses are designated in the water quality standards. This term is defined in rule (IDAPA 58.01.02) as:

> Those beneficial uses actually attained in waters on or after November 28, 1975, whether or not they are designated for those waters in Idaho Department of Environmental Quality Rules, IDAPA 58.01.02, "Water Quality Standards."

Existing Water Quality: A measurement or estimate of surface water quality for pollutants under currently permitted pollutant loads at a specific time and in a specific location.

High Water Quality: Refers to concentrations of parameters that are better than water quality criteria.

High-Quality Water: Refers to overall quality of a water body unconstrained by water quality of individual parameters. For example, outstanding resource waters can be recognized for their high ecological value.

Integrated Report (IR): A report on the status of use support and compliance with water quality standards for state surface waters. The IR meets the regulatory reporting requirements of Clean Water Act sections 305(b) and 303(d). This term is defined in statute (Idaho Code § 39-3602(15)) as:

> "Integrated report" means the consolidated listing and reporting of the state's water quality status pursuant to the federal clean water act.

Jurisdictional Waters: Waters of the United States to which the Clean Water Act applies.

Less-Degrading Alternative: A reasonable alternative to a proposed activity or discharge that would result in less degradation to water quality than the minimum level of pollution control.

Listed: A water body identified in the Integrated Report in Category 5 for failure to meet one or more water quality criteria or for not fully supporting a use (e.g., bioassessment may directly determine aquatic life use is not fully supported).

Necessary: No reasonable alternative(s) exists to prevent or minimize degradation.

Nondegrading Alternative: A reasonable alternative to a proposed or existing discharge that would not result in degradation of existing water quality.

Notice of Intent (NOI): A form or application that applicants must submit to EPA when seeking coverage under a general permit.

Outstanding Resource Water (ORW): A surface water body that the Idaho legislature has designated as an outstanding national or state resource water. An ORW receives Tier 3 antidegradation protection. This term is defined in rule (IDAPA 58.01.02) as:

> A high quality water, such as water of national and state parks and wildlife refuges and water of exceptional recreational or ecological significance, which has been designated by the legislature and subsequently listed in this chapter. ORW constitutes an outstanding national or state resource that requires protection from point and nonpoint source activities that may lower water quality.

Parameter: A characteristic of water quality relevant to a beneficial use. Parameters may be a pollutant that directly changes water quality (e.g., discharge of copper increases copper concentrations) or a characteristic affected by a pollutant. For example, dissolved oxygen is a parameter of concern that is often adversely affected by discharge of oxygen-demanding organic waste (i.e., biological oxygen demand is the pollutant) or indirectly by nutrient enrichment (e.g., phosphorus, a pollutant). The terms parameter and pollutant are often used interchangeably.

Pollutant: This term is defined in rule (IDAPA 58.01.02) as:

> Dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, unitions, chemical waste, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, silt, cellar dirt; and industrial, municipal and agricultural waste, gases entrained in water; or other materials which, when discharged to water in excessive quantities, cause or contribute to water pollution. Provided however, biological materials shall not include live or occasional dead fish that may accidentally escape into the waters of the state from aquaculture facilities.

See glossary entry for Parameter for a discussion of pollutants and parameters.

Presumed Use Protection: Protection of water quality of undesignated water bodies based on the presumption they can support cold water aquatic life and primary or secondary contact recreation.

Reasonable: Alternatives are identified as reasonable based on case-specific information. Generally speaking, nondegrading or less-degrading pollution-control alternatives shall be considered reasonable where the costs of such alternatives are affordable.

Regulated Activity: A regulated activity is an activity or discharge that requires a permit or license and is subject to CWA § 401 certification (e.g., CWA § 402 [NPDES permits], CWA § 404 [dredge and fill permits], or a FERC license).

Short-Term or Temporary Activity: An activity that is as short as possible but lasts for no more than 1 year, is limited in scope, and is expected to have only minimal impact on water quality. This term is defined in rule (IDAPA 58.01.02) as:

> An activity which is as short as possible but lasts for no more than one (1) year, is limited in scope and is expected to have only minimal impact on water quality as determined by the Director. Short-term or temporary activities include, but are not limited to, those activities described in Subsection 080.02.

Social or Economic Justification (SEJ): An evaluation of whether the project causing degradation provides social or economic benefits important to the community in the area in which it occurs.

Technologically Feasible: Capable of accomplishment as may be evidenced by prior success under similar circumstances (e.g., industry standards are in place for a facility or treatment technologies exist at similar facilities).

Tier 1 Protection: Policies and procedures that require an antidegradation review to prevent degradation that would result in a beneficial use not being fully supported or violation of water quality criteria. Tier 1 protection applies to all surface waters as the minimum protection level, regardless of existing water quality.

Tier 2 Protection: Policies and procedures that require an analysis of reasonable alternatives and social or economic considerations to justify significant degradation or a determination the degradation is insignificant. Tier 2 protection applies to all surface waters where existing water quality is sufficient to classify them as high quality on a water body by water body basis.

Tier 3 Protection: Policies and procedures that prohibit any degradation in waters designated in the water quality standards as ORWs. A new or expanded source of pollutants may be allowed if it is offset to avoid degradation.

Water Body: A generic term for a stream, river, lake, reservoir, or other type of water, or a portion thereof, usually identified by name and/or boundaries.

Water Body Unit and WBID: The geographic unit used in Idaho's water quality standards for identifying and designating beneficial uses. A water body unit includes all the named and unnamed tributaries within a drainage and is considered a single unit unless designated otherwise. All water body units are assigned a unique identification number (WBID) in the rules. Water body unit is defined in rule (IDAPA 58.01.02) as:

> Includes all named and unnamed tributaries within a drainage and is considered a single unit unless designated otherwise.

Water Quality Criteria: Elements of water quality standards that are expressed as pollutant concentrations or narrative statements representing the level of chemical, physical, or biological water quality that supports a beneficial use. Numeric criteria are use-specific, applying only to particular beneficial uses. Narrative criteria are general, applying to any and all uses applicable to a water body.