

Turnpenny and Williams (1980) also found survival significantly reduced at 8 mg/L. Other studies found reduced growth of juvenile salmon correlating with IGDO with significant reductions occurring at levels below 9 mg/L (Maret *et al.*, 1993). Growth reductions result in small-sized juveniles that can be poor competitors and face increased risks from predation, disease, and starvation (Mason, 1969; Chapman and McLeod, 1987).

## 2. EPA's Proposed IGDO Criterion

EPA is proposing a water quality criterion for IGDO for the protection of bull trout spawning and salmon and steelhead spawning through fry emergence such that in water bodies or segments in which the numeric temperature criteria for bull trout spawning and salmon and steelhead spawning through fry emergence applies according to the proposed use designation maps, the spatial median IGDO shall not be less than 8.0 mg/L.

Altitude and temperature place physical limitations on the oxygen concentration in water. Oxygen saturation level decreases with increasing altitude and naturally, increasing temperature. (Oregon Department of Environmental Quality, Dissolved Oxygen 1992–1994 Water Quality Standards Review Final Issue Paper, June 1995). Thus, the IGDO criterion for the protection of egg incubation and fry emergence may not be achievable in some locations and times. EPA recognizes the need to have an alternative criterion when high altitude or naturally occurring warm temperatures preclude meeting the 8 mg/L IGDO criterion. Therefore, EPA proposes the following modifying provision to the IGDO criterion. Where barometric pressure, altitude, and air temperature preclude attainment of the IGDO criterion, then the criterion shall be not less than 95 percent of the maximum IGDO level attainable given the barometric pressure, altitude, and air temperature.

EPA requests comment on its proposed IGDO criterion, which is based on the studies cited above, and any additional data relevant to this criterion. EPA also notes that in general, an ambient water column DO level of 11 mg/L will ensure an IGDO of 8 mg/L and requests comment on whether an IGDO criterion is necessary to protect salmonid spawning in waters that already have an 11 mg/L ambient DO criterion.

## E. Antidegradation Implementation Methods

### 1. Background

Section 303 (33 U.S.C. 1313) of the CWA requires States and authorized Tribes to adopt water quality standards for waters of the United States within their applicable jurisdictions. Such water quality standards must include, at a minimum: (1) Designated uses for all water bodies within their jurisdictions, (2) water quality criteria necessary to protect the most sensitive of the uses, and (3) antidegradation provisions consistent with the regulations at 40 CFR 131.12. Antidegradation is an important tool for States and authorized Tribes to use in meeting the CWA's requirement that water quality standards protect the public health or welfare, enhance the quality of water and meet the objective of the CWA to restore and maintain the chemical, physical and biological integrity of the nation's waters.

EPA's regulation at 40 CFR 131.12 requires that States and authorized Tribes adopt antidegradation policies to provide three levels of water quality protection and identify implementation methods. The first level of protection at 40 CFR 131.12(a)(1) requires the maintenance and protection of existing instream water uses and the level of water quality necessary to protect those existing uses (tier 1). Protection of existing uses is the "floor" of water quality protection afforded to all waters of the United States. Existing uses are " \* \* \* those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards." (40 CFR 131.3(e))

The second level of protection is for high quality waters (tier 2). High quality waters are defined in 40 CFR 131.12(a)(2) as waters where the quality is better than the levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water. This high water quality is to be maintained and protected unless the State or authorized Tribe finds, after public participation and intergovernmental review, 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 lower water quality, the State or authorized Tribe must assure water quality adequate to protect existing uses. Further, prior to allowing lower water quality, the State or authorized Tribe must ensure that all applicable statutory and regulatory requirements are achieved for all other new and existing

point sources and all cost-effective and reasonable best management practices required by the State or authorized Tribe are achieved for nonpoint source control.

Finally, the third and highest level of antidegradation protection is for Outstanding National Resource Waters (ONRWs) (tier 3). If a State or authorized Tribe determines that the characteristics of a water body constitute an outstanding National resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, and designates a water body as such, then those characteristics must be maintained and protected. *See* 40 CFR 131.12(a)(3).

In addition to requiring States and authorized Tribes to have an antidegradation policy, 40 CFR 131.12 requires States to identify methods for implementing such a policy. Such methods are not required to be contained in the State's regulation, but as they inform EPA's judgment regarding whether the State's antidegradation policy is consistent with the Federal regulations at 40 CFR 131.12, they are subject to EPA review. Where the State chooses to make such methods part of its water quality standards regulations, section 303(c)(3) of the CWA and EPA's implementing regulations require them to be submitted to EPA for review. When a State or authorized Tribe chooses to develop such methods as guidance or outside of regulation, EPA reviews the methods either in connection with the State or Tribe's submission of an amendment to its antidegradation regulations under CWA section 303(c)(3) or under its discretionary authority to review existing water quality standards under CWA section 303(c)(4).

EPA's regulations at 40 CFR 131.12 provide a great deal of discretion to States regarding the amount of specificity required in antidegradation implementation methods. The regulations do not specify minimum elements for such methods, but do require that such methods not undermine the intent of the antidegradation policy. *See* Advanced Notice of Proposed Rulemaking, 63 FR 36742, 36781 July 7, 1998.

Finally, EPA wishes to explain the applicability of antidegradation provisions to point sources and nonpoint sources. While antidegradation requirements as water quality standards apply to the waterbody, the CWA requires only that antidegradation be applied to point sources because the CWA only gives EPA authority to regulate point sources.