

**Idaho Antidegradation Implementation**  
**Discussion Paper**  
**Socioeconomic Justification**  
**July 12, 2010**

Antidegradation Tier II analysis is made up of two parts, an analysis of alternative methods available to minimize degradation and a determination of whether lowering water quality will accommodate important economic or social development. This briefing will focus on the issues to be considered when evaluating whether a discharge is important for social or economic development, suggest some information that may support a justification of social or economic importance and summarize what neighboring states are doing. Issues identified for discussion are 1) defining what is meant by “important”, 2) differences in analyzing public versus private entities, 3) public involvement and 4) identifying information that may be used to show that a lowering of water quality is important.

**Important social or economic development**

Antidegradation is not an absolute “no growth” policy. It is instead meant to allow the public to have input in determining when degradation of higher quality waters is important to overall societal growth and development. Defining what is important social or economic development is a crucial step in the Tier II analysis and should be done on a case-by-case basis. In some states this evaluation includes an analysis of the monetary costs and benefits associated with the project as well as other use-related and intrinsic benefits. These benefits/costs are identified to the extent possible when evaluating the overall impact of a new or increased discharge to high quality water. Although it may not be possible to quantitatively evaluate these benefits a qualitative description of them is often included and evaluated.

Breaking out the alternatives analysis from the social and economic justification seems to be common in many states’ rules and implementation; however the order of the two actions is occasionally reversed with the determination of importance occurring before the determination of necessity. In situations where importance is determined before necessity (social and economic justification is before alternatives analysis), often the economics play a more significant role in the alternatives analysis. Although we have tried to create a situation in which there are two distinct parts to the Tier II analysis, the line of distinction between the two is imprecise. This paper follows the outline of the draft proposed rule language where the alternatives analysis is done before the justification.

There is a fine balancing act in determining how the economic factors should be weighed in comparison to environmental factors. Thus a socioeconomic justification (SEJ) may be used to estimate the potential change in several indicators of community social and economic health and may provide an understanding of the overall impact of the pollution control costs to help inform the public regarding the trade-offs of allowing a lowering of water quality. Economic indicators to evaluate may include:

- Median household income;
- Community unemployment rate;
- Percent of households below poverty line;
- Impact on community development potential; and

- Impact on property values

Along with economic factors, environmental factors may also be discussed when determining SEJ. Some environmental factors that are highlighted in EPA's interim guidance include use benefits (such as direct consumptive and non-consumptive uses and indirect uses) and intrinsic benefits. Consumptive uses exclude other uses of the water such as diversions for irrigation, or drinking water. Non-consumptive uses leave the water in basically the same state after use, e.g., swimming or fishing. Indirect uses are those uses that benefit from a direct use of the water but do not directly impact the water body. For example, an outfitter for whitewater kayaking has an indirect use and relies on the quality of water and the kayaking experience on the water to induce demand for the product and service. Other indirect uses are those associated recreational and scenic value added by having higher quality waters nearby. Property values that are dependent upon the condition of a nearby lake are another example of an indirect use.

Intrinsic benefits are associated with a resource but do not directly relate to the current use of the resource. Two types of intrinsic benefits are existence value and option value. Existence value is society's willingness to pay to maintain a resource for the sake of the resource itself, regardless of any real or potential opportunity for an individual or community to use that water either now or in the future. Option value is the willingness of society to pay for having a future opportunity to use the resource in either a known or unknown way. Pristine habitats and wildlife refuges are often preserved under the assumption that plant or animal species dependent upon that habitat may yet yield a benefit to the community in a way as yet unknown, such as pharmaceutical, genetic or ecological benefits.

The use-related and intrinsic benefits are often difficult to quantify and evaluate. However, it may be possible to address them through the SEJ or the alternatives analysis using qualitative descriptions.

### **Public versus private entities**

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 gain most of their capital for expenses from tax levies 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. Since governments typically have the authority to levy taxes and distribute pollution control costs among households and businesses, they may be able to recover pollution control costs through user fees. 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 substantial and 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 as well as 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 that evaluate public entities and those that evaluate private entities may both need to be employed to determine an overall economic impact.

### **Public involvement**

One factor in determining public involvement for the SEJ is defining the geographical area over which the impacts are likely to occur. This area will affect and control the overarching decision regarding importance to the community. In the case of municipal operations the area affected will most likely be the immediate municipality or households that the operation serves. For private sector entities the area affected may vary depending upon the area where most of the workers live and where most of the businesses that depend upon the private entity are located. Delineating areas of impact may be done by looking at the service area of the discharger (for POTWs), the employee base (who is likely to work at the facility and where they live), the client base, and people, services and businesses that would be impacted by the discharger (e.g., downstream businesses that depend upon higher water quality, upstream dischargers that may be impacted, etc). There is unfortunately no set and simple rule for determining the affected area or community. It is a decision that will be based upon the judgment of the applicant and state and subject to EPA review.

As with all regulations and policies that have wide ranging impacts on local water quality, public participation is important. The federal regulations also require states to go through public participation as well as intergovernmental coordination before allowing for the degradation of high quality waters. Because there are no economic ratios that can define exactly whether a development is important to the public, justification of degrading higher quality waters should be put before the affected community and explained in a way that clearly defines both the costs and benefits of allowing the degradation.

Avenues for public involvement will of course include publishing the antidegradation review for public comment typical of our 401 certification process. Other avenues may be explored.

### **Suggested tests for socio-economic importance:**

One key question to the Tier 2 analysis is determining that degradation of water quality is important. This justification is based upon social and economic factors of health of the community that may be most impacted by the lowering of water quality.

Once the area of impact has been identified, an analysis of the positive and negative impacts that the discharger may have on the area should be done. It is unlikely that a discharger has solely positive or negative impacts, but trying to quantify the impacts will allow the Department to have a better understanding of the overall situation and make a more informed decision.

Positive impacts to the affected community might include an increase in tax base, decrease in unemployment rate, an increase in median household income, a decrease in household expenses

for services and retention of assimilative capacity for future growth. Negative impacts to the affected community may include increased treatment costs for downstream municipalities, reduction in property values for those properties on or near the water, reduction in tax base due to reduced property values, reduction in tourism due to loss of aquatic life, etc.

When viewed on the whole, the positive impacts of the increased discharge should outweigh the negative impacts. It is likely that a pure quantification of these impacts is not possible and qualitative descriptions of these impacts may need to be done. The job of comparing the positive and negative impacts will become more difficult when less quantitative data is available and the department has to rely on more qualitative descriptions.

The exact methods for determining importance in the social or economic justification are likely best left to guidance. Although there are general indicators that may be looked at, there are many mitigating factors in all cases that cannot be portrayed and evaluated concisely in rule. The following section and table outline some tests that may be useful in evaluating the economic health of a community and its ability to withstand costs associated with pollution control measures. Along with suggested tests for looking at the overall community health, there are suggested tests for evaluating alternative methods to the proposed degradation.

#### *Municipal Preliminary Screening*

One test that may be helpful in determining the ability of a community to support a particular pollution control measure is the Municipal Preliminary Screener. The Municipal Preliminary Screener estimates the total per household annual pollution control cost that would be placed on households. This estimate is expressed as a percentage of the median household income.

$$\text{Municipal Preliminary Screener} = \frac{\text{Average Total Pollution Control Cost per Household}}{\text{Median Household Income}}$$

To estimate median household income data from the US Census Bureau can be accessed online. For example it lists the median household income in Idaho as \$49,247 for 2007-2008. The median household income for a particular project should be more specific in nature, likely a county or city statistic that can be accessed from the US Census Bureau or the USDA Economic Research Service. This organization lists the 2009 unemployment rate for Lemhi County as 8.4% and the median household income as \$36,423 which is ~ 76.6% of the state median household income. The average total pollution control cost per household would be calculated as the total cost for the pollution control measures divided by the number of households affected by the change.

If the result of this screening test is less than the lower threshold (often 1%) it is likely that the costs of the pollution control measures would not impose a substantial burden on the affected community. If the result of the screening falls between the lower and upper thresholds (often 1 and 2%) then more information is required to determine the overall burden of the pollution control measure and above the upper threshold (often 2%) it is likely that there would be a significant burden on the community of the pollution control costs.

The following tables show some possible indicators of economic health that may be included in guidance for the purposes of determining social or economic importance.

### **Factors to Consider in Making a Determination of Important Social and Economic Impacts**

Define the affected community in this case;  
what areas are included.

Estimated change in Median Household Income (MHI) (negative values means lower MHI after development)

$$\frac{\text{EstimatedMHI} - \text{CurrentMHI}}{\text{CurrentMHI}} * 100$$

Estimated change in the unemployment rate (UR) (negative values means higher UR after development)

$$\frac{\text{CurrentUR} - \text{EstimatedUR}}{\text{CurrentUR}} * 100$$

Estimated change in overall net debt (ND) as a percent of full market value of taxable property (FMVTP) (negative values means higher net debt after development)

$$\frac{\text{CurrentND} - \text{EstimatedND}}{\text{CurrentFMVTP}} * 100$$

Estimated change in % of households below the poverty line (PL) (negative values means more households below PL after development)

$$\frac{\text{CurrentBelowPL} - \text{EstimatedBelowPL}}{\text{CurrentBelowPL}} * 100$$

Impact on commercial development potential

Impact on property values

### **Summary of surrounding states:**

Our neighboring states have each addressed this issue in their own unique manner. The following is a summary of how SEJ analysis is addressed in either rule or implementation guidance. Except for Oregon, no state gives a clear and concise statement detailing how the analysis will be performed. Most states simply outline those pieces of information that is required in order to complete an analysis. SEJ analysis is a complex review of many economic principles that should indicate the degree to which a lowering of water quality is in the best economic interest of the community.

### *Oregon:*

- ▷ Allows for effluent trading as a means to offset the expected lowering of water quality due to the proposed activity. However, if such trading is proposed the discharge/source should still be subjected to an antidegradation review. The trade may be used to show how environmental costs will be lowered as a result of allowing the lowering of water quality due to the proposed activity.
- ▷ Refers to EPA's "Economic Guidance for Water Quality Standards Workbook"
- ▷ Environmental Costs:
  - Intrinsic Value – the sum of the existence value and the option value. Existence value is the willingness of an individual or society to pay to maintain water quality for its own sake regardless of any perceived future use. Option value is the willingness of an individual or society to pay to maintain water quality as an opportunity for future use.
  - Estimating Intrinsic Value – Can be difficult. A note in the antidegradation review should be made if an estimate of the intrinsic value cannot be made. For example if the proposed activity might have an impact on a rare species with no known economic value, then an estimate of the willingness of society to pay for maintaining the existence of this species would be one intrinsic value. If the species is or was to become listed, then the associated costs of protection and restoration should be noted.
  - Human Use Value – Direct consumptive and indirect non-consumptive uses by humans. For example, if a proposed activity would have an impact on a fishery but the extent of the impact is unknown, the antideg review should note this impact and whatever metrics that may be available to measure the impact (e.g., number of angler hours in impacted stream).

Although a description of the type of analysis necessary for the socioeconomic analysis is given, the details for how all the parts and pieces are evaluated after submittal is not given in Oregon's IMD.

### *Washington:*

- Called an "Evaluation of Overriding Public Interest (OPI)"
- Requires a cost/benefit analysis that can be used by the DOE to evaluate whether costs of allowing degradation are too great in proportion to the benefits.
- Intends analysis be focused on reasonable expectations and available information. Accepts use of narrative descriptions where numeric information is not readily available.
- Focuses on the benefits and costs of specific proposal not the industry or facility as a whole. Meaning if there is an expansion only those benefits and costs associated with the expansion are reviewed.

- Key purpose of the OPI is to open public discussion on the relative merits and tradeoffs associated with degrading water quality. DOE focuses on indentifying those actions that clearly are not in the overriding public interest rather than trying to identify strict cost to benefit ratios.
- Information to assist in determining OPI:
  - a. Economic benefits associated with current or expanding employment, increasing median family income or increasing the community tax base
  - b. Providing or contributing to necessary social services
  - c. Use and demonstration of innovative pollution control and management approaches that would allow significant improvement in AKART (all known, available, and reasonable methods of treatment)
  - d. Prevention or remediation of environmental or public health threats
  - e. Societal and economic benefits of better health protection
  - f. Preservation of assimilative capacity for future industry and development
  - g. Benefits associated with high water quality for uses such as fishing, recreation and tourism

*Utah:*

Factors to be addressed in a demonstration of economic or social importance include (but are not limited to):

1. employment (i.e., increasing, maintaining, or avoiding a reduction in employment)
2. increased production
3. improved community tax base
4. housing
5. correction of an environmental or public health problem
6. other information necessary to determine the social and economic importance of the proposed surface water discharge.

*Montana:*

To determine that the proposed activity will result in important economic or social development that exceeds the benefit to society of maintaining existing high-quality waters and exceeds the costs to society of allowing degradation of high-quality waters, the department must find that the proposed activity will provide important economic or social development which outweighs any cost to society of allowing the proposed change in water quality. In making its determination, the department may consider factors that include, but are not limited to, the following:

- a. effects on the state or local community resulting from increased employment opportunities considering the existing level of employment, unemployment, and wage levels in the area
- b. effects on the state or local economies
- c. effects on the fiscal status of the local, county or state governments and local public schools;
- d. effects on the local or state economies (i.e., increased or reduced diversity, multiplier effects);
- e. effects on social or historical values;
- f. effects on public health;
- g. effects on housing (i.e., availability and affordability);

- h. effects on existing public service systems and local educational systems
- i. correction of an environmental or public health problem.

In making the determination required, the department must weigh any costs associated with the loss of high quality waters against any social or economic benefits demonstrated by the applicant. The department may also consider as a cost to society any identified and/or quantifiable negative social or economic effects resulting from the proposed activity.

*Wyoming:*

Economic Evaluation:

Determine affected areas on a case-by-case basis. Determination of important social or economic development also made on a case-by-case basis. No listing of exactly what information is necessary for this determination to be made. Really quite limited in scope.

*Iowa:*

Defines Social and Economic Importance (SEI) as the social and economic benefits to the community that will occur from any activity resulting in a new or expanded discharge. The steps in demonstrating SEI are:

- Identify the affected community
- Identify relevant factors that characterize the social and economic conditions of the affected community.
- Describe the important social and economic development associated with the project.

These steps are then described in much greater detail in guidance.