

ATTACHMENT A

CONSIDERATIONS FOR USE OF SELECTED 131.10(g) FACTORS

This list of considerations and the brief discussion of application are intended to be illustrative not definitive. It is not necessarily comprehensive.

Factor 1 – Naturally occurring pollutant concentrations prevent the attainment of the use.

Potential Components of Demonstration: water quality assessment for all relevant parameters, biological assessment (as an indicator of water quality), appropriate reference condition for comparison (if available), land usage/watershed characteristics, characterization of point and non-point source pollutant sources upstream of water body, characterization of natural sources, water quality modeling (as necessary to confirm effects from natural pollutant sources), assessment of possible groundwater contamination from human activities as the source of surface water pollutant levels, stream bank stability (including upstream stability if natural siltation is suspected), tidal influences (i.e., for estuarine dissolved oxygen).

Factor 1 may be used in situations where, for example, natural shale deposits cause elevated levels of trace metals or where naturally occurring low dissolved oxygen levels predominate (possibly in conjunction with considerations for factor 1 and factor 5). A “natural condition” is a condition without human-caused changes. Because it is difficult (if not impossible) to find a completely “natural” water body that is free from influence from any human activity, the “natural condition” is typically determined using conditions least affected by human activities as the point of reference, as long as those least affected conditions are believed to be a reasonable approximation of the natural condition. Waters where activities such as urbanization, agricultural practices, hydrologic modification, and atmospheric deposition have a significant measurable or predicted effect on the designated use should not be used as a natural point of reference.

Factor 2 – Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met.

Potential Components of Demonstration: volume and velocity of flow, depth, range of flow conditions (including highs and lows as well as more generally representative conditions not influenced by drought or recent precipitation), presence of pools within the water body channel, precipitation and snowmelt patterns, presence of riparian vegetation (as an indicator of pattern of flow and water levels), depth of water table (to distinguish ephemeral from intermittent if necessary), biological assessment (as necessary to confirm flow or water level limitation if physical evidence is unclear), recreational use safety and access, potential use by children.

Factor 2 is most commonly applied to situations where the ephemeral character of a water

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body precludes certain types of aquatic life uses or where low flow conditions that are associated with a depth that is not conducive to swimming predominate. Although there is no formal guidance on what depth precludes recreation, many states have developed protocols that have led to acceptable use refinements (e.g., Colorado, Oklahoma, Kansas). More recently, this factor has been considered relevant for situations where high flows make it unsafe for recreation under certain situations. However, the wording of factor 2 in the regulation only lends itself to application where high flow conditions are natural. The last phrase of the factor (“unless those conditions...”) means that the factor is not relevant to situations where a discharger creates permanent flow in an otherwise ephemeral stream or where a discharger creates sufficient depth for recreation in a stream that would otherwise be too shallow.

Factor 3 – Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place.

Potential Components of Demonstration: water quality (and sediment and tissue quality as necessary) assessment for all relevant parameters, biological assessment (as an indicator of water quality), appropriate reference condition for comparison (if available), land usage/watershed characteristics, characterization of human caused condition and its relationship to water quality and/or the use in question, identification of currently available remedies and assessment of their potential efficacy and feasibility, demonstration of application of technology-based requirements and cost effective and reasonable BMPs (as appropriate) or forecast of water quality conditions once implemented (e.g., using water quality modeling), assessment of potential damage caused by potential remedies.

Factor 3 is likely most applicable to watershed scale impacts, where there are a mix of pollutant sources and conditions, and the degree of human activity cannot be reconciled with certain water quality or designated use expectations. Application of this factor is very closely tied to the particular aspects of a given situation and not easily generalized. A good example is removal of contaminated sediment from a harbor that would cause more damage by disruption than the damage caused by leaving it in place.

Factor 4 – Dams, diversions, or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use.

Potential Components of Demonstration: water quality assessment for all relevant parameters, biological assessment (as an indicator of water quality), appropriate reference condition for comparison (if available), land usage/watershed characteristics, characterization of hydrologic modification and its relationship to water quality and/or the use in question, identification of currently available restoration and/or operation methods and assessment of their potential efficacy and feasibility, societal value of the hydrologic modification.

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Factor 4 has been used to examine dam operation and consider potential use modifications. The potential applications for this factor are related to those associated with Factor 3. As with factor 3, application of this factor is very closely tied to the particular aspects of a given situation and not easily generalized.

Factor 5 - Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses.

Potential Components of Demonstration: physical habitat characterization of the water body, natural hydrologic patterns, sediment grain size, bathymetry, biological assessment (as necessary to confirm physical habitat limitation if physical evidence is unclear).

Factor 5 is often cited in conjunction with factor 1 and factor 2 for situations where, for example, natural physical conditions contribute to naturally low dissolved oxygen levels. This factor would also be relevant for situations where the natural substrate is not conducive to certain aquatic life uses (e.g., where a high “percent fines” in the sediment and lack of gravel preclude salmonid spawning). Natural physical conditions are also occasionally cited as a contributing factor to situations where human activity has also played a large role in modifying water body conditions (e.g., a combination of factor 3 and factor 5). For example, in a southeastern stream, it was the combination of the effects of urbanization and naturally sluggish hydrology that made attainment of a use infeasible.

Note: The phrase “unrelated to water quality” in Factor 5 does not preclude an examination of water quality. This is particularly important when evaluating a waterbody below a WWTP discharge¹. A demonstration that the downstream conditions are *natural* may require a quantitative examination of the water quality in the waterbody above and below the WWTP to determine the effects of the discharge on the downstream condition. It is possible that the discharged WWTP effluent could directly impact the available habitat and aquatic life through the exposure of suspended solids, biological oxygen demanding substances, ammonia and other pollutants toxic to aquatic life which could limit the attainability of the use.

¹ A task of the UAA is to identify receiving water bodies, in which the use(s) is not attained for reasons other than those specified above (natural conditions), that are water quality-limited (impaired) and will require water quality-based controls. Water quality-limited segments are specifically defined by EPA as:

“...those segments that do not or are not expected to meet applicable water quality standards even after the application of technology-effluent limitations required by sections 301(b) and 306 of the Act.”

According to sections 301(b) and 306, technology-based controls include, but are not limited to, “best available technology economically achievable (BAT)” for industrial point sources and secondary treatment for publicly owned treatment work, as well as reasonable and cost-effective BMPs for diffuse sources that have an assurance of being implemented.

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Factor 6 - Controls more stringent than those required by sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact

Potential Components of Demonstration: water quality assessment for all relevant parameters, biological assessment (as an indicator of water quality), identification of currently available control technologies and assessment of their potential efficacy, characterization of the costs of controls and their potential for financing over a period of years, characterization of the ability to pay for the affected entities, opportunity costs, evaluation of equity and distribution, environmental justice, identification of the community and characterization of its financial health.

Factor 6 has primarily been applied to single discharger situations where the surrounding community is experiencing economic hardship. It is often used in conjunction with a variance rather than a use removal. EPA’s 1995 *Interim Economic Guidance for Water Quality Standards: Workbook* provides guidance on using this factor.