

Table III.A.2 Level 2 environmental attributes. All attributes except length can be treated as categorical.

| Name | Definition |
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| Alkalinity | Alkalinity of water (conductivity can be used as a surrogate) (at moderate flows) |
| Bed scour | Average depth and frequency of scour on small-cobble/gravel riffles during high flow events. Frequent indicates at least one event every 1-2 years. Particle sizes of substrate modified from Platts et al. (1983) based on information in Gordon et al. (1992): gravel (0.2 to 2.9 inch diameter), small cobble (2.9 to 7 inch diameter), large cobble (7 to 11.9 inch diameter), boulder (>11.9 inch diameter). |
| Benthos diversity and production | Measure of the diversity and production of the benthos community. |
| Channel length | Length of the primary channel contained within the stream reach -- Note: this attribute will not be given by categories but rather will be a point estimate. Length of channel is given for the main channel only--multiple channels do not add length. |
| Channel width - month maximum width (ft) | Average width of the wetted channel during peak flow month (average monthly conditions). If the stream is braided or contains multiple channels, then the width would represent the sum of the wetted widths along a transect that extends across all channels. Note: Categories are not to be used for calculation of wetted surface area; categories here are used to designate relative stream size. |
| Channel width - month minimum width (ft) | Average width of the wetted channel. If the stream is braided or contains multiple channels, then the width would represent the sum of the wetted widths along a transect that extends across all channels. Note: Categories are not to be used for calculation of wetted surface area; categories here are used to designate relative stream size. |
| Confinement – Hydromodifications | The extent that man-made structures within or adjacent to the stream channel constrict flow (as at bridges) or restrict flow access to the stream's floodplain (due to streamside roads, revetments, diking or levees) or the extent that the channel has been ditched or channelized. |
| Confinement – natural | The extent that the valley floodplain of the reach is confined by natural features. It is determined as the ratio between the width of the valley floodplain and the bankfull channel width. Note: this attribute addresses the natural (pristine) state of valley confinement only. |
| Dissolved oxygen | Average dissolved oxygen within the water column for the specified time interval. |
| Embeddedness | The extent that larger cobbles or gravel are surrounded by or covered by fine sediment. |
| Fine sediment | Percentage of fine sediment within pool-tailouts and riffles. |
| Fish community richness | Measure of the richness of the fish community (no. of fish taxa). |
| Fish pathogens | The presence of pathogenic organisms (relative abundance and species present) having potential for affecting survival of stream fishes. |
| Fish species introductions | Extent of introductions of exotic fish species in the vicinity of the stream reaches under consideration. |
| Flow - change in interannual variability in high flows | A measure of between year variation in magnitude of high flow levels and/or the extent of change in overall high flow level during a month relative to an undisturbed watershed of comparable size, geology, and geography (or as would have existed in the pristine state). |

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| Flow - changes in interannual variability in low flows | A measure of between year variation in the severity of low flow discharge during a month. Variation in low flows as applied here is relative to an undisturbed watershed of comparable size, geology, and geography (or as would have existed in the pristine state). |
| Flow - Intra daily (diel) variation | Variability in flow level during a daily period. This attribute is informative mainly for regulated rivers or when flow patterns are influenced by storm water runoff. |
| Flow - intra-annual flow pattern | The average extent of intra-annual flow variation during a month -- a measure of a stream's "flashiness" during a season. |
| Gradient | Average gradient of the main channel of the reach over its entire length. |
| Habitat type - backwater pools | Percentage of the wetted channel surface area comprising backwater pools. |
| Habitat type - beaver ponds | Percentage of the wetted channel surface area comprising beaver ponds. Note: these are pools located in the main or side channels, not part of off-channel habitat. |
| Habitat type - large cobble/boulder riffles | Percentage of the wetted channel surface area comprising large cobble/boulder riffles. |
| Habitat type - off-channel habitat factor | A multiplier used to estimate the amount of off-channel habitat based on the wetted surface area of the all combined in-channel habitat. |
| Habitat type - pool tailouts/glides | Percentage of the wetted channel surface area comprising pool tailouts and glides. |
| Habitat type - primary pools | Percentage of the wetted channel surface area comprising pools, excluding beaver ponds. |
| Habitat type - small cobble/gravel riffles | Percentage of the wetted channel surface area comprising small cobble/gravel riffles. |
| Harassment | The relative extent of poaching and/or harassment of fish within the stream reach. |
| Hatchery fish outplants | The magnitude of hatchery fish outplants made into the drainage over the past 10 years. |
| Hydrologic regime - natural | The natural flow regime within the reach of interest. Flow regime typically refers to the seasonal pattern of flow over a year; here it is inferred by identification of flow sources. This applies to an unregulated river or to the pre-regulation state of a regulated river. |
| Hydrologic regime – regulated | The change in the natural hydrograph caused by the operation of hydroelectric facilities in a watershed. Definition does not take into account daily flow fluctuations (See Flow-Intra-daily Variation attribute) |
| Icing | Extent (magnitude and frequency) of icing events. |
| Metals - in water column | The extent of dissolved heavy metals within the water column. |
| Metals/Pollutants - in sediments/soils | The extent of heavy metals and miscellaneous toxic pollutants within the stream sediments and/or soils adjacent to the stream channel. |
| Miscellaneous toxic pollutants - water column | The extent of miscellaneous toxic pollutants (other than heavy metals) within the water column. |
| Nutrient enrichment | The amount of nutrient enrichment consisting of such items as ammonia, nitrogen, phosphorous. |
| Obstructions to fish migration | Obstructions to fish passage by physical barriers (not dewatered channels or hindrances to migration caused by pollutants or lack of oxygen). |

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| Predation risk | Level of predation risk on fish species due to presence of top level carnivores or unusual concentrations of other fish eating species. This is a classification of per-capita predation risk, in terms of the likelihood, magnitude and frequency of exposure to potential predators (assuming other habitat factors are constant). |
| Riparian function | A measure of riparian function that has been altered within the reach. |
| Salmon Carcasses | Relative abundance of anadromous salmonid carcasses within watershed (e.g., 5-HUC level) that can serve as nutrient sources for juvenile salmonid production. |
| Temperature - daily maximum (by month) | Maximum water temperatures within the stream reach during a month. |
| Temperature - daily minimum (by month) | Minimum water temperatures within the stream reach during a month. |
| Temperature - spatial variation | The extent of water temperature variation within the reach as influenced by inputs of groundwater. |
| Turbidity | The relative extent of turbidity episodes within the stream reach. |
| Water withdrawals | The number and relative size of water withdrawals in the stream reach. |
| Wood | The amount of wood within the reach. Note definition of "large wood" under terms/clarification. |

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