APPENDIX B

METRIC DESCRIPTIONS

Table B-1. Definitions of the evaluated metrics and predicted trend of metric response to increasing stress (compiled from DeShon 1995, Barbour et al.1996, Fore et al. 1996, Hayslip 1993, Smith and Voshell 1997). "Trend" = predicted trend of response to increasing stress: "+" = increase; "-" = decrease; "+/-" = variable.

MEASURE	DEFINITION	TREND
RICHNESS MEASURES		
Total taxa	Measures the overall variety of the macroinvertebrate assemblage	-
Insect taxa	Number of taxa in the class Insecta	-
Non-insect taxa	All non-insect taxa, including crustaceans, mollusks, worms, etc…	+
EPT taxa	Number of taxa in the insect orders Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddisflies)	-
Plecoptera & Trichoptera taxa	Number of taxa in the insect orders Plecoptera (stoneflies) and Trichoptera (caddisflies)	-
Ephemeroptera taxa	Number of mayfly taxa	-
Plecoptera taxa	Number of stonefly taxa	-
Trichoptera taxa	Number of caddisfly taxa	-
Coleoptera taxa	Number of beetle taxa	-
Diptera taxa	Number of true fly taxa, including midges	-
Chironomidae taxa	Number of chironomid (midge) taxa	-
Orthocladiinae taxa	Number of taxa in Orthocladini subfamily of the Chironimid family	-
Tanytarsini taxa	Number of taxa in Tanytarsini tribe of the Chironimid family	-
Tanypodinae taxa	Number of taxa in Tanypodinae subfamily of the Chironimid family	-
Oligochaeta taxa	Number of segmented worm taxa	+
Crustacea & Mollusca taxa	Number of crustacean and mollusk taxa	+
Mollusca taxa	Number of mollusk taxa	+
Crustacea taxa	Number of crustacea taxa	+
COMPOSITION MEASURES		
Non-insect percent	Percent of the total sample count that are worms, mollusks, crustaceans, etc.	+
EPT percent	Percent of the total sample count that are mayfly, stonefly, and caddisfly larvae or nymphs	-
EPT percent excluding Baetidae	Percent of the total sample count that are mayfly, stonefly, and caddisfly larvae or nymphs excluding baetid mayflies	-
Ephemeroptera percent	Percent of the total sample count that are mayfly larvae or nymphs	-
Ephemeroptera percent excluding Baetidae	Percent of the total sample count that are mayfly larvae or nymphs excluding baetid mayflies	-
Plecoptera percent	Percent of the total sample count that are stonefly larvae or nymphs	-
Trichoptera percent	Percent of the total sample count that are caddisfly larvae or nymphs	-
Plecoptera & Trichoptera percent	Percent of the total sample count that are stonefliy and caddisfly larvae or nymphs	-
Coleoptera percent	Percent of the total sample count that are beetles	-
Odonata percent	Percent of the total sample count that are dragonflies	-

MEASURE	DEFINITION	TREND
Diptera percent	Percent of the total sample count that are true fly larvae	-
Diptera percent excluding Tanytarsini	Percent of the total sample count that are true fly larvae, excluding the tribe Tanytarsini	+
Chironomidae percent	Percent of the total sample count that are midge larvae	+
Chironomidae percent excluding Tanytarsini	Percent of the total sample count that are midges, excluding the Tanytarsini	+
Orthocladiinae percent	Percent of the total sample count that are in the midge subfamily Orthocladiinae	+
Tanytarsini Percent	Percent of the total sample count that are in the midge tribe Tanytarsini	+/-
Tanypodinae percent	Percent of the total sample count that are in the midge subfamily Tanypodinae	+/-
Crustacea & Mollusca percent	Percent of the total sample count that are crustaceans and mollusks	+
Mollusca percent	Percent of the total sample count that are mollusks	+
Amphipoda percent	Percent of the total sample count that are amphipods	+
Mollusca & Amphipoda percent	Percent of the total sample count that are mollusks and amphipods	+
Gastropoda percent	Percent of the total sample count that are gastropods	+
Bivalvia percent	Percent of the total sample count that are bivalves	+
Isopoda percent	Percent of the total sample count that are isopods	+
Oligochaeta percent	Percent of the total sample count that are aquatic worms	+
Shannon-Wiener Index	An index of the richness and the distribution of individuals within each taxon	-
Evenness	Shannon-Wiener Index divided by the maximum obtainable Shannon-Wiener Index value	-
Margaleff's Index	Provides a measure of species richness that is roughly normalized for sample size	-
Simpson's Index	The probability of two individuals in a sample being of the same species	+
Percent dominant taxon	Measures the dominance of the single most abundant taxon	+
Percent 2 dominant taxa	Measures the dominance of the two most abundant taxa	+
TOLERANCE MEASURES		
Beck's Biotic Index (Hilsenhoff values)	Twice the number of organisms considered most sensitive to perturbation (Hilsenhoff value 0 or 1) + the number of organisms considered moderately sensitive (value 2, 3, or 4)	-
Hilsenhoff's Biotic Index	The HBI is the average tolerance value of individuals. It is calculated by multiplying the number of individuals of each taxon by their tolerance value, summing the products, and dividing by the total number of individuals with tolerance values.	+
Intolerant percent (Hilsenhoff values)	Percent of the total individuals considered to be intolerant of various types of perturbation (Hilsenhoff values 0 – 3)	-
Tolerant percent (Hilsenhoff values)	Percent of the total individuals considered to be tolerant of various types of perturbation (Hilsenhoff values 7 – 10)	+
Intolerant taxa (Hilsenhoff values)	Taxa richness of those organisms considered to be sensitive to perturbation (Hilsenhoff values 0 – 3)	-
Tolerant taxa (Hilsenhoff values)	Taxa richness of those organisms considered to be insensitive to perturbation (Hilsenhoff values 7 - 10)	+

MEASURE	DEFINITION	TREND
TROPHIC OR FUNCTIONAL FEEDING GROUP MEASURES		
Collector percent	Percentage of sample that collects organic debris from substrates and sediments	-
Filterer percent	Percentage of sample that filters suspended detritus	+/-
Predator percent	Percentage of sample that consumes living prey organisms	+/-
Scraper percent	Percentage of sample that scrapes substrate to remove food particles	-
Shredder percent	Percentage of sample that shreds organic litter	-
Collector taxa	Number of taxa that collect organic debris from substrates and sediments	-
Filterer taxa	Number of taxa that filter suspended detritus	+/-
Predator taxa	Number of taxa that consume living prey organisms	+/-
Scraper taxa	Number of taxa that scrape substrate to remove food particles	-
Shredder taxa	Number of taxa that shred organic litter	-
HABIT MEASURES		
Burrower percent	Percentage of sample that inhabits fine sediments	+
Climber percent	Percentage of sample that climbs about aquatic substrates, including plants and debris	+/-
Clinger percent	Percentage of sample that attaches to plants, rocks, and other substrates	-
Sprawler percent	Percentage of sample that inhabits surfaces of leaves and sediments	+/-
Swimmer percent	Percentage of sample that swims freely in the water column	+/-
Burrower taxa	Number of taxa that inhabit fine sediments	-
Climber taxa	Number of taxa that climb about aquatic substrates, including plants and debris	-
Clinger taxa	Number of taxa that attach to plants, rocks, and other substrates	-
Sprawler taxa	Number of taxa that inhabit surfaces of leaves and sediments	-
Swimmer taxa	Number of taxa that swim freely in the water column	-