The following text is an addendum to the SWQM Procedures Manual, Volume 2 (RG-416, May 2014) Revision Chapter 5, page 5-13 to 5-16.

Many of the metrics used in the regionalized benthic Indices of Biotic Integrity (IBI) are used in the statewide benthic IBI and already defined in Volume 2, Chapter 5. Additional metrics used in the regionalized IBIs are defined below.

- **Percent Trichoptera.** This metric is used in the regionalized benthic IBI for Ecoregion 24 (Chihuahuan Deserts). It represents the ratio of the number of individuals in the order Trichoptera to the total number of individuals in the sample multiplied by 100. This metric reflects the status of one of the more environmentally sensitive aquatic insect orders, making it a valuable indicator of ambient conditions. A decrease in percent Trichoptera usually indicates increasing stream perturbation, however an overabundance of Trichoptera also indicates an imbalance, possibly due to physicochemical disturbance.
- **Percent Diptera.** This metric is used in the regionalized benthic IBI for Ecoregion 24 (Chihuahuan Deserts). It represents the ratio of the number of individuals in the order Diptera to the total number of individuals in the sample multiplied by 100. Diptera are ubiquitous in Texas streams and this metric reflects the condition of the most ecologically diverse insect order in aquatic ecosystems. This metric usually increases with increasing perturbation, however extremely low values also indicate an imbalance, possibly due to physicochemical disturbance.
- **Percent Diptera and Non-Insect Taxa.** This metric is used in the regionalized benthic IBI for Ecoregions 27-29-32 (Central Great Plains, Cross Timbers, Texas Blackland Prairies), 30 (Edwards Plateau), 33-35 (East Central Texas Plains, South Central Plains), and 34 (Western Gulf Coastal Plain). It represents the ratio of the number of individuals in the order Diptera plus the number of individuals in non-insect taxa to the total number of individuals in the sample multiplied by 100. This metric reflects the relative abundance of organisms generally considered to be tolerant to a wide range of environmental conditions. This metric usually increases with increasing perturbation, however extremely low values also indicate an imbalance, possibly due to physicochemical disturbance.
- **Number of Ephemeroptera Taxa.** This metric is used in the regionalized benthic IBI for Ecoregions 24 (Chihuahuan Deserts) and 27-29-32 (Central Great Plains, Cross Timbers, Texas Blackland Prairies). It represents the total number of benthic macroinvertebrate taxa within the order Ephemeroptera. This metric reflects the status of one of the more environmentally sensitive aquatic insect orders, making it a valuable indicator of ambient conditions. A decrease in Ephemeroptera taxa usually indicates increasing stream perturbation.
- **Number of Taxa with Tolerance Value <8.5.** This metric is used in the regionalized benthic IBI for Ecoregions 24 (Chihuahuan Deserts), 27-29-32 (Central Great Plains, Cross Timbers, Texas Blackland Prairies), 30 (Edwards Plateau), 33-35 (East Central Texas Plains, South Central Plains), and 34 (Western Gulf Coastal Plain). It represents the total number of taxa with tolerance values less than 8.5 and is a measure of taxa

richness of those organisms considered to be sensitive to perturbation. This metric is predicted to decrease in response to increasing stream perturbation.

- **Percent Tolerant Organisms (Tolerance Value ≥8.5).** This metric is used in the regionalized benthic IBI for Ecoregions 30 (Edwards Plateau) and 33-35 (East Central Texas Plains, South Central Plains). It represents the ratio of the number of individuals considered to be tolerant taxa to the total number of individuals in the sample multiplied by 100. This metric usually increases with increasing perturbation.
- **Percent Shredders.** This metric is used in the regionalized benthic IBI for Ecoregions 33-35 (East Central Texas Plains, South Central Plains). It represents the ratio of the number of individuals in the shredder functional group (see Table B.13, Appendix B) to the total number of individuals in the sample multiplied by 100. Scoring for the metric is based on the premise that relatively low to moderate percentages of shredders reflect a balanced trophic structure, while extremely high or low percentages reflect an imbalance, possibly due to physicochemical perturbation.
- **Percent Scrapers.** This metric is used in the regionalized benthic IBI for Ecoregions 33-35 (East Central Texas Plains, South Central Plains) and 34 (Western Gulf Coastal Plain). It represents the ratio of the number of individuals in the scraper functional group (see Table B.13, Appendix B) to the total number of individuals in the sample multiplied by 100. Scoring for the metric is based on the premise that relatively low to moderate percentages of scrapers reflect a balanced trophic structure, while extremely high or low percentages reflect an imbalance, possibly due to physicochemical perturbation.
- **Percent Ephemeroptera.** This metric is used in the regionalized benthic IBI for Ecoregion 34 (Western Gulf Coastal Plain). It represents the ratio of the number of individuals in the order Ephemeroptera to the total number of individuals in the sample multiplied by 100. This metric reflects the status of one of the more environmentally sensitive aquatic insect orders, making it a valuable indicator of ambient conditions. A decrease in percent Ephemeroptera usually indicates increasing stream perturbation.