

Standard Operating and Quality Control Procedures for Macroinvertebrate Sampling



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Section 1 Aquatic Macroinvertebrates

1.0 Introduction

Aquatic macroinvertebrates are insects and other invertebrates living in streams, rivers, lakes, and estuaries. Aquatic macroinvertebrate communities can be useful indicators of water quality because they respond to integrated stresses over time, and reflect fluctuating environmental conditions. Community response to various pollutants (e.g. organic, toxic, and sediment) may be assessed through interpretation of diversity, known organism tolerances, and in some cases, relative abundance and feeding behavior types.

Regional ambient monitoring generates data, which represent the general biological condition of state waters that may be subject to a variety of point and nonpoint source impacts. The Aquatic Biology Section (ABS) uses these ambient macroinvertebrate data to support a variety of state and federal programs. Additionally, special macroinvertebrate studies are conducted at various sites to evaluate specific potential point and nonpoint source pollution impacts.

1.1 Field Collection Methods

1.1.2 Timed-qualitative Multiple Habitat Sampling Protocol

The ABS uses a timed-qualitative, multiple habitat sampling protocol (MHSP) to collect macroinvertebrates. Multiple habitat sampling of some type is widely used by many regulatory and non-regulatory agencies both in the United States and abroad (Barbour, et al., 1997; USEPA, 1997; Marchant, et al., 1997). The greatest benefit from using the MHSP is that it enables resource managers to collect representative macroinvertebrate taxa from the wide variety of natural habitats in a stream. Since macroinvertebrates occupy a variety of habitat types, many taxa may be excluded when only select habitats are sampled by specific sampling devices (e.g. Surber net, Ponar dredge, etc.). This may lead to exclusion of a variety of taxa and spurious assessments.

At ambient monitoring sites, a team of two or three biologists (never less than two) samples for aquatic macroinvertebrates for approximately three person-hours (three person-hours represent three biologists sampling for one hour, or two biologists sampling for one and one half hours). With the aid of a D-frame dip net, kick net, metal sieve, white pan, bucket and a fine mesh sampler, all the available natural habitats are sampled. Macroinvertebrates are also collected directly from the habitat with forceps. All macroinvertebrates are placed in jars or vials filled with 85% ethanol (EtOH) and labeled with the station number and collection date. If a station number has not been established, other data such as county, stream name, and nearest road is listed on the label. It is highly desirable to list the latitude and longitude on the label unless this information is readily available through a geographic information system.

The goal of the sampling team is to collect as many different macroinvertebrate taxa as possible during the allotted time. Although the MHSP is a qualitative method, the actual collection of

samples is a disciplined procedure designed to ensure that all the habitats present at a site are thoroughly sampled, irrespective of what types of habitat are available or where the sample is collected. Rivers and streams from the mountains to the coastal plain of South Carolina vary in habitat type and amount available for colonization by macroinvertebrates. For example, mountain sites are often dominated by rock/gravel riffle stream substrate, woody debris, and root wads, while coastal sites may be dominated by aquatic vegetation, woody debris, and sandy to muddy stream substrate. Between the mountains and coastal plain lies the piedmont, which has a combination of some or all of the above habitats. Regardless of what region or what kind of habitat is being sampled, the MHSP insures that an adequate representation of the macroinvertebrate community is obtained. The following is a discussion of the MHSP with detailed steps on how to properly collect macroinvertebrate samples from the variety of stream habitats.

A. Chironomidae and Small Macroinvertebrate Collection Procedure

A very important component of the macroinvertebrate community is the midge family Chironomidae. Midge larvae often account for at least 50% of the total species diversity in most aquatic systems (Merritt et al., 2008). Since midges are relatively small, they are collected with fine mesh samplers. The fine mesh samplers are made with Nytex (micro-screen cloth material) that has a mesh size of 300 μm . One sampler is a mesh bag, 0.5 m by 1.0 m, made from a folded sheet of Nytex sewn together on two sides. This bag is used to collect midges from the sand. The other sampler is a 13 cm long by 10 cm diameter piece of PVC pipe with a Nytex covering on one end. This is used to strain water from the bucket into which midges are washed from the habitats. Although the objective of the fine mesh net is to collect midges, it can also collect other small macroinvertebrates.

Collection Steps:

1. Fill a 19 liter bucket approximately one half full with water.
2. Collect two or three samples of all the habitat types present at a stream site by hand (rocks, sticks, leaf packs, root wads, etc.) and rinse in the bucket to remove midges and other macroinvertebrates. Attached root wads and vegetation may be rinsed directly in the bucket without detachment.
3. Since some midge taxa are sand dwellers, select a sandy bottom site in the stream and collect midges by placing the small mesh bag on the bottom with the open end facing upstream. Disturb approximately a 1 m^2 area of the sand upstream of the bag and let the sand and midges drift into the bag. In areas with little current, the sandy area can be disturbed and the bag swept back and forth over that area to capture the midge larvae. Collect three sand samples from three different areas of the stream. The bag is only used when there are sandy bottom areas available.
4. Empty the contents of the bag into the same bucket of water that contains the other habitat washes and rinse the bag up and down in the bucket to remove the attached midges.

5. Rinse and remove by hand as much of the larger debris as possible from the bucket and discard. Stir the water in the bucket and strain through the Nytex covered pipe.

6. Remove small portions of the detritus left in the bottom of the Nytex pipe and place in a white pan 1/4 filled with water. Spread the detritus evenly in the pan by hand so that the macroinvertebrates can be seen against the white background. With the aid of forceps and an eye-dropper, collect the midges and other small macroinvertebrates and preserve them in a jar filled with 85% EtOH.

7. Repeat step 6 until all the detritus in the Nytex pipe has been examined.

Do not collect more than 100 midges, but collect them in relative proportion to the size classes present. Other macroinvertebrates are sampled proportional to the relative abundance in each pan picked. Although the emphasis of the fine mesh sampler is to collect small macroinvertebrates, larger macroinvertebrates are also collected as they are encountered.

B. D-frame Dip Net Collection Procedure

The habitat type most often sampled with the dip net is root wad habitat. Root wads are present at most stream sites, often at the margins, and they support a variety of small caddisflies and other taxa. Aquatic vegetation, when present, is also sampled with the dip net.

Collection Steps:

1. Root wads are sampled by repeatedly jabbing a D-frame dip net (500 μ m mesh size) upwardly into the roots along a stretch of bank until the net is about 1/4 full of detritus and root debris. Several root wads are washed down by hand into the dip net to remove firmly attached macroinvertebrates. Aquatic vegetation is sampled by sweeping the dip net through the vegetation two or three times.

2. Rinse the bottom of the dip net in the stream to remove excess mud and silt. If excess sediment or silt is present it is helpful to rinse the sample by dipping water into the net and allowing it to drain while swirling the contents with your hand. This can be done several times in rapid succession. Remove small portions of the detritus left in the net and spread it evenly in a white pan 1/4 filled with water. Do not attempt to sort through so much detritus that the bottom of the pan is obscured.

3. Using forceps, remove macroinvertebrates from the pan and place in a jar of 85% EtOH. It is helpful to allow the contents of the pan to settle and become still. This facilitates seeing the small macroinvertebrates as they begin to move about.

Based on the quality of the root banks and/or aquatic vegetation, collect one or two dip net samples in the root banks and two or three samples in the aquatic vegetation.

C. Kick Net Collection Procedure

The kick net is a 1.0 m² sheet of Nyltex (500 -1000 µm mesh size) attached on two sides to 1.5 m long poles. The kick net is used to sample rock/gravel riffles and snags/leaf packs.

Collection Steps:

1. Place the kick net slightly downstream of the area to be sampled (snags/leaf packs and/or rock/gravel riffle). Disturb about 1 m² of the habitat and catch the debris and macroinvertebrates that drift into the net.
2. Spread the kick net out on a sand bar or a flat area on the bank and collect macroinvertebrates from the net with forceps and preserve them in a jar of 85% EtOH. Alternatively, the net can be rinsed into a large white pan and the macroinvertebrates picked from there.

If the habitat is mostly snags/leaf packs, a minimum of two kick net samples should be taken there. If the habitat is a mix of both rock/gravel riffle and snags/leaf packs, a minimum of one kick net sample should be taken from each habitat. In streams that are mostly rock/gravel riffle, a minimum of two kick net samples should be taken in the riffle areas. One kick net sample should be taken from a high velocity riffle area and the other from a low velocity riffle area.

D. Sieve Collection Procedure

Sieves are used to sample sand and sediment as well as other habitat types during visual collections. Sieve sizes used are the U.S. #30 (0.6 mm openings) and the U.S. #10 (2.0 mm openings). The #10 sieve is used primarily to sample sand and sediment. The #30 can be used as an aid to sweep and to hold material from all habitat types. The sieve enables the biologist to sample large amounts of habitat quickly and is invaluable for collecting sediment-dwelling taxa such as: Odonata (dragonflies), Gastropoda (snails), Pelecypoda (clams, mussels), sand case building and burrowing caddisflies (Molannidae, Sericostomadidae, Dipseudopsidae, Odontoceridae), and Ephemeraeidae (burrowing mayflies).

Collection Steps:

1. Visually inspect the sand and mud for signs of macroinvertebrate activity. For example, the movement of burrowing odonates and mussels leaves trails in the sand. Small holes can be seen in the mud, clay, or sand in areas where burrowing mayflies are found. The tubes of *Phyloctropus* sp. larvae can often be seen extending above the substrate where they are present.
2. With the #10 sieve, sample the mud or sand where there are signs of macroinvertebrate

activity. Sift the sand, mud, silt, and detritus in the stream to trap macroinvertebrates in the sieve.

3. Collect macroinvertebrates from the sieve and place them in jar of 85% EtOH.
4. The #30 sieve can be used to sample root wad and snag sites. Process as above.

E. Visual Collection Procedure

Collections using the kick net, d-frame net and the fine mesh samplers generally require a total of 1.5 person-hours to complete. For an additional 1.5 person-hours, stream habitats are visually searched for macroinvertebrates, and collected directly from the habitat with forceps and placed in jars filled with 85% EtOH. This requires sieving sediment and removing rocks and logs from the water for inspection. For example, rocks and logs are searched for taxa such as the retreat building *Psychomyia* sp. (caddisfly) and for retreat building Hydropsychidae. The undersides of rocks are examined for macroinvertebrates such as Ephemeroptera (mayflies), Plecoptera (stoneflies), Gastropoda (snails), Psephenidae (water pennies) and Megaloptera (hellgrammites). The crevices in rocks and logs are searched for caddisflies such as *Nyctiophylax* sp., *Pycnopsyche* sp., and *Ceraclea* sp. Decaying logs are picked apart to reveal midges and other taxa. Aquatic vegetation, sticks, and limbs are visually searched for small caddisflies (Hydroptilidae and Brachycentridae) and other macroinvertebrates. Mature leaf packs, snags, and root wads are sampled to collect a variety of other macroinvertebrates. Unionid mussels are located using the #10 seive as well as by sight and by feeling in the sediment. These are identified in the field, photographed, and released unharmed into the same habitat type from which they were collected.

F. Collection Procedures Summary

No attempt is made to collect all specimens encountered. If a taxon can be reliably identified in the field, only 10-15 specimens are collected, other taxa are collected in approximate proportion to their abundance in each sampling method (net, pan, sieve, etc.). Since the emphasis of the MHSP method is to collect different taxa, abundance is considered only in a relative sense (see Data Analysis). Some taxa are not collected including: Nematoda, Collembola, semiaquatic Coleoptera, and all Hemiptera except Naucoridae, Belostomatidae, Corixidae, and Nepidae. These are not collected because they are most often found on the water surface or on the banks, and are generally thought of as semiaquatic.

There is no established distance of stream reach sampled at any particular site. If there is good, fairly evenly distributed natural habitat, approximately 100 m of stream (both sides) is routinely sampled. In streams where there is sparse habitat, the distance covered may be more than 100 m. For ambient monitoring activities most sites are accessed at road bridges and are sampled upstream of the bridge, however, some situations may warrant sampling downstream (e.g. access and/or habitat limitations).

As previously noted, the MHSP is a three person-hour sampling effort. Approximately one half hour is devoted to use of the kick net, one half hour is devoted to use of the d-frame dip net, and about one half hour is devoted to the fine mesh samplers. The rest of the time (one and one half person hours) is spent using sieves and forceps to make visual collections of all habitat types present.

As a general rule, when teams of biologists sample a site, each one independently uses one of the three sampling devices (dip net, kick net, fine mesh nets) to sample the appropriate habitat. Upon completion, visual collections are begun and the sieve is used extensively. It is helpful for the sampling team to discuss the kinds and numbers of taxa present and absent at a site. This results in more efficient sampling. It is important that the field staff be trained and experienced macroinvertebrate taxonomists to use the MHSP effectively.

High water conditions can impair sampling efficiency by making some critical habitats inaccessible due to water depth and clarity. An underestimate of taxa richness may lead to spurious results. If high water levels and turbid conditions make sampling difficult, it is better to return to the site under more amenable sampling conditions.

When sampling large rivers, a boat or kayaks may be used to access the habitats for sampling. The sampling methodology remains the same but the duration may be increased to insure that all natural habitats have been adequately sampled. In shallow areas, the river is sampled as a wadeable stream. Otherwise, the available habitat is sampled from the boat with dip nets and sieves and/or by dragging logs, sticks, root wads, etc., into the boat. A clam rake can help to reach and bring up habitat in deep areas as well as to find Unionid mussels. A ponar may be used to reach sediment-dwelling organisms in deep areas.

Photographs are taken of the upstream and downstream ends of the reach sampled at each station in order to document conditions on the sampling day. It is a good idea to also take photos when a site is visited but not sampled. Photos are kept in an electronic file and named in the format STN-designation-mo.day.yr (for example E-042-dn-8.10.17) so that they can be easily retrieved. Any mussel photos are included in this file as well. Ensure that photo files are labeled correctly by using the camera's date/time stamp and downloading them soon after returning to the lab.

1.1.3 Equipment

1. D-frame dip net
2. Kick net
3. U.S. # 10 Sieve
4. 13 cm (length) by 10 cm (dia) PVC fine mesh sampler
5. Fine mesh bag
6. 19 liter bucket
7. White pans
8. Forceps
9. Collection vials and jars filled with 85% EtOH

10. Collection labels and EtOH-proof pen or pencil
11. Physicochemical parameter equipment (multi-parameter meter or equivalent)
12. Camera

Optional

13. U.S. # 30 Sieve
14. Ponar
15. Clam rake

1.2 Habitat Assessment

Habitat assessment is an important step towards understanding the effects of pollution on macroinvertebrate communities. The ABS conducts two kinds of habitat assessment at each sampling site. The first is a comprehensive assessment adopted from the Environmental Protection Agency's (EPA) *Revisions to Rapid Bioassessment Protocols for Use in Streams and Rivers* (Appendix 1), and the second is a simplified form developed to meet specific needs of the ABS (Appendix 2). Instructions are included on the forms explaining how to evaluate each of the habitat metrics. Habitat metrics are independently evaluated by each biologist and averaged for a final score (on a single form).

The EPA habitat assessment (EPA-HA) provides a thorough evaluation of several conditions at a stream site that could affect stream habitat quality. It provides clues to why certain habitat types may be present or absent, and information about the general stream condition at the assessment site. Since the EPA-HA is a standardized form, it is very useful for reporting purposes and sharing data among the Southeastern states. In South Carolina the EPA-HA high gradient form is used in Blueridge and Piedmont ecoregions while the low gradient form is used for the Southeastern Plains and the Middle Atlantic Coastal Plains.

The simplified habitat assessment form (ABS-HA) provides more detailed information about instream macroinvertebrate habitat. It enables ABS biologists to make better assessments on the role of stream habitat in situations where pollution is involved. The form classifies the habitat into five categories and rates them from excellent to non-existent. This permits visualization of the habitats when the data are being analyzed, and helps to explain the presence or absence of certain taxa. In addition, the ABS-HA helps ABS biologists to cluster stations according to shared habitats when comparisons are made among stations.

1.3 Physicochemical Sampling Procedures

The stream dissolved oxygen, pH, temperature, and conductivity are measured at the time of macroinvertebrate sampling. Results are recorded in the Field Quality Control Logbook (Appendix 3). Specific operation and calibration procedures are followed as documented in the most recent version Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (SCDHEC).

1.4 Laboratory Methods

1.4.1 Sample Handling and Identification

At the end of each sampling day EtOH is decanted and the samples are reconstituted with fresh 85% EtOH. After returning to the ABS laboratory the samples are logged into the Macroinvertebrate Central Receiving Logbook (MCRL) (Appendix 4) and stored in a locked cabinet to await further processing.

Before the sorting and identification of a macroinvertebrate sample begins, the taxonomist assumes custody of the sample by signing for it in the MCRL. Custody remains with the taxonomist until the sample has been identified and these data are recorded. Sample completion is noted in the MCRL.

Macroinvertebrates are generally sorted by taxonomic order and placed into separate vials or petri dishes for further identification. Specimens not requiring slide mounting are identified using a stereo dissecting scope capable of at least 50x magnification. Midges, some baetid mayflies, and on occasion other taxonomic groups are mounted on labeled (date and locality) slides with CMC-10 mounting media and identified with a compound microscope capable of 1000x magnification. Identifications are made to the lowest practical taxonomic level using the appropriate taxonomic references. When reliable keys are available and specimens are mature, this is typically species level for the EPT taxa and genus level for other groups though there are some exceptions. The NC Department of Environmental Quality has provided online taxonomic guides which include suggested levels of taxonomic effort for the orders Ephemeroptera, Plecoptera, Trichoptera, and Coleoptera (Beaty, S. R. 2010, 2011, 2013, 2015). Staff in the DHEC Aquatic Biology Section have found these to be useful and appropriate for most South Carolina species.

Midges are transferred to water and allowed to settle before mounting. A drop of CMC-10 mounting media is placed on a labeled slide, and the specimen(s) is oriented in the media so that the ventral side of the head capsule is up. To get the head arranged properly, it may be necessary to separate it from the body. A cover slip is placed over the specimen and gentle pressure is applied to spread the mouthparts. Several midges may be mounted on one slide. Slides are allowed to dry at least two days before identification.

Baetidae and certain other taxa that require slide mounting are set aside in a petri dish and the entire body or body parts are mounted, as necessary, for identification. A drop of CMC 10 mounting media is placed on a labeled slide. The whole specimen or parts such as the head or legs are placed in the drop of CMC 10 and with forceps, a cover slip is placed over the specimen. Gentle pressure is applied to the cover slip to reveal the structures necessary for identification. Several specimens may be mounted on one slide. Slides are allowed to dry at least two days before identification.

After the sorted macroinvertebrates (except Chironomidae and some Baetidae) from a station

have been identified and these data recorded on bench sheets, they are placed together in a single jar of 85% EtOH. This jar is labeled with station, date collected, and person who identified the sample, and is stored at least five years in the ABS voucher collection. If a new taxa record (i.e. one not previously collected from South Carolina) is identified from a site, it is removed from the voucher collection and stored separately in the ABS reference collection. A note is made on a bench sheet (a form used to record the number of taxa and specimens identified) when a specimen is relocated to the reference collection. Slide mounted specimens are stored separately in cabinets according to sample date and station. If mounted Chironomidae or other taxa are transferred to the reference collection, this is noted on the bench sheet.

1.4.2 Data Analysis

The taxa list, physicochemical data, and habitat information are entered into a computer data base. This program is used for data management and reporting purposes.

Because the MHSP is a timed-qualitative method, metrics that require quantitative collection methods are not used. Two metrics that have proven to be very effective in evaluating macroinvertebrate data collected by qualitative methods are the EPT and biotic indices (Lenat, 1993; Wallace, 1996; Barbour, 1997). The EPT index is the total number of distinct Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddisflies) taxa collected at a site. Most EPT taxa are very intolerant of pollution and, in general, a high EPT count indicates excellent water quality.

The biotic index (BI) is the average pollution tolerance of all organisms collected (based on assigned index values for taxa) and the calculation factors in relative abundances. The index is based on a scale from 0 to 10, with 10 representing the most impaired stream conditions.

$$\text{Biotic Index (BI)} = \frac{\sum(Tv_i)(n_i)}{N}$$

Tv_i = i th taxon tolerance value

n_i = i th taxon abundance value

N = sum of all abundance values

This index and the associated tolerance values were developed in North Carolina (Lenat, 1993) and the SCDHEC uses a modification of these values (Appendix 5). Taxa with no assigned tolerance value are excluded from the biotic index calculation.

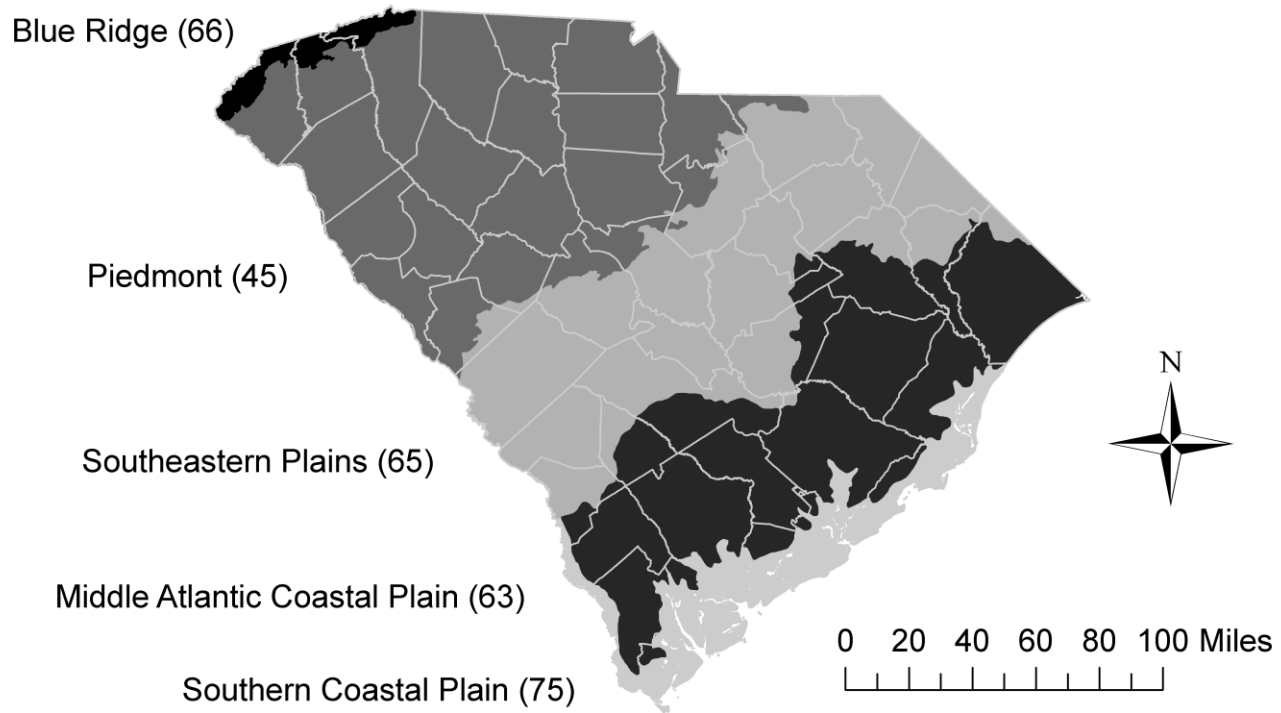
The calculation of the BI does not include all specimens collected in a sample but rather a maximum of 10 specimens per taxon. This is done to ensure that the BI for a site will not be biased because some taxa are more successfully collected than others. Since most taxa cannot be accurately identified in the field, it is common for some taxa to be more abundant in a sample. Taxa collected from freshwater streams are designated as Rare (1-2 individuals), Common (3-9 individuals) or Abundant (≥ 10 individuals) and are assigned a 1, 3, and 10, respectively, for the calculation of the BI. If there are less than 100 total organisms in a sample, the BI is not used.

Instead, the EPT index is used along with other data to assign a bioclassification.

Macroinvertebrate communities change across ecoregions so different BI and EPT criteria are used to establish bioclassifications for streams based on the ecoregion in which they occur.

Figure 1 shows the ecoregions in South Carolina (after Omernik 1987, and Griffith et. al 2002). Macroinvertebrate Biocriteria have been established for 3 of South Carolina's 5 level III ecoregions: Blue Ridge (66), Piedmont (45), and Southeastern Plains (65). Numeric biocriteria for the Middle Atlantic Coastal Plain (63) have yet to be fully developed but are currently being evaluated. Many of the streams in this ecoregion are swamp-like and become dry or stagnant in the summer months. Thus the macroinvertebrate diversity in these systems is often low and the organisms that are present tend to be hardy species that can tolerate extreme environmental conditions. This makes the stressor signal weak and often it is difficult to distinguish anthropogenic perturbation from natural environmental conditions.

Figure 1. Level 3 Ecoregions of South Carolina
(after Omernik, 1987)



Bioclassification of streams in South Carolina is based on the combination of equally weighted BI and EPT scores, and parallels North Carolina's criteria range:

Excellent = 5 Good = 4 Good-Fair = 3 Fair = 2 Poor = 1

Since North Carolina and South Carolina share similar ecoregions, the North Carolina bioclassification criteria are applied to South Carolina streams. The following linear equations are used to determine the scores for the EPT taxa richness values and BI values. These produce scores as a continuous variable roughly equivalent to those found in Lenat, 1993. The highest and lowest values remain 5.0 and 1.0 respectively.

EPT Scores

SE Plains	Score = $0.1431 \times \text{EPT index} + 0.568$
Piedmont and Blue Ridge	Score = $0.1247 \times \text{EPT index} + 0.568$

Biotic Index Scores

SE Plains	Score = $-1.3599 \times \text{biotic index} + 11.832$
Piedmont and Blue Ridge	Score = $-1.3241 \times \text{biotic index} + 11.264$

The biotic index score and the EPT score are averaged together to produce a combined score, which determines the final bioclassification. Rounding is used only to format the combined score to show a single decimal place and this is done using the standard rules where digits of five or greater round up while digits under 5 round down.

Bioclassification of streams is important because it helps resource manager's prioritize cleanup and protection efforts. This information is reported in the 305b report to the United States Environmental Protection Agency. The Clean Water Act (Section 305b) requires that States report the conditions of their waters to congress. In the 305b report, macroinvertebrates are used to make a determination on a stream's level of aquatic life use support (ALUS). The criteria used to measure ALUS are summarized in three categories: Fully Supporting, Partially Supporting and Not Supporting.

Fully Supporting: Reliable data indicate functioning, sustainable biological assemblages (e.g. fish, macroinvertebrates, or algae) none of which has been modified significantly beyond the natural range of the reference condition.

Partially Supporting: At least one assemblage indicates moderate modification of the biological community as compared to the reference condition.

Not Supporting: At least one assemblage indicates a severely impacted macroinvertebrate community. Data clearly indicate severe modification of the biological community compared to the reference condition.

The Aquatic Biology Section determines the ALUS based on the bioclassification of the stream:

<u>Combined Score</u>	<u>Bioclassification</u>	<u>ALUS</u>
4.5 – 5.0	Excellent	Fully Supporting
3.5 -4.4	Good	Fully Supporting
2.5 - 3.4	Good-Fair	Partially Supporting
1.5 – 2.4	Fair	Partially Supporting
1.0 – 1.5	Poor	Not Supporting

This method is also used to make stream impairment judgments for South Carolina’s Watershed Water Quality Management Strategy and for point/nonpoint source impact assessments.

1.4.3 Data Analysis for Special Studies

Special studies often involve using sites upstream from a point source discharge or a non-point source area as a control. The site downstream from the potential impact can then be compared with this upstream reference station for assessment purposes. By comparing final bioclassification scores an assessment can be made. The following represents the levels of impairment and their associated change in bioclassification scores.

<u>Level of Impairment</u>	<u>Decrease in Bioclassification Score</u>
Unimpaired	<0.5
Slightly Impaired	0.6-1.5
Moderately Impaired	1.6-2.5
Severely Impaired	>2.5

The above scale is used as a general guide and there are situations in both special studies and routine monitoring where professional judgment of the Aquatic Biology Section may override the assessment metrics. This is common practice in areas such as the Mid-Atlantic Coastal Plain where criteria are still being developed. Another example is when the control is also impaired. This is common in urban watersheds where the biological community is often stressed (see Allen 2004 for a review). In such streams if the control is Poor (1.0), for example, it is a mathematical impossibility to show a decrease in the bioassessment score since 1.0 is the lowest category. This is not to suggest that the point source discharge could not contribute to degradation of water quality. In this situation, water chemistry, toxicity tests, or other means may be more appropriately used to determine the potential for an effluent to cause degradation. However even

in these situations biomass assessments can be valuable. The change in species composition, feeding groups, or habits of the animals making up the macroinvertebrate communities can sometimes help determine impact. These studies can also help track long-term trends or provide clues to catastrophic events in which substantial numbers of species are missing from a downstream site relative to the control.

In situations where a bioclassification cannot be calculated for a downstream site due to a paucity of organisms, an assessment of impact will be based on weight of evidence. Metrics such as EPT taxa richness, total taxa richness, and abundance of organisms will be used to compare the control site with the study site.

1.5 Quality Assurance

All macroinvertebrate samples are logged into the Aquatic Biology Section's Macroinvertebrate Central Receiving Logbook upon delivery to the lab. Entries on the Macroinvertebrate Sampling Form are checked for agreement as to the number of jars and vials of samples collected from each station. The logbook serves to track sample possession and to document progress through initial log in, sorting, taxonomic identification, and data recording. The number of jars and/or vials containing the samples at each phase of sample processing, identification, and storage is recorded in the logbook. The identification data are recorded on a macroinvertebrate bench sheet. Completed bench sheets along with habitat assessment forms and any other hard copy related to a sample are kept on permanent file. Using the completed bench sheet, the data are then entered into a computer database. After data are entered into the database they are printed out on spreadsheets. These spreadsheets are compared to the original bench sheets and corrections made if needed.

Ten percent of all identified samples are selected at random to be evaluated for taxonomic accuracy. The quality assurance (QA)/quality control (QC) reviewer records the findings in the permanently bound Macroinvertebrate QA/QC Logbook (Appendix 7). Count accuracy is also checked and similar QA/QC measures (checking counts of other samples identified by errant taxonomist) are taken if average count error (all taxa) exceeds 10%. A sample is chosen for QA/QC after 10 samples have been identified. Each set of 10 completed samples is numbered. A single sample is randomly chosen by picking a coin from a jar of coins numbered one through ten. Each taxonomist is assigned a number and is chosen to perform QA/QC by random picking from numbered coins. The taxonomist that conducted the initial identifications is not eligible to conduct QA/QC on that sample. Disagreements are resolved between the QA/QC taxonomist and the original taxonomist, and the results are recorded in the QA/QC logbook.

To evaluate the precision of the field techniques 10% of the stations are sampled twice. This involves the selection of two adjacent stream reaches on the same stream. Each reach should be similar to each other with respect to habitat and hydrology. Each reach is sampled using the timed MHSP described above preferably on the same day. Each reach is treated as a separate station with a final bioclassification score calculated for each segment. Precision is determined by comparing the two bioclassification scores, which ideally should be the same.

Taxonomists use current, accepted taxonomic references in making identifications as well as in interpreting the results. The texts “*Larvae of the Southeastern USA Mayfly, Stonefly, and Caddisfly Species*” (Morse et al., 2017) and the fourth edition of “*An Introduction to the Aquatic Insects of North America*” (Merritt et al., 2008) have been found to be particularly useful. In addition, primary literature is kept on file and used when the above keys are not appropriate. Taxonomists also attend workshops and training sessions when available to expand their knowledge and competence and to remain current in the ever-changing realm of taxonomy.

1.6 Index Period

For ambient monitoring SCDHEC’s index period is 15 June to 15 September for the Blue Ridge, Piedmont, and Southeastern Plains ecoregions while it is 15 January to 15 March in the Middle Atlantic Coastal Plain Ecoregion. Attempts are made to stay away from the margins of these date brackets if time permits. Special studies in which an upstream control site can be used theoretically can be conducted at any time of the year. A summer sample is often used but recent findings demonstrate that a winter sample may be more valuable, particularly in small watersheds. This is because the upstream control often has a better macroinvertebrate community when water levels are higher and more stable, making any potential change more noticeable.

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Appendix 1. EPA Habitat Assessment Forms (high gradient for mountain and piedmont ecoregions)

HABITAT ASSESSMENT FIELD DATA SHEET

HIGH GRADIENT

Date _____ Collectors _____
 Station No. _____ Location _____

Habitat parameter	Condition category			
	Excellent	Good	Fair	Poor
1. Epifaunal (bottom) substrate / available cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonisation potential (i.e. logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonisation (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness	Gravel, cobble and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble and boulder particles are more than 75% surrounded by fine sediment.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Velocity / depth regime	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). Slow is <0.3m/s, deep is >0.5m).	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/depth regime (usually slow-deep).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment deposition	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions and bends; moderate deposition in pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel flow status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Appendix 1. EPA Habitat Assessment Forms (high gradient for mountain and piedmont ecoregions)

Habitat parameter	Condition category																				
	Excellent				Good				Fair				Poor								
6. Channel alteration	Channelization or dredging absent or minimal; stream with normal pattern.				Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e. dredging (greater than 20 yr) may be present, but recent channelization is not present.				Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.				Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
7. Frequency of riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.				Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.				Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.				Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
8. Bank stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.				Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.				Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.				Unstable; many eroded areas; 'raw' areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.								
Left Bank	10	9	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0	0	0	0
Right Bank	10	9	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0	0	0	0
9. Vegetative protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or non woody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.				70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one half of the potential plant stubble height remaining.				50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.				Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimetres or less in average stubble height.								
Left Bank	10	9	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0	0	0	0
Right Bank	10	9	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0	0	0	0
10. Riparian zone (score each bank)	Width of riparian zone >18 metres; human activities (i.e. roads, lawns, crops etc.) have not impacted the riparian zone.				Width of riparian zone 12-18 metres; human activities have impacted riparian zone only minimally.				Width of riparian zone 6-12 metres; human activities have impacted zone a great deal.				Width of riparian zone <6 metres; little or no riparian vegetation is present because of human activities.								
Left Bank	10	9	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0	0	0	0
Right Bank	10	9	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0	0	0	0

Appendix 1. EPA Habitat Assessment Forms (low gradient for coastal plain ecoregions)

HABITAT ASSESSMENT FIELD DATA SHEET

LOW GRADIENT

Date _____ Collectors _____
 Station No. _____ Location _____

Habitat parameter	Condition category			
	Excellent	Good	Fair	Poor
1. Epifaunal (bottom) substrate / available cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonisation potential (i.e. logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonisation (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool substrate	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Pool variability	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment deposition	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions and bends; moderate deposition in pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel flow status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Appendix 1. EPA Habitat Assessment Forms (low gradient for coastal plain ecoregions)

Habitat parameter	Condition category																				
	Excellent				Good				Fair				Poor								
6. Channel alteration	Channelization or dredging absent or minimal; stream with normal pattern.				Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e. dredging (greater than 20 yr) may be present, but recent channelization is not present.				Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.				Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
7. Channel sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)				The bends in the stream increase the stream length 2-3 times longer than if it was in a straight line.				The bends in the stream increase the stream length 1-2 times longer than if it was in a straight line.				Channel straight; waterway has been channelized for a long distance.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
8. Bank stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.				Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.				Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.				Unstable; many eroded areas; 'raw' areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.								
Left Bank	10	9	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0	0	0	0
Right Bank	10	9	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0	0	0	0
9. Vegetative protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or non woody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.				70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one half of the potential plant stubble height remaining.				50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.				Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimetres or less in average stubble height.								
Left Bank	10	9	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0	0	0	0
Right Bank	10	9	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0	0	0	0
10. Riparian zone (score each bank)	Width of riparian zone >18 metres; human activities (i.e. roads, lawns, crops etc.) have not impacted the riparian zone.				Width of riparian zone 12-18 metres; human activities have impacted riparian zone only minimally.				Width of riparian zone 6-12 metres; human activities have impacted zone a great deal.				Width of riparian zone <6 metres; little or no riparian vegetation is present because of human activities.								
Left Bank	10	9	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0	0	0	0
Right Bank	10	9	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0	0	0	0

SC DHEC ABS

Macroinvertebrate Habitat Assessment

Station _____ Date _____ Time _____ Jars _____ Vials _____

Stream _____ Location _____ County _____

Collectors _____ Field QC Logbook _____ Page# _____

pH (SU) _____ DO (mg/L) _____ H₂O Temp (C°) _____ Cond (umhos/cm) _____

Aquatic Habitat Score: Excellent = 5 Good = 4 Good-Fair = 3 Fair = 2 Poor = 1 Nonexistent = 0

*Habitat	Score						Comments
Root Banks	5	4	3	2	1	0	
Logs, Sticks, Snags	5	4	3	2	1	0	
Rock/Gravel Riffle	5	4	3	2	1	0	
Mature Leaf Pack	5	4	3	2	1	0	
Aquatic Vegetation	5	4	3	2	1	0	

*If aufwuchs and/or sediment on the habitats appear to adversely affect colonization by macroinvertebrates, this impact is noted in the comments section; however, the habitat score does not change.

	5	4	3	2	1	0
Braided channel:	Multiple clear channels with water under most conditions. "Main" channel hard to distinguish.		Side channel(s) present but with less flow/water.		Islands or side channels only during high water.	Not braided
Stream detritus % pine needles:	_____ %					
Amount of pine needles in stream:	5 more	4	3	2	1 less	0
Velocity/Flow:	5	4	3	2	1	0
Sedimentation:	3 (Little or No)		2 (Moderate)		1 (Severe)	

Species observed but not collected:

Appendix 3. Field Quality Control Logbook

SCDHEC Field Quality Control Log

Study/Purpose _____

Date _____ Collector(s) _____

Units on this page are the same as those on the facing page.

Station _____	Sampled _____	Not Sampled _____	Time Out _____
pH _____ DO _____	Temp _____	Sal _____	Cond _____ Secchi _____
Notes _____			
Station _____	Sampled _____	Not Sampled _____	Time Out _____
pH _____ DO _____	Temp _____	Sal _____	Cond _____ Secchi _____
Notes _____			
Station _____	Sampled _____	Not Sampled _____	Time Out _____
pH _____ DO _____	Temp _____	Sal _____	Cond _____ Secchi _____
Notes _____			
Station _____	Sampled _____	Not Sampled _____	Time Out _____
pH _____ DO _____	Temp _____	Sal _____	Cond _____ Secchi _____
Notes _____			
Station _____	Sampled _____	Not Sampled _____	Time Out _____
pH _____ DO _____	Temp _____	Sal _____	Cond _____ Secchi _____
Notes _____			
Station _____	Sampled _____	Not Sampled _____	Time Out _____
pH _____ DO _____	Temp _____	Sal _____	Cond _____ Secchi _____
Notes _____			
Station _____	Sampled _____	Not Sampled _____	Time Out _____
pH _____ DO _____	Temp _____	Sal _____	Cond _____ Secchi _____
Notes _____			
Station _____	Sampled _____	Not Sampled _____	Time Out _____
pH _____ DO _____	Temp _____	Sal _____	Cond _____ Secchi _____
Notes _____			

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Annelida	Amphichaeta	NA	NA	Amphichaeta	-
Annelida	Branchiobdellae	Branchiobdellida	Branchiobdellidae	Branchiobdellidae	-
Annelida	Branchiobdellae	Branchiobdellida	Cambarincolidae	Pterodrilus alaicornis	5.00
Annelida	Hirudinea	NA	NA	Hirudinea	-
Annelida	Hirudinea	Pharyngobdellida	Erpobdellidae	Erpobdella/Mooreobdella sp.	8.60
Annelida	Hirudinea	Pharyngobdellida	Erpobdellidae	Erpobdellidae	-
Annelida	Hirudinea	Pharyngobdellida	Erpobdellidae	Mooreobdella tetragon	9.40
Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Desserobdella phalera	6.60
Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Gloiobdella elongata	9.10
Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Glossiphoniidae	9.00
Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Helobdella sp.	9.00
Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Helobdella stagnalis	8.60
Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Helobdella triserialis	9.30
Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Placobdella nuchalis	9.00
Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Placobdella papillata	9.00
Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Placobdella papillifera	8.20
Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Placobdella parasitica	8.90
Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Placobdella sp.	9.00
Annelida	Hirudinea	Rhynchobdellida	Hirudinidae	Batracobdella sp.	7.61
Annelida	Hirudinea	Rhynchobdellida	Hirudinidae	Hirudinidae	5.00
Annelida	Hirudinea	Rhynchobdellida	Hirudinidae	Macrobdella decora	-
Annelida	Hirudinea	Rhynchobdellida	Hirudinidae	Macrobdella ditetra	4.00
Annelida	Hirudinea	Rhynchobdellida	Hirudinidae	Philobdella gracilis	5.00
Annelida	Hirudinea	Rhynchobdellida	Hirudinidae	Philodella sp.	5.00
Annelida	Oligochaeta	Aeolosomatida	Aeolosomatidae	Aeolosoma sp.	-
Annelida	Oligochaeta	Haplotaxida	Enchytraeidae	Enchytraeidae	9.84
Annelida	Oligochaeta	Haplotaxida	Haplotaxidae	Haplotaxis gordioides	3.60
Annelida	Oligochaeta	Haplotaxida	NA	Haplotaxida	-
Annelida	Oligochaeta	Haplotaxida	Naididae	Chaetogaster diastrophus	-
Annelida	Oligochaeta	Haplotaxida	Naididae	Chaetogaster sp.	-
Annelida	Oligochaeta	Haplotaxida	Naididae	Dero digitata	10.00
Annelida	Oligochaeta	Haplotaxida	Naididae	Dero sp.	9.80
Annelida	Oligochaeta	Haplotaxida	Naididae	Naididae	-
Annelida	Oligochaeta	Haplotaxida	Naididae	Naidinae	-
Annelida	Oligochaeta	Haplotaxida	Naididae	Nais behningi	8.90
Annelida	Oligochaeta	Haplotaxida	Naididae	Nais communis	8.81
Annelida	Oligochaeta	Haplotaxida	Naididae	Nais sp.	8.70
Annelida	Oligochaeta	Haplotaxida	Naididae	Nais variabilis	8.90
Annelida	Oligochaeta	Haplotaxida	Naididae	Pristina longisoma	7.70
Annelida	Oligochaeta	Haplotaxida	Naididae	Pristinella sp.	7.70
Annelida	Oligochaeta	Haplotaxida	Naididae	Ripistes parasita	2.00
Annelida	Oligochaeta	Haplotaxida	Naididae	Slavina appendiculata	8.40
Annelida	Oligochaeta	Haplotaxida	Naididae	Vejdovskyella comata	-
Annelida	Oligochaeta	Haplotaxida	Niadidae	Pristina sp.	7.70
Annelida	Oligochaeta	Haplotaxida	Niadidae	Stylaria lacustris	8.40
Annelida	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus hoffmeisteri	9.40
Annelida	Oligochaeta	Lumbriculida	Lumbriculida	Eclipidrilus sp.	-
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	Lumbriculidae	7.03
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	Stylodrilus sp.	7.03
Annelida	Oligochaeta	Lumbriculida	Megasolecidae	Megasolecidae	-
Annelida	Oligochaeta	NA	NA	Oligochaeta	-
Annelida	Oligochaeta	Tubificida	Opisthocystidae	Opisthocystidae	9.04
Annelida	Oligochaeta	Tubificida	Tubificidae	Aulodrilus limnobius	5.50
Annelida	Oligochaeta	Tubificida	Tubificidae	Aulodrilus paucichaeta	6.00
Annelida	Oligochaeta	Tubificida	Tubificidae	Aulodrilus pigueti	5.50
Annelida	Oligochaeta	Tubificida	Tubificidae	Aulodrilus pluriseta	5.60
Annelida	Oligochaeta	Tubificida	Tubificidae	Branchiura sowerbyi	8.60
Annelida	Oligochaeta	Tubificida	Tubificidae	Ilyodrilus templetoni	9.30
Annelida	Oligochaeta	Tubificida	Tubificidae	Isochaetides curvisetosus	6.80
Annelida	Oligochaeta	Tubificida	Tubificidae	Isochaetides freyi	8.60

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Annelida	Oligochaeta	Tubificida	Tubificidae	Limnodrilus cervix	9.90
Annelida	Oligochaeta	Tubificida	Tubificidae	Limnodrilus sp.	8.50
Annelida	Oligochaeta	Tubificida	Tubificidae	Limnodrilus udekemianus	9.50
Annelida	Oligochaeta	Tubificida	Tubificidae	Pelosclex sp.	5.40
Annelida	Oligochaeta	Tubificida	Tubificidae	Quistadrilus multisetosus	3.90
Annelida	Oligochaeta	Tubificida	Tubificidae	Quistadrilus sp.	7.11
Annelida	Oligochaeta	Tubificida	Tubificidae	Spirosperma nikolskyi	6.00
Annelida	Oligochaeta	Tubificida	Tubificidae	Spirosperma sp.	5.40
Annelida	Oligochaeta	Tubificida	Tubificidae	Tubifex tubifex	9.90
Annelida	Oligochaeta	Tubificida	Tubificidae	Tubificidae	7.11
Annelida	Polychaeta	NA	NA	Polychaeta	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paraphaenocladus/Parametricnemus	-
Arthropoda	Arachnida	Acariformes	NA	Hydracarina	5.53
Arthropoda	Branchiopoda	Cladocera	Daphniidae	Ceriodaphnia sp.	-
Arthropoda	Branchiopoda	Cladocera	NA	Cladocera	-
Arthropoda	Crustacea	Amphipoda	Gammaridae	Crangonyx serratus	7.87
Arthropoda	Crustacea	Amphipoda	Gammaridae	Crangonyx sp.	7.20
Arthropoda	Crustacea	Amphipoda	Gammaridae	Gammaridae	-
Arthropoda	Crustacea	Amphipoda	Gammaridae	Gammarus fasciatus	7.00
Arthropoda	Crustacea	Amphipoda	Gammaridae	Gammarus sp.	7.10
Arthropoda	Crustacea	Amphipoda	Gammaridae	Synurella sp.	-
Arthropoda	Crustacea	Amphipoda	NA	Amphipoda	-
Arthropoda	Crustacea	Amphipoda	Talitridae	Hyaella azteca	7.75
Arthropoda	Crustacea	Amphipoda	Talitridae	Hyaella sp.	7.20
Arthropoda	Crustacea	Copepoda	NA	Copepoda	-
Arthropoda	Crustacea	Decapoda	Cambaridae	Cambaridae	7.50
Arthropoda	Crustacea	Decapoda	Cambaridae	Cambarus (P.) sp. C	6.30
Arthropoda	Crustacea	Decapoda	Cambaridae	Cambarus asperimanus	7.50
Arthropoda	Crustacea	Decapoda	Cambaridae	Cambarus bartoni	4.60
Arthropoda	Crustacea	Decapoda	Cambaridae	Cambarus robustus	4.00
Arthropoda	Crustacea	Decapoda	Cambaridae	Cambarus sp.	7.50
Arthropoda	Crustacea	Decapoda	Cambaridae	Cambarus tuckasegee	2.00
Arthropoda	Crustacea	Decapoda	Cambaridae	Orconectes cristavarius	5.50
Arthropoda	Crustacea	Decapoda	Cambaridae	Orconectes rusticus	6.00
Arthropoda	Crustacea	Decapoda	Cambaridae	Orconectes sp.	2.70
Arthropoda	Crustacea	Decapoda	Cambaridae	Procambarus acutus	7.00
Arthropoda	Crustacea	Decapoda	Cambaridae	Procambarus clarkii	7.00
Arthropoda	Crustacea	Decapoda	Cambaridae	Procambarus echinatus	-
Arthropoda	Crustacea	Decapoda	Cambaridae	Procambarus hirsutus	9.30
Arthropoda	Crustacea	Decapoda	Cambaridae	Procambarus sp.	9.30
Arthropoda	Crustacea	Decapoda	Cambaridae	Procambarus troglodytes	9.30
Arthropoda	Crustacea	Decapoda	Palaemonidae	Palaemonetes paludosus	6.10
Arthropoda	Crustacea	Decapoda	Palaemonidae	Palaemonetes sp.	8.70
Arthropoda	Crustacea	Isopoda	Anthuridae	Cyathura polita	-
Arthropoda	Crustacea	Isopoda	Asellidae	Asellidae	-
Arthropoda	Crustacea	Isopoda	Asellidae	Caecidotea forbesi	6.00
Arthropoda	Crustacea	Isopoda	Asellidae	Caecidotea laticaudatus	3.00
Arthropoda	Crustacea	Isopoda	Asellidae	Caecidotea obtusus	7.00
Arthropoda	Crustacea	Isopoda	Asellidae	Caecidotea racovitzai	5.50
Arthropoda	Crustacea	Isopoda	Asellidae	Caecidotea sp.	8.40
Arthropoda	Crustacea	Isopoda	Asellidae	Lirceus lineatus	7.85
Arthropoda	Crustacea	Isopoda	Asellidae	Lirceus sp.	7.40
Arthropoda	Crustacea	Isopoda	Isopoda	Isopoda	-
Arthropoda	Crustacea	Isopoda	NA	NA	-
Arthropoda	Crustacea	Isopoda	Sphaeromatidae	Cassidinidea lunifrons	-
Arthropoda	Crustacea	Isopoda	Sphaeromatidae	Cassidinidea ovalis	-
Arthropoda	Crustacea	Isopoda	Sphaeromatidae	Sphaeromatidae	-
Arthropoda	Crustacea	Ostracoda	NA	Ostracoda	-
Arthropoda	Hexapoda	Coleoptera	Carabidae	Carabidae	-
Arthropoda	Hexapoda	Coleoptera	Chrysomelidae	Agasicles hygrophila	-

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Coleoptera	Chrysomelidae	Chrysomelidae	-
Arthropoda	Hexapoda	Coleoptera	Chrysomelidae	Disonycha collata	-
Arthropoda	Hexapoda	Coleoptera	Chrysomelidae	Disonycha pennsylvanica	-
Arthropoda	Hexapoda	Coleoptera	Chrysomelidae	Disonycha sp.	-
Arthropoda	Hexapoda	Coleoptera	Chrysomelidae	Donacia sp.	-
Arthropoda	Hexapoda	Coleoptera	Chrysomelidae	Pyrrhalta nymphaeae	-
Arthropoda	Hexapoda	Coleoptera	Chrysomelidae	Pyrrhalta sp.	-
Arthropoda	Hexapoda	Coleoptera	Curculionidae	Bagous sp.	-
Arthropoda	Hexapoda	Coleoptera	Curculionidae	Curculionidae	-
Arthropoda	Hexapoda	Coleoptera	Dryopidae	Dryopidae	-
Arthropoda	Hexapoda	Coleoptera	Dryopidae	Helichus basalis	0.50
Arthropoda	Hexapoda	Coleoptera	Dryopidae	Helichus fastigiatus	4.60
Arthropoda	Hexapoda	Coleoptera	Dryopidae	Helichus lithophilus	3.00
Arthropoda	Hexapoda	Coleoptera	Dryopidae	Helichus sp.	4.10
Arthropoda	Hexapoda	Coleoptera	Dryopidae	Helichus striatus	4.60
Arthropoda	Hexapoda	Coleoptera	Dryopidae	Pelonomus obscurus	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Acilius fraternus	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Acilius sp.	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Agabetes acuductus	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Agabetes sp.	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Agabus sp.	8.30
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Agabus/Platambus sp.	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Anodocheilus exiguus	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Bidessonotus longovalis	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Bidessonotus sp.	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Bidessus fuscatus	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Celina sp.	8.04
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Copelatus glyphicus	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Copelatus sp.	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Coptotomus interrogatus	8.50
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Coptotomus loticus	9.26
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Coptotomus sp.	8.50
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Cybister sp.	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Deronecetes sp.	4.00
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Desmopachria grana	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Dytiscidae	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Dytiscus fasciventris	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Dytiscus hybridus	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Dytiscus sp.	7.70
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Eretes sp.	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Falloporus sp.	2.96
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Graphoderus liberus	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Hoperius planatus	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Hydaticus sp.	9.10
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Hydrocolus sp.	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Hydroporus sp.	7.00
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Hydroporus undulatus	8.62
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Hydroporus vittatipennis	8.62
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Hydroporus/Hygrotus sp.	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Hydrovatus sp.	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Hygrotus farctus	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Hygrotus sp.	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Ilybius sp.	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Laccophilus sp.	9.80
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Laccornis diformis	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Laccornis sp.	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Liodesus sp.	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Lioporeus pilatei	3.00
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Lioporeus sp.	4.00
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Lioporeus triangularis	3.00

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Matus ovatus	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Matus sp.	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Neoporus clypealis	8.62
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Neoporus mellitus	3.90
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Neoporus sp.	5.00
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Platambus sp.	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Prodaticus bimarginatus	9.10
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Prodaticus sp.	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Rhantus sp.	3.61
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Stictotarsus griseostriatus	4.90
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Thermonectus sp.	-
Arthropoda	Hexapoda	Coleoptera	Dytiscidae	Uvarus sp.	-
Arthropoda	Hexapoda	Coleoptera	Elmidae	Ancyronyx variegatus	6.80
Arthropoda	Hexapoda	Coleoptera	Elmidae	Dubiraphia bivittata	5.93
Arthropoda	Hexapoda	Coleoptera	Elmidae	Dubiraphia quadrinotata	5.50
Arthropoda	Hexapoda	Coleoptera	Elmidae	Dubiraphia sp.	5.50
Arthropoda	Hexapoda	Coleoptera	Elmidae	Dubiraphia vittata	5.00
Arthropoda	Hexapoda	Coleoptera	Elmidae	Elmidae	-
Arthropoda	Hexapoda	Coleoptera	Elmidae	Gonielmis dietrichi	-
Arthropoda	Hexapoda	Coleoptera	Elmidae	Macronychus glabratus	4.70
Arthropoda	Hexapoda	Coleoptera	Elmidae	Microcylloepus pusillus	3.30
Arthropoda	Hexapoda	Coleoptera	Elmidae	Optioservus immunis	2.40
Arthropoda	Hexapoda	Coleoptera	Elmidae	Optioservus ovalis	2.10
Arthropoda	Hexapoda	Coleoptera	Elmidae	Optioservus sp.	2.10
Arthropoda	Hexapoda	Coleoptera	Elmidae	Optioservus trivittatus	2.10
Arthropoda	Hexapoda	Coleoptera	Elmidae	Oulimnius latiusculus	1.90
Arthropoda	Hexapoda	Coleoptera	Elmidae	Oulimnius sp.	1.80
Arthropoda	Hexapoda	Coleoptera	Elmidae	Promoesia elegans	2.10
Arthropoda	Hexapoda	Coleoptera	Elmidae	Promoesia sp.	3.10
Arthropoda	Hexapoda	Coleoptera	Elmidae	Promoesia tardella	0.001
Arthropoda	Hexapoda	Coleoptera	Elmidae	Stenelmis antennalis	5.10
Arthropoda	Hexapoda	Coleoptera	Elmidae	Stenelmis convexula	5.10
Arthropoda	Hexapoda	Coleoptera	Elmidae	Stenelmis crenata	7.80
Arthropoda	Hexapoda	Coleoptera	Elmidae	Stenelmis fuscata	5.10
Arthropoda	Hexapoda	Coleoptera	Elmidae	Stenelmis grossa	5.00
Arthropoda	Hexapoda	Coleoptera	Elmidae	Stenelmis hungerfordi	5.10
Arthropoda	Hexapoda	Coleoptera	Elmidae	Stenelmis lignicola	3.00
Arthropoda	Hexapoda	Coleoptera	Elmidae	Stenelmis mera	5.10
Arthropoda	Hexapoda	Coleoptera	Elmidae	Stenelmis mirabilis	5.10
Arthropoda	Hexapoda	Coleoptera	Elmidae	Stenelmis sandersoni	5.10
Arthropoda	Hexapoda	Coleoptera	Elmidae	Stenelmis sp.	5.60
Arthropoda	Hexapoda	Coleoptera	Elmidae	Stenelmis xylonastis	5.10
Arthropoda	Hexapoda	Coleoptera	Gyrinidae	Dineutus carolinus	5.54
Arthropoda	Hexapoda	Coleoptera	Gyrinidae	Dineutus discolor	5.54
Arthropoda	Hexapoda	Coleoptera	Gyrinidae	Dineutus robertsi	5.54
Arthropoda	Hexapoda	Coleoptera	Gyrinidae	Dineutus sp.	5.00
Arthropoda	Hexapoda	Coleoptera	Gyrinidae	Gyretes sp.	-
Arthropoda	Hexapoda	Coleoptera	Gyrinidae	Gyrinidae	-
Arthropoda	Hexapoda	Coleoptera	Gyrinidae	Gyrinus sp.	5.80
Arthropoda	Hexapoda	Coleoptera	Gyrinidae	Spanglerogyrus sp.	-
Arthropoda	Hexapoda	Coleoptera	Haliplidae	Haliplidae	-
Arthropoda	Hexapoda	Coleoptera	Haliplidae	Haliplus fasciatus	-
Arthropoda	Hexapoda	Coleoptera	Haliplidae	Haliplus sp.	8.71
Arthropoda	Hexapoda	Coleoptera	Haliplidae	Helocombus sp.	-
Arthropoda	Hexapoda	Coleoptera	Haliplidae	Peltodytes dietrichi	8.40
Arthropoda	Hexapoda	Coleoptera	Haliplidae	Peltodytes dunavani	8.40
Arthropoda	Hexapoda	Coleoptera	Haliplidae	Peltodytes duodicimpunctatus	8.40
Arthropoda	Hexapoda	Coleoptera	Haliplidae	Peltodytes lengi	8.00
Arthropoda	Hexapoda	Coleoptera	Haliplidae	Peltodytes muticus	8.40
Arthropoda	Hexapoda	Coleoptera	Haliplidae	Peltodytes oppositus	8.73

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Coleoptera	Haliplidae	Peltodytes sexmaculatus	8.40
Arthropoda	Hexapoda	Coleoptera	Haliplidae	Peltodytes shermani	8.40
Arthropoda	Hexapoda	Coleoptera	Haliplidae	Peltodytes sp.	8.40
Arthropoda	Hexapoda	Coleoptera	Hydraenidae	Hydraena sp.	-
Arthropoda	Hexapoda	Coleoptera	Hydraenidae	Hydraenidae	-
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Anacaena sp.	-
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Berosus sp.	8.80
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Cercyon sp.	-
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Cymbiodyta sp.	-
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Cymbiodyta/Helocombus sp.	-
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Derallus altus	-
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Dobolocellus ovatus	-
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Enochrus sayi	8.75
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Enochrus sp.	8.50
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Enochrus sublongus	8.75
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Helobata striata	-
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Helochares maculicollis	-
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Helochares sp.	-
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Helophorus sp.	7.60
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Hydrobiomorpha casta	0.001
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Hydrobiomorpha sp.	0.001
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Hydrobius sp.	-
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Hydrochara obtusa	-
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Hydrochara soror	-
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Hydrochara sp.	-
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Hydrochus sp.	6.55
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Hydrophilidae	-
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Hydrophilus triangularis	-
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Laccobius agilis	6.50
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Laccobius sp.	6.50
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Paracymus confusus	-
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Paracymus sp.	-
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Phaenonotum sp.	-
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Sperchopsis tessellatus	4.40
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Tropisternus blatchleyi	9.68
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Tropisternus collaris	9.30
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Tropisternus glaber	9.68
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Tropisternus limbatus	9.68
Arthropoda	Hexapoda	Coleoptera	Hydrophilidae	Tropisternus sp.	9.30
Arthropoda	Hexapoda	Coleoptera	NA	Coleoptera	-
Arthropoda	Hexapoda	Coleoptera	Noteridae	Hydrocanthus atripennis	7.14
Arthropoda	Hexapoda	Coleoptera	Noteridae	Hydrocanthus iricolor	7.14
Arthropoda	Hexapoda	Coleoptera	Noteridae	Hydrocanthus sp.	7.14
Arthropoda	Hexapoda	Coleoptera	Noteridae	Noteridae	-
Arthropoda	Hexapoda	Coleoptera	Noteridae	Notomicrus manulus	-
Arthropoda	Hexapoda	Coleoptera	Noteridae	Notomicrus sp.	-
Arthropoda	Hexapoda	Coleoptera	Noteridae	Suphis inflatus	-
Arthropoda	Hexapoda	Coleoptera	Noteridae	Suphisellus sp.	-
Arthropoda	Hexapoda	Coleoptera	Psephenidae	Ectopria nervosa	4.30
Arthropoda	Hexapoda	Coleoptera	Psephenidae	Ectopria sp.	-
Arthropoda	Hexapoda	Coleoptera	Psephenidae	Psephenidae	-
Arthropoda	Hexapoda	Coleoptera	Psephenidae	Psephenus herricki	2.30
Arthropoda	Hexapoda	Coleoptera	Ptilodactylidae	Anchytarsus bicolor	2.40
Arthropoda	Hexapoda	Coleoptera	Ptilodactylidae	Ptilodactyla augustata	-
Arthropoda	Hexapoda	Coleoptera	Ptilodactylidae	Ptilodactyla serricollis	-
Arthropoda	Hexapoda	Coleoptera	Ptilodactylidae	Ptilodactyla sp.	-
Arthropoda	Hexapoda	Coleoptera	Ptilodactylidae	Ptilodactylidae	-
Arthropoda	Hexapoda	Coleoptera	Scirtidae	Cyphon sp.	-
Arthropoda	Hexapoda	Coleoptera	Scirtidae	Elodes sp.	-
Arthropoda	Hexapoda	Coleoptera	Scirtidae	Ora sp.	-

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Coleoptera	Scirtidae	Prionocyphon sp.	-
Arthropoda	Hexapoda	Coleoptera	Scirtidae	Scirtes sp.	-
Arthropoda	Hexapoda	Coleoptera	Scirtidae	Scirtidae	-
Arthropoda	Hexapoda	Coleoptera	Scirtidae	Scirtidae	-
Arthropoda	Hexapoda	Coleoptera	Staphylinidae	Staphylinidae	-
Arthropoda	Hexapoda	Coleoptera	Staphylinidae	Stenus sp.	-
Arthropoda	Hexapoda	Collembola	Entomobryidae	Entomobryidae	-
Arthropoda	Hexapoda	Collembola	NA	Collembola	-
Arthropoda	Hexapoda	Diptera	Anthomyiidae/Muscidae	Anthomyiidae/Muscidae	-
Arthropoda	Hexapoda	Diptera	Athericidse	Atherix lantha	1.80
Arthropoda	Hexapoda	Diptera	Athericidse	Atherix sp.	0.90
Arthropoda	Hexapoda	Diptera	Bibionidae	Dilophus sp.	-
Arthropoda	Hexapoda	Diptera	Blephariceridae	Blepharicera sp.	0.001
Arthropoda	Hexapoda	Diptera	Ceratopogonidae	Alluaudomyia neehami	5.99
Arthropoda	Hexapoda	Diptera	Ceratopogonidae	Alluaudomyia sp.	5.99
Arthropoda	Hexapoda	Diptera	Ceratopogonidae	Atrichopogon sp.	6.10
Arthropoda	Hexapoda	Diptera	Ceratopogonidae	Bezzia	5.70
Arthropoda	Hexapoda	Diptera	Ceratopogonidae	Culicoides sp.	8.60
Arthropoda	Hexapoda	Diptera	Ceratopogonidae	Dasyhelea sp.	5.00
Arthropoda	Hexapoda	Diptera	Ceratopogonidae	Forcipomyia sp.	-
Arthropoda	Hexapoda	Diptera	Ceratopogonidae	Forcipomyiinae	-
Arthropoda	Hexapoda	Diptera	Ceratopogonidae	Leptoconops sp.	-
Arthropoda	Hexapoda	Diptera	Ceratopogonidae	Mallochohelea sp.	-
Arthropoda	Hexapoda	Diptera	Ceratopogonidae	Palpomyia complex	5.70
Arthropoda	Hexapoda	Diptera	Ceratopogonidae	Probezzia sp.	-
Arthropoda	Hexapoda	Diptera	Ceratopogonidae	Sphaeromyias sp.	-
Arthropoda	Hexapoda	Diptera	Ceratopogonidae	Stilobezzia sp.	-
Arthropoda	Hexapoda	Diptera	Ceratopogonidae	Ceratopogonidae	-
Arthropoda	Hexapoda	Diptera	Ceratopogonidae	Ceratopogoniinae	-
Arthropoda	Hexapoda	Diptera	Chaoboridae	Chaoboridae	-
Arthropoda	Hexapoda	Diptera	Chaoboridae	Chaoborus albatus	-
Arthropoda	Hexapoda	Diptera	Chaoboridae	Chaoborus americanus	-
Arthropoda	Hexapoda	Diptera	Chaoboridae	Chaoborus flavicans	-
Arthropoda	Hexapoda	Diptera	Chaoboridae	Chaoborus punctipennis	8.50
Arthropoda	Hexapoda	Diptera	Chaoboridae	Chaoborus sp.	8.50
Arthropoda	Hexapoda	Diptera	Chironomidae	Ablabesmyia (Karelia) sp.	7.20
Arthropoda	Hexapoda	Diptera	Chironomidae	Ablabesmyia annulata	2.04
Arthropoda	Hexapoda	Diptera	Chironomidae	Ablabesmyia aspera	7.20
Arthropoda	Hexapoda	Diptera	Chironomidae	Ablabesmyia cinctipes	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Ablabesmyia hauberi	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Ablabesmyia ideii	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Ablabesmyia janata	7.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Ablabesmyia mallochi	7.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Ablabesmyia monilis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Ablabesmyia monilis/rhamphe gr.	6.80
Arthropoda	Hexapoda	Diptera	Chironomidae	Ablabesmyia parajanta	7.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Ablabesmyia parajanta/janata	7.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Ablabesmyia peleensis	9.67
Arthropoda	Hexapoda	Diptera	Chironomidae	Ablabesmyia philosphagnos	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Ablabesmyia rhamphe gr.	6.80
Arthropoda	Hexapoda	Diptera	Chironomidae	Ablabesmyia simpsoni	4.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Ablabesmyia sp.	7.20
Arthropoda	Hexapoda	Diptera	Chironomidae	Acamptocladus sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Acricotopus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Alotanypus aris	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Antillocladius arcuatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Antillocladius pluspilalus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Antillocladius sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Apedilum elachistum	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Apedilum sp.	-

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Diptera	Chironomidae	Apedilum subcinctum	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Apsectrotanypus johnsoni	0.10
Arthropoda	Hexapoda	Diptera	Chironomidae	Axarus festivus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Axarus rogersi	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Axarus sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Axarus taenionotus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Beardius truncatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Beckidia sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Bethbilbeckia floridensis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Boreochlus persimilis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Brillia flavifrons	3.90
Arthropoda	Hexapoda	Diptera	Chironomidae	Brillia parva	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Brillia sera	5.20
Arthropoda	Hexapoda	Diptera	Chironomidae	Brillia sp.	5.70
Arthropoda	Hexapoda	Diptera	Chironomidae	Brundiniella eumorpha	2.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Bryophaenocladus digitatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Bryophaenocladus flavoscutellatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Bryophaenocladus fuminosus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Bryophaenocladus impectinus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Bryophaenocladus psilacrus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Bryophaenocladus sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Bryophaenocladus sp. 1	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Bryophaenocladus sp. 2	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Bryophaenocladus sp. 3	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Camptocladus stercorarius	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cantopelopia gesta	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cardiocladus albiplumus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cardiocladus obscurus	6.20
Arthropoda	Hexapoda	Diptera	Chironomidae	Cardiocladus sp.	6.20
Arthropoda	Hexapoda	Diptera	Chironomidae	Chaetocladus ligni	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Chaetocladus piger	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Chaetocladus sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Chasmatonotus bicolor	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Chasmatonotus bimaculatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Chasmatonotus sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Chasmatonotus unimaculatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Chernovskiiia orbicus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Chernovskiiia sp.	9.63
Arthropoda	Hexapoda	Diptera	Chironomidae	Chironomidae	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Chironominae	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Chironomini	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Chironomini genus III	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Chironomini genus IV	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Chironomus austini	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Chironomus crassicaudatus	9.30
Arthropoda	Hexapoda	Diptera	Chironomidae	Chironomus decorus complex	9.30
Arthropoda	Hexapoda	Diptera	Chironomidae	Chironomus longipes	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Chironomus major	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Chironomus ochreatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Chironomus plumosus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Chironomus riparius	9.30
Arthropoda	Hexapoda	Diptera	Chironomidae	Chironomus sp.	9.30
Arthropoda	Hexapoda	Diptera	Chironomidae	Chironomus staegeri	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Chironomus stigmaterus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Chironomus tuxis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cladopelma amachaerum	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cladopelma collator	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cladopelma edwardsi	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cladopelma forcipis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cladopelma galeator	-

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Diptera	Chironomidae	Cladopelma sp.	4.09
Arthropoda	Hexapoda	Diptera	Chironomidae	Cladopelma spectabile	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cladopelma virudulum	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cladotanytarsus aeiparthenus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cladotanytarsus cf. daviesi	2.80
Arthropoda	Hexapoda	Diptera	Chironomidae	Cladotanytarsus sp.	4.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Cladotanytarsus sp. A (Epler)	4.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Cladotanytarsus sp. B (Epler)	7.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Cladotanytarsus sp. D (Epler)	2.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Cladotanytarsus sp. E (Epler)	4.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Cladotanytarsus sp. F (Epler)	3.20
Arthropoda	Hexapoda	Diptera	Chironomidae	Cladotanytarsus sp. H (Epler)	4.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Cladotanytarsus sp. I (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cladotanytarsus viridiventris	4.70
Arthropoda	Hexapoda	Diptera	Chironomidae	Clinotanypus pinguis	7.80
Arthropoda	Hexapoda	Diptera	Chironomidae	Clinotanypus sp.	7.80
Arthropoda	Hexapoda	Diptera	Chironomidae	Clunia marshalli	8.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Coelotanypu scapularis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Coelotanypu tricolor	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Coelotanypus concinnus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Coelotanypus sp.	8.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Compteromesa oconeensis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Compterosmittia nerius	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Conchapelopia aleta	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Conchapelopia currani	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Conchapelopia fasciata	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Conchapelopia gr.	8.43
Arthropoda	Hexapoda	Diptera	Chironomidae	Conchapelopia pallens	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Conchapelopia rurika	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Conchapelopia sp.	8.43
Arthropoda	Hexapoda	Diptera	Chironomidae	Conchapelopia sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Conchapelopia telema	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Constempellina brevicosta	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Constempellina sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Constempellina sp. A (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Corynoneura cf. oxfordana	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Corynoneura floridaensis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Corynoneura lobata	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Corynoneura sp.	5.70
Arthropoda	Hexapoda	Diptera	Chironomidae	Corynoneura sp. C (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Corynoneura sp. D (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Corynoneura sp. E (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Corynoneura/Thienemanniella	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus absurdus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus albiforceps	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus annulator complex	8.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus belkini	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus bicinctus	8.70
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus cf. fuscus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus cf. patens	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus cylindraceus	2.30
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus elegans	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus festivellus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus fugax	5.60
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus infuscatus gr.	9.10
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus intersectus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus lebetis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus luciae	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus nostocicola	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus nr trifascia	2.80

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus politus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus slossonae	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus sp. "Ozarks" (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus sp. "Santa Fe" (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus sp. 2 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus sylvestris	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus tremulus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus triannulatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus tricinctus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus varipes	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus vierriensis gr.	5.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Cricotopus/Orthocladius	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cryptochironomua psittacinus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cryptochironomus argus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cryptochironomus blarina gr.	8.50
Arthropoda	Hexapoda	Diptera	Chironomidae	Cryptochironomus digitatus	6.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Cryptochironomus fulvus	6.70
Arthropoda	Hexapoda	Diptera	Chironomidae	Cryptochironomus NR ponderosus	6.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Cryptochironomus parafulvus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cryptochironomus scimitarus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cryptochironomus sorex	6.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Cryptochironomus sp.	6.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Cryptotendipes casuaris	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cryptotendipes emorsa	6.20
Arthropoda	Hexapoda	Diptera	Chironomidae	Cryptotendipes pseudotener	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Cryptotendipes sp.	6.20
Arthropoda	Hexapoda	Diptera	Chironomidae	Demeijerea atrimana	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Demeijerea brachialis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Demeijerea obrepta	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Demeijerea sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Demicryptochironomus cuneatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Demicryptochironomus sp.	2.20
Arthropoda	Hexapoda	Diptera	Chironomidae	Demicryptochironomus sp. A (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Demicryptochironomus sp. B (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Demicryptochironomus sp. C (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Denopelopia atria	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Derotanypus sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Diamesa nivoriunda	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Diamesa sp.	6.60
Arthropoda	Hexapoda	Diptera	Chironomidae	Diamesa sp. A (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Diamesa sp. B (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Diamesa sp. C (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Diamesinae	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Diamesinae genus P (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Dicotendipes fumidus	8.80
Arthropoda	Hexapoda	Diptera	Chironomidae	Dicotendipes hulberti	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Dicotendipes leucoscelis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Dicotendipes lobus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Dicotendipes lucifer	7.95
Arthropoda	Hexapoda	Diptera	Chironomidae	Dicotendipes modestus	9.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Dicotendipes neomodestus	7.90
Arthropoda	Hexapoda	Diptera	Chironomidae	Dicotendipes nervosus	9.50
Arthropoda	Hexapoda	Diptera	Chironomidae	Dicotendipes simpsoni	9.80
Arthropoda	Hexapoda	Diptera	Chironomidae	Dicotendipes sp.	7.20
Arthropoda	Hexapoda	Diptera	Chironomidae	Dicotendipes thanatogratus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Dicotendipes tritonus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Diplocladius cultriger	8.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Diplosmittia sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Djalmabatista pulchra	-

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Diptera	Chironomidae	Djalmabatista pulchra variant	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Djalmabatista sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Doithrix dillonae	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Doithrix parvivillosa	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Doithrix sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Doithrix villosa	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Einfeldia brunneipennis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Einfeldia natchitochaeae	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Einfeldia pagana	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Einfeldia sp.	7.10
Arthropoda	Hexapoda	Diptera	Chironomidae	Einfeldia sp. A (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Endochironomus nigricans	7.79
Arthropoda	Hexapoda	Diptera	Chironomidae	Endochironomus sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Endochironomus sp. A (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Endochironomus subtendens	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Endotribelos hesperium	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Epoicocladius flavens	0.001
Arthropoda	Hexapoda	Diptera	Chironomidae	Epoicocladius sp.	0.001
Arthropoda	Hexapoda	Diptera	Chironomidae	Epoicocladius sp. 3 (Epler)	0.001
Arthropoda	Hexapoda	Diptera	Chironomidae	Eukiefferiella brehmi gr.	2.50
Arthropoda	Hexapoda	Diptera	Chironomidae	Eukiefferiella brevicalcar gr.	2.90
Arthropoda	Hexapoda	Diptera	Chironomidae	Eukiefferiella brevicalcar gr. sp. A (Epler)	2.20
Arthropoda	Hexapoda	Diptera	Chironomidae	Eukiefferiella brevinervis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Eukiefferiella claripennis gr.	6.20
Arthropoda	Hexapoda	Diptera	Chironomidae	Eukiefferiella coerulea	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Eukiefferiella devonica sp. A (Epler)	3.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Eukiefferiella devonica sp. B (Epler)	3.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Eukiefferiella gr.acei gr.	4.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Eukiefferiella ilkleyensis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Eukiefferiella pseudomontana gr.	1.30
Arthropoda	Hexapoda	Diptera	Chironomidae	Eukiefferiella sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Eukiefferiella tirolensis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Eukiefferiella/Tvetenia	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Euryhapsis sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Euryhapsis sp. 1 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Fissimentum sp. A (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Fittkauimyia sarta	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Georthocladus curticornus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Georthocladus fimbriosus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Georthocladus sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Georthocladus triquetrus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Gillotia albobiridis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Glyptotendipes amplus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Glyptotendipes barbipes	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Glyptotendipes meridionalis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Glyptotendipes paripes	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Glyptotendipes seminole	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Glyptotendipes sp.	8.60
Arthropoda	Hexapoda	Diptera	Chironomidae	Glyptotendipes sp. B (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Glyptotendipes sp. F (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Glyptotendipes sp. G (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Glyptotendipes testaceus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Goeldechironomus devineyae	9.47
Arthropoda	Hexapoda	Diptera	Chironomidae	Goeldechironomus fluctuans	10.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Goeldechironomus holoprasinus	10.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Goeldichironomus amazonicus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Goeldichironomus carus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Goeldichironomus cf. natans	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Goeldichironomus sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Guttipeloplia guttipennis	-

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Diptera	Chironomidae	Gymnometriocnemus brumalis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Gymnometriocnemus sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Gymnometriocnemus sp. 1 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Gymnometriocnemus subnudus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Harnischia curtilamelata	9.07
Arthropoda	Hexapoda	Diptera	Chironomidae	Harnischia genus A (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Harnischia genus B (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Harnischia genus C (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Harnischia incidata	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Harnischia sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Hayesomyia senata	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Heleniella hirta	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Heleniella parva	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Heleniella sp.	0.001
Arthropoda	Hexapoda	Diptera	Chironomidae	Helopelopia cornuticaudata	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Helopelopia pilicaudata	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Helopelopia sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Heterotrissocladius marcidus gr.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Heterotrissocladius sp.	5.23
Arthropoda	Hexapoda	Diptera	Chironomidae	Heterotrissocladius sp. "Caldwell" (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Heterotrissocladius sp. C (Saether)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Hudsonimyia karelena	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Hudsonimyia parrishi	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Hudsonimyia sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Hydrobaenus johannseni	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Hydrobaenus pilipes	9.20
Arthropoda	Hexapoda	Diptera	Chironomidae	Hydrobaenus sp.	9.20
Arthropoda	Hexapoda	Diptera	Chironomidae	Hyporhygma quadripunctatum	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Kiefferulus dux	8.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Kiefferulus pungens	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Kiefferulus sp.	8.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Kiefferulus sp. B (Epler)	8.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Kloosia dorsenna	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Krenopelopia hudsoni	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Krenosmittia sp.	0.001
Arthropoda	Hexapoda	Diptera	Chironomidae	Kribiodorum perpulchrum	4.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Labrundinia becki	6.20
Arthropoda	Hexapoda	Diptera	Chironomidae	Labrundinia johanseni	6.20
Arthropoda	Hexapoda	Diptera	Chironomidae	Labrundinia maculata	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Labrundinia neopilosella	5.97
Arthropoda	Hexapoda	Diptera	Chironomidae	Labrundinia pilosella	6.20
Arthropoda	Hexapoda	Diptera	Chironomidae	Labrundinia sp.	6.20
Arthropoda	Hexapoda	Diptera	Chironomidae	Labrundinia sp. 3 nr. Virescens (Roback)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Labrundinia sp. 6 (Roback)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Labrundinia sp. A (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Labrundinia sp. B (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Labrundinia sp. virescens	4.33
Arthropoda	Hexapoda	Diptera	Chironomidae	Labrundinia/Nilotanypus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Larsia berneri	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Larsia canadensis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Larsia decolorata	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Larsia indistincta	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Larsia sp.	6.50
Arthropoda	Hexapoda	Diptera	Chironomidae	Larsia sp. A (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Larsia sp. B (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Lauterborniella agrayloides	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Limnophyes asquamatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Limnophyes brachytomus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Limnophyes carolinensis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Limnophyes cf. pilicistulus	-

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Diptera	Chironomidae	Limnophyes fumosus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Limnophyes minimus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Limnophyes natalensis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Limnophyes pumilo	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Limnophyes sp.	7.43
Arthropoda	Hexapoda	Diptera	Chironomidae	Limnophyes sp. 1 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Lipiniella sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Lipurometrioctenemus sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Lipurometrioctenemus vixlobatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Lopecladius sp. 1 (Coffman & Roback)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Lopescladius sp.	1.20
Arthropoda	Hexapoda	Diptera	Chironomidae	Macropelopia decedens	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Maropelopia flavifrons	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Meropelopia sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Meropelopia americana	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Mesocricotopus loticus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Mesocricotopus sp. 1 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Mesocricotopus sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Mesosmittia nina	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Mesosmittia patrihortae	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Mesosmittia prolixa	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Mesosmittia sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Metrioctenemus eurynotus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Metrioctenemus knabi	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Metrioctenemus NR fuscipes	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Metrioctenemus sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Microchironomus nigrovittatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Microchironomus sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Micropsectra dives	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Micropsectra geminata	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Micropsectra polita	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Micropsectra recurvata	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Micropsectra sp.	2.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Micropsectra sp. 1 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Micropsectra sp. 6 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Micropsectra sp. 7 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Micropsectra sp. A (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Micropsectra sp. B (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Micropsectra sp. C (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Micropsectra sp. D (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Micropsectra sp. E (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Micropsectra xantha	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Micropsectra/Tanytarsus sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Microtendipes caducus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Microtendipes caetum	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Microtendipes pedellus gr.	3.90
Arthropoda	Hexapoda	Diptera	Chironomidae	Microtendipes rydalensis gr.	1.10
Arthropoda	Hexapoda	Diptera	Chironomidae	Microtendipes sp.	4.60
Arthropoda	Hexapoda	Diptera	Chironomidae	Microtendipes sp. 1 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Monodiamesa cf. depectinata	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Monodiamesa sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Monopelopia boliekiae	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Monopelopia sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Monopelopia tenuicalcar	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Nanocladius alternantherae	7.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Nanocladius balticus	7.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Nanocladius branchicolus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Nanocladius cf. rectinervis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Nanocladius crassicornis/rectinervis	7.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Nanocladius crassicornus	-

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Diptera	Chironomidae	Nanocladius distinctus	7.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Nanocladius downesi	2.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Nanocladius incomptus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Nanocladius minimus	7.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Nanocladius NR balticus	7.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Nanocladius sp.	7.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Nanocladius sp. #1 (Jacobsen)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Nanocladius sp. #3 (Jacobsen)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Nanocladius sp. #5 (Jacobsen)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Nanocladius sp. D (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Nanocladius spiniplenus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Nanocladius/Psectrocladius	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Natarsia baltimorea	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Natarsia sp.	9.60
Arthropoda	Hexapoda	Diptera	Chironomidae	Natarsia sp. A (Epler)	9.60
Arthropoda	Hexapoda	Diptera	Chironomidae	Neostempellina reissi	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Neozavrelia sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Nilotanypus americanus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Nilotanypus fimbriatus	4.90
Arthropoda	Hexapoda	Diptera	Chironomidae	Nilotanypus sp.	4.10
Arthropoda	Hexapoda	Diptera	Chironomidae	Nilothauma babilii	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Nilothauma bicorne	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Nilothauma mirabile	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Nilothauma sp.	5.10
Arthropoda	Hexapoda	Diptera	Chironomidae	Nilothauma sp. A (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Odontomesa fulva	4.90
Arthropoda	Hexapoda	Diptera	Chironomidae	Omisus browni	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Omisus pica	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Omisus sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Omisus/Phaenopsectra sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadiinae	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadiinae genus 2 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadiinae genus I (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadiinae species A (Saether)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadiinae species B (Saether)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadiinae species C (Saether)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadis dentifer	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadius annectens	4.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadius carlatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadius doreus	5.80
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadius dubitatus	9.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadius frigidus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadius hellenthali	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadius lignicola	5.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadius luteipes	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadius luteipes/thienemanni	6.30
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadius mallochi	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadius nigrinus	3.80
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadius nr nigrinus	0.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadius obumbratus gr.	8.10
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadius oliveri	4.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadius rivulorum	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadius robacki	6.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadius rubicundus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadius saxosus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadius sp.	4.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadius sp. "Jacobsen"	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadius subletti	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadius thienemanni	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Orthoclaadius vaillanti	-

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Diptera	Chironomidae	Pagastia orthogonia	1.50
Arthropoda	Hexapoda	Diptera	Chironomidae	Pagastiella orophila	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Pagastiella ostansa	2.50
Arthropoda	Hexapoda	Diptera	Chironomidae	Pagastiella sp.	2.50
Arthropoda	Hexapoda	Diptera	Chironomidae	Paraboreochlus stahli	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Parachaetocladius abnobaeus	0.70
Arthropoda	Hexapoda	Diptera	Chironomidae	Parachaetocladius sp.	0.001
Arthropoda	Hexapoda	Diptera	Chironomidae	Parachaetocladius sp. B (Saethar & Sublette	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Parachironomus alatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Parachironomus carinatus	8.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Parachironomus chaetoalus complex	8.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Parachironomus digitalus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Parachironomus directus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Parachironomus frequens	8.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Parachironomus hazelriggi	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Parachironomus hirtalatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Parachironomus pectinatellae	6.45
Arthropoda	Hexapoda	Diptera	Chironomidae	Parachironomus potamogetti	8.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Parachironomus schneideri	8.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Parachironomus sp.	8.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Parachironomus subletti	8.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Parachironomus supparilis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Parachironomus tenuicaudatus complex	8.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Paracladopelma doris	6.30
Arthropoda	Hexapoda	Diptera	Chironomidae	Paracladopelma loganea	6.30
Arthropoda	Hexapoda	Diptera	Chironomidae	Paracladopelma nereis	0.94
Arthropoda	Hexapoda	Diptera	Chironomidae	Paracladopelma sp.	6.30
Arthropoda	Hexapoda	Diptera	Chironomidae	Paracladopelma sp. 1 (Jackson)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paracladopelma sp. 2 (Jackson)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paracladopelma sp. A (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paracladopelma undine	4.50
Arthropoda	Hexapoda	Diptera	Chironomidae	Paracricotopus glaber	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paracricotopus millrockensis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paracricotopus mozleyi	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paracricotopus sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Parakiefferiella sp. D (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Parakiefferiella cf. bathophila	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Parakiefferiella coronata	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Parakiefferiella sp.	4.80
Arthropoda	Hexapoda	Diptera	Chironomidae	Parakiefferiella sp. A (Epler)	8.50
Arthropoda	Hexapoda	Diptera	Chironomidae	Parakiefferiella sp. B (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Parakiefferiella sp. C (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Parakiefferiella sp. E (Epler)	5.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Parakiefferiella sp. F (Epler)	5.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Parakiefferiella sp. G (Mozley)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paralauterborniella nigrohalteralis	4.90
Arthropoda	Hexapoda	Diptera	Chironomidae	Paramerina fragilis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paramerina NR anomala	4.10
Arthropoda	Hexapoda	Diptera	Chironomidae	Paramerina sp.	4.10
Arthropoda	Hexapoda	Diptera	Chironomidae	Paramerina testa	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Parametriocnemus cf. vespertinus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Parametriocnemus eoelivus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Parametriocnemus hamatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Parametriocnemus lundbecki	3.65
Arthropoda	Hexapoda	Diptera	Chironomidae	Parametriocnemus sp.	3.90
Arthropoda	Hexapoda	Diptera	Chironomidae	Parametriocnemus sp. 1 Epler	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Parametriocnemus sp. F Epler	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paraphaenocladus exagitans	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paraphaenocladus innasus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paraphaenocladus pseudirritus	-

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Diptera	Chironomidae	Paraphaenocladus pusillus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paraphaenocladus sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Parapsectra sp. 1 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Parasmittia carinata	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paratanytarsus dissimilis	8.45
Arthropoda	Hexapoda	Diptera	Chironomidae	Paratanytarsus dubius	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paratanytarsus laccophilus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paratanytarsus longistilus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paratanytarsus quadratus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paratanytarsus sp.	8.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Paratanytarsus sp. 2 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paratanytarsus sp. D (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paratanytarsus sp. E (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paratendipes albimanus	5.60
Arthropoda	Hexapoda	Diptera	Chironomidae	Paratendipes basidens	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paratendipes nitidulus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paratendipes sp.	5.60
Arthropoda	Hexapoda	Diptera	Chironomidae	Paratendipes subequalis	5.11
Arthropoda	Hexapoda	Diptera	Chironomidae	Paratendipes/Omisus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paratrichocladus rufiventris	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Paratrichocladus sp.	8.50
Arthropoda	Hexapoda	Diptera	Chironomidae	Pentaneura inconspicua	5.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Pentaneura sp.	4.70
Arthropoda	Hexapoda	Diptera	Chironomidae	Phaenopsectra flavipes	7.94
Arthropoda	Hexapoda	Diptera	Chironomidae	Phaenopsectra obediens gr.	6.60
Arthropoda	Hexapoda	Diptera	Chironomidae	Phaenopsectra punctipes gr.	7.10
Arthropoda	Hexapoda	Diptera	Chironomidae	Phaenopsectra sp.	6.50
Arthropoda	Hexapoda	Diptera	Chironomidae	Phaenopsectra vittata	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Platysmittia fimbriata	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Platysmittia sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Pludsonia partita	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum acifer	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum albicorne	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum albinodus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum angulum	5.20
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum angustum	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum artifer	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum aviceps	3.60
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum aviceps/flavum	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum beckae	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum bergi	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum branseniae	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum calopterus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum cinctum	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum digitifer	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum epleri/fallax gr.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum falciforme	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum fallax	6.50
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum fallax gr.	6.50
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum flavum	5.70
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum gomphus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum griseopunctatum	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum halterale	7.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum halterale gr.	7.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum illinoense	8.70
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum illinoense gr.	8.70
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum laetum	2.20
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum nymphaeorum	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum ontario	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum ophiodes	-

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum pardus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum parvum	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum pedatum	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum scalaenum	8.50
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum scalaenum gr.	8.50
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum scalaenum/halterale	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum simulans	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum sp. A (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum trigonus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum tritum	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Polypedilum vibex	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Potthastia gaedi	2.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Potthastia longimanus	8.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Potthastia montium	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Potthastia sp.	6.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Procladius bellus	8.80
Arthropoda	Hexapoda	Diptera	Chironomidae	Procladius denticulatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Procladius freemani	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Procladius sp.	8.80
Arthropoda	Hexapoda	Diptera	Chironomidae	Procladius sublettei	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Procladius/Djalmabatista sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Prodiamesa olivacea	8.80
Arthropoda	Hexapoda	Diptera	Chironomidae	Psectrocladius NR elatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Psectrocladius cf. calcaratus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Psectrocladius cf. octomaculatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Psectrocladius flavus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Psectrocladius limbatellus group	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Psectrocladius pilosus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Psectrocladius psilopterus group sp. 1 (Eplei	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Psectrocladius psilopterus group sp. 2 (Eplei	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Psectrocladius simulans	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Psectrocladius sordidellus group	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Psectrocladius sp.	3.60
Arthropoda	Hexapoda	Diptera	Chironomidae	Psectrocladius sp. 1	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Psectrocladius vernalis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Psectrotantpus sp. A (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Psectrotanypus dyari	10.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Psectrotanypus sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Pseudochironomus fulviventris	4.90
Arthropoda	Hexapoda	Diptera	Chironomidae	Pseudochironomus julia	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Pseudochironomus middlekauffi	4.90
Arthropoda	Hexapoda	Diptera	Chironomidae	Pseudochironomus rex	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Pseudochironomus richardsoni	4.90
Arthropoda	Hexapoda	Diptera	Chironomidae	Pseudochironomus sp.	4.90
Arthropoda	Hexapoda	Diptera	Chironomidae	Pseudorthocladius	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Pseudorthocladius amplicaudus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Pseudorthocladius clavatosus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Pseudorthocladius curticornus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Pseudorthocladius destitutus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Pseudorthocladius dumicaudus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Pseudorthocladius macrovirgatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Pseudorthocladius morsei	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Pseudorthocladius rectangilobus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Pseudorthocladius rectilobus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Pseudorthocladius sp.	1.51
Arthropoda	Hexapoda	Diptera	Chironomidae	Pseudorthocladius sp. B (Saether & Sublette	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Pseudorthocladius tricanthus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Pseudorthocladius uniserratus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Pseudorthocladius wingio	-

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Diptera	Chironomidae	Pseudosmittia forcipata	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Pseudosmittia sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Psilometriocnemus sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Psilometriocnemus triannulatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Reomyia sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Reomyia sp. A	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Rheocricotopus amplicristatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Rheocricotopus conflusirus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Rheocricotopus effusus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Rheocricotopus eminellobus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Rheocricotopus glabricollis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Rheocricotopus robacki	7.90
Arthropoda	Hexapoda	Diptera	Chironomidae	Rheocricotopus sp.	4.70
Arthropoda	Hexapoda	Diptera	Chironomidae	Rheocricotopus sp. VA (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Rheocricotopus tuberculatus	4.70
Arthropoda	Hexapoda	Diptera	Chironomidae	Rheocricotopus unidentatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Rheopelopia acra	0.30
Arthropoda	Hexapoda	Diptera	Chironomidae	Rheopelopia cf. paramaculipennis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Rheopelopia perda	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Rheopelopia sp.	0.30
Arthropoda	Hexapoda	Diptera	Chironomidae	Rheopelopia sp. 3 (Roback)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Rheopelopia sp. A (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Rheosmittia arcuata	7.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Rheosmittia sp.	6.80
Arthropoda	Hexapoda	Diptera	Chironomidae	Rheotanytarsus exiguus	5.89
Arthropoda	Hexapoda	Diptera	Chironomidae	Rheotanytarsus exiguus gr.	5.89
Arthropoda	Hexapoda	Diptera	Chironomidae	Rheotanytarsus pellucidus	5.89
Arthropoda	Hexapoda	Diptera	Chironomidae	Rheotanytarsus sp.	6.50
Arthropoda	Hexapoda	Diptera	Chironomidae	Rheotanytarsus sp. 4 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Rheotanytarsus sp. A (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Robackia claviger	1.90
Arthropoda	Hexapoda	Diptera	Chironomidae	Robackia demeijerei	4.30
Arthropoda	Hexapoda	Diptera	Chironomidae	Robackia sp.	2.16
Arthropoda	Hexapoda	Diptera	Chironomidae	Saetheria hirta	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Saetheria sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Saetheria sp. 1	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Saetheria tylus	7.30
Arthropoda	Hexapoda	Diptera	Chironomidae	Saetheriella amplicristata	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Skutzia sp. 1 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Smittia aterrima	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Smittia lasiops	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Smittia sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Smittia sp. 1 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Smittia sp. 2 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Stempellina almi	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Stempellina rodesta	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Stempellina sp.	0.001
Arthropoda	Hexapoda	Diptera	Chironomidae	Stempellina sp. B (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Stempellina subglabripennis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Stempellinella boltoni	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Stempellinella brevis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Stempellinella fimbriata	5.60
Arthropoda	Hexapoda	Diptera	Chironomidae	Stempellinella leptocelloides	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Stempellinella sp.	5.60
Arthropoda	Hexapoda	Diptera	Chironomidae	Stenochironomus aestivalis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Stenochironomus cinctus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Stenochironomus hilaris	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Stenochironomus macateei	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Stenochironomus poecilopter	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Stenochironomus sp.	6.30

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Diptera	Chironomidae	Stenochironomus unictus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Stictochoironomus annulicris	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Stictochoironomus cafferius group sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Stictochoironomus divinctus	6.52
Arthropoda	Hexapoda	Diptera	Chironomidae	Stictochoironomus palliatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Stictochoironomus sp.	5.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Stilocladius clinopecten	0.98
Arthropoda	Hexapoda	Diptera	Chironomidae	Sublettea coffmani	1.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Sublettiella calvata	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Symbiocladius sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Symptothastia sp.	4.50
Arthropoda	Hexapoda	Diptera	Chironomidae	Symptothastia zavreli	4.50
Arthropoda	Hexapoda	Diptera	Chironomidae	Synorthocladius semivirens	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Synorthocladius sp.	4.20
Arthropoda	Hexapoda	Diptera	Chironomidae	Synorthocladius sp. 1 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanutarsus sp. Z (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanyatsus buckleyi	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanyopodinae	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanyopus carinatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanyopus clavatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanyopus concavus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanyopus neopunctipennis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanyopus punctipennis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanyopus sp.	9.19
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanyopus stellatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsini	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsini genus A (Ekrem)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus becki	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus cf. acifer	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus cf. allicis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus confusus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus debilis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus dendyi	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus epleri	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus gibbus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus guerlus	6.60
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus limneticus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus mendax	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus messersmithi	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus neoflavellus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus recurvatus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus sepp	6.90
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus sp.	6.60
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus sp. 10 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus sp. 11 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus sp. 13 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus sp. 14 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus sp. 3 (Epler)	7.30
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus sp. 7 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus sp. 8 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus sp. 9 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus sp. D (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus sp. F (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus sp. G (Epler) (T. martini)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus sp. I (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus sp. M (Epler)	3.20
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus sp. O (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus sp. P (Epler)	4.80
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus sp. SC-A (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus sp. T (Epler)	-

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus sp. U (Epler)	6.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus sp. V (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus tibialis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus wirthi	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tanytarsus cf. brundini	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tavastia cristicauda	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Telmatogeton japonicus	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Thienemannia pilinucha	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Thienemanniella boltoni	5.90
Arthropoda	Hexapoda	Diptera	Chironomidae	Thienemanniella lobapodema	5.90
Arthropoda	Hexapoda	Diptera	Chironomidae	Thienemanniella similis	5.90
Arthropoda	Hexapoda	Diptera	Chironomidae	Thienemanniella sp.	6.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Thienemanniella sp. B	5.90
Arthropoda	Hexapoda	Diptera	Chironomidae	Thienemanniella taurocapita	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Thienemanniella xena	8.00
Arthropoda	Hexapoda	Diptera	Chironomidae	Thienemannimyia gr.	8.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Tokunagaia sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tribelos atrum	6.31
Arthropoda	Hexapoda	Diptera	Chironomidae	Tribelos fusicorne	6.31
Arthropoda	Hexapoda	Diptera	Chironomidae	Tribelos jucundum	5.70
Arthropoda	Hexapoda	Diptera	Chironomidae	Tribelos sp.	6.40
Arthropoda	Hexapoda	Diptera	Chironomidae	Tribelos/Phaenopsectra sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Trichochilus lacteipennis	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Trissopelopia ogemawi	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tvetenia paucunca	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tvetenia sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tvetenia sp. GA (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tvetenia sp. NC (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Tvetenia vitracies	3.50
Arthropoda	Hexapoda	Diptera	Chironomidae	Tvetenia/Eukiefferiella	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Unniella multivirga	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Virgatanytarsus sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Xenochironomus xenolabis	6.60
Arthropoda	Hexapoda	Diptera	Chironomidae	Xestochironomus sp.	5.99
Arthropoda	Hexapoda	Diptera	Chironomidae	Xestochironomus subletti	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Xylotopus par	6.10
Arthropoda	Hexapoda	Diptera	Chironomidae	Zalutschia briani	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Zalutschia cf. zalutschicola	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Zalutschia sp.	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Zalutschia sp. A (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Zavrelia aristata	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Zavrelia hudsoni	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Zavrelia sp.	6.10
Arthropoda	Hexapoda	Diptera	Chironomidae	Zavrelia sp. 1 (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Zavreliella marmorata	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Zavrelimyia bifasciata	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Zavrelimyia sinuosa	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Zavrelimyia sp.	8.60
Arthropoda	Hexapoda	Diptera	Chironomidae	Zavrelimyia sp. A (Epler)	-
Arthropoda	Hexapoda	Diptera	Chironomidae	Zavrelimyia thryptica	-
Arthropoda	Hexapoda	Diptera	Culicidae	Aedes sp.	-
Arthropoda	Hexapoda	Diptera	Culicidae	Aedes vexans	-
Arthropoda	Hexapoda	Diptera	Culicidae	Anopheles excrucians	3.00
Arthropoda	Hexapoda	Diptera	Culicidae	Anopheles punctipennis	8.60
Arthropoda	Hexapoda	Diptera	Culicidae	Anopheles sp.	8.60
Arthropoda	Hexapoda	Diptera	Culicidae	Coquillettidia sp.	-
Arthropoda	Hexapoda	Diptera	Culicidae	Culex atratus	-
Arthropoda	Hexapoda	Diptera	Culicidae	Culex erraticus	-
Arthropoda	Hexapoda	Diptera	Culicidae	Culex restuans	-
Arthropoda	Hexapoda	Diptera	Culicidae	Culex sp.	-

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Diptera	Culicidae	Culex territans	-
Arthropoda	Hexapoda	Diptera	Culicidae	Culicidae	-
Arthropoda	Hexapoda	Diptera	Culicidae	Culiseta sp.	-
Arthropoda	Hexapoda	Diptera	Culicidae	Mansonia perturbani	-
Arthropoda	Hexapoda	Diptera	Culicidae	Mansonia sp.	-
Arthropoda	Hexapoda	Diptera	Culicidae	Mansonia titilans	-
Arthropoda	Hexapoda	Diptera	Culicidae	Orthopodomyia alba	-
Arthropoda	Hexapoda	Diptera	Culicidae	Orthopodomyia sp.	-
Arthropoda	Hexapoda	Diptera	Culicidae	Psorophora	-
Arthropoda	Hexapoda	Diptera	Culicidae	Toxorhynchites septentrionalis	-
Arthropoda	Hexapoda	Diptera	Culicidae	Uranotaenia sp.	-
Arthropoda	Hexapoda	Diptera	Dixidae	Dixa sp.	2.50
Arthropoda	Hexapoda	Diptera	Dixidae	Dixella indiana	4.90
Arthropoda	Hexapoda	Diptera	Dixidae	Dixella sp.	4.90
Arthropoda	Hexapoda	Diptera	Dixidae	Dixidae	-
Arthropoda	Hexapoda	Diptera	Dolichopodidae	Dolichopodidae	-
Arthropoda	Hexapoda	Diptera	Empididae	Chelifera sp.	7.57
Arthropoda	Hexapoda	Diptera	Empididae	Empididae	7.57
Arthropoda	Hexapoda	Diptera	Empididae	Hemerodromia sp.	-
Arthropoda	Hexapoda	Diptera	Empididae	Roederoides sp.	7.57
Arthropoda	Hexapoda	Diptera	Ephydriidae	Ephydra	-
Arthropoda	Hexapoda	Diptera	Ephydriidae	Ephydriidae	-
Arthropoda	Hexapoda	Diptera	Muscidae	Limnophora sp.	8.40
Arthropoda	Hexapoda	Diptera	Muscidae	Muscidae	-
Arthropoda	Hexapoda	Diptera	NA	Diptera	-
Arthropoda	Hexapoda	Diptera	Phoridae	Phoridae	-
Arthropoda	Hexapoda	Diptera	Psychodidae	Maruina sp.	-
Arthropoda	Hexapoda	Diptera	Psychodidae	Pericoma sp.	-
Arthropoda	Hexapoda	Diptera	Psychodidae	Psychoda sp.	9.64
Arthropoda	Hexapoda	Diptera	Psychodidae	Psychodidae	-
Arthropoda	Hexapoda	Diptera	Psychodidae	Telmatoscopus sp.	-
Arthropoda	Hexapoda	Diptera	Ptychopteridae	Bittacomorpha clavipes	-
Arthropoda	Hexapoda	Diptera	Ptychopteridae	Bittacomorpha sp.	-
Arthropoda	Hexapoda	Diptera	Ptychopteridae	Bittacomorphella sp.	-
Arthropoda	Hexapoda	Diptera	Ptychopteridae	Liriopespp	-
Arthropoda	Hexapoda	Diptera	Ptychopteridae	Ptychoptera sp.	-
Arthropoda	Hexapoda	Diptera	Ptychopteridae	Ptychopteridae	-
Arthropoda	Hexapoda	Diptera	Rhagionidae	Rhagionidae	-
Arthropoda	Hexapoda	Diptera	Sciaridae	Sciaridae	-
Arthropoda	Hexapoda	Diptera	Sciomyzidae	Sepedon	-
Arthropoda	Hexapoda	Diptera	Simuliidae	Cnephia mutata	-
Arthropoda	Hexapoda	Diptera	Simuliidae	Cnephia ornithophila	-
Arthropoda	Hexapoda	Diptera	Simuliidae	Cnephia pecuarium	-
Arthropoda	Hexapoda	Diptera	Simuliidae	Cnephia sp.	-
Arthropoda	Hexapoda	Diptera	Simuliidae	Ectemnia invenusta	-
Arthropoda	Hexapoda	Diptera	Simuliidae	Ectemnia sp.	-
Arthropoda	Hexapoda	Diptera	Simuliidae	Prosimulium magnum	4.50
Arthropoda	Hexapoda	Diptera	Simuliidae	Prosimulium mixtum	3.60
Arthropoda	Hexapoda	Diptera	Simuliidae	Prosimulium rhizophorum	4.50
Arthropoda	Hexapoda	Diptera	Simuliidae	Prosimulium sp.	4.50
Arthropoda	Hexapoda	Diptera	Simuliidae	Simuliidae	-
Arthropoda	Hexapoda	Diptera	Simuliidae	Simulium (phosterodoros) sp.	4.00
Arthropoda	Hexapoda	Diptera	Simuliidae	Simulium clarkei	4.90
Arthropoda	Hexapoda	Diptera	Simuliidae	Simulium congareenarum	4.87
Arthropoda	Hexapoda	Diptera	Simuliidae	Simulium decorium	4.90
Arthropoda	Hexapoda	Diptera	Simuliidae	Simulium jonesi	4.90
Arthropoda	Hexapoda	Diptera	Simuliidae	Simulium meridionale	4.90
Arthropoda	Hexapoda	Diptera	Simuliidae	Simulium NR johannseni	4.90
Arthropoda	Hexapoda	Diptera	Simuliidae	Simulium nyssa	4.90
Arthropoda	Hexapoda	Diptera	Simuliidae	Simulium parnassum	4.90

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Diptera	Simuliidae	Simulium pictipes	4.90
Arthropoda	Hexapoda	Diptera	Simuliidae	Simulium podostemi	4.90
Arthropoda	Hexapoda	Diptera	Simuliidae	Simulium snowi	4.90
Arthropoda	Hexapoda	Diptera	Simuliidae	Simulium sp.	4.90
Arthropoda	Hexapoda	Diptera	Simuliidae	Simulium tuberosum	4.42
Arthropoda	Hexapoda	Diptera	Simuliidae	Simulium venustum	7.30
Arthropoda	Hexapoda	Diptera	Simuliidae	Simulium verecundum	4.90
Arthropoda	Hexapoda	Diptera	Simuliidae	Simulium vittatum	9.10
Arthropoda	Hexapoda	Diptera	Simuliidae	Stegoterna mutata	-
Arthropoda	Hexapoda	Diptera	Stratiomyidae	Nemotelus sp.	-
Arthropoda	Hexapoda	Diptera	Stratiomyidae	Odontomyia	-
Arthropoda	Hexapoda	Diptera	Stratiomyidae	Oxycera sp.	-
Arthropoda	Hexapoda	Diptera	Stratiomyidae	Stratiomyidae	-
Arthropoda	Hexapoda	Diptera	Stratiomyidae	Stratiomys sp.	8.10
Arthropoda	Hexapoda	Diptera	Syrphidae	Eristalis sp.	9.70
Arthropoda	Hexapoda	Diptera	Syrphidae	Neoascia sp.	-
Arthropoda	Hexapoda	Diptera	Syrphidae	Syrphidae	-
Arthropoda	Hexapoda	Diptera	Tabanidae	Chrysogaster	-
Arthropoda	Hexapoda	Diptera	Tabanidae	Chrysops sp.	6.70
Arthropoda	Hexapoda	Diptera	Tabanidae	Tabanidae	-
Arthropoda	Hexapoda	Diptera	Tabanidae	Tabanus sp.	8.50
Arthropoda	Hexapoda	Diptera	Tanyderidae	Protoplasa fitchii	4.00
Arthropoda	Hexapoda	Diptera	Tanyderidae	Tanyderidae	-
Arthropoda	Hexapoda	Diptera	Tipulidae	Antocha sp.	4.40
Arthropoda	Hexapoda	Diptera	Tipulidae	Brachypremna sp.	-
Arthropoda	Hexapoda	Diptera	Tipulidae	Cryptolabis sp.	-
Arthropoda	Hexapoda	Diptera	Tipulidae	Dicranota sp.	0.001
Arthropoda	Hexapoda	Diptera	Tipulidae	Erioptera sp.	4.62
Arthropoda	Hexapoda	Diptera	Tipulidae	Gonomyia gr.	-
Arthropoda	Hexapoda	Diptera	Tipulidae	Helius flavipes	-
Arthropoda	Hexapoda	Diptera	Tipulidae	Helius sp.	-
Arthropoda	Hexapoda	Diptera	Tipulidae	Hexatoma sp.	3.50
Arthropoda	Hexapoda	Diptera	Tipulidae	Holorusia sp.	-
Arthropoda	Hexapoda	Diptera	Tipulidae	Limnophila sp.	-
Arthropoda	Hexapoda	Diptera	Tipulidae	Limonia sp.	9.30
Arthropoda	Hexapoda	Diptera	Tipulidae	Lipsothrix hynesiana	-
Arthropoda	Hexapoda	Diptera	Tipulidae	Molophilus sp.	-
Arthropoda	Hexapoda	Diptera	Tipulidae	Ormosia sp.	6.30
Arthropoda	Hexapoda	Diptera	Tipulidae	Pedicia sp.	-
Arthropoda	Hexapoda	Diptera	Tipulidae	Pilaria sp.	-
Arthropoda	Hexapoda	Diptera	Tipulidae	Polymeda/Ormosia sp.	6.50
Arthropoda	Hexapoda	Diptera	Tipulidae	Pseudolimnophila sp.	6.20
Arthropoda	Hexapoda	Diptera	Tipulidae	Rhabdomastix sp.	-
Arthropoda	Hexapoda	Diptera	Tipulidae	Tipula sp.	7.50
Arthropoda	Hexapoda	Diptera	Tipulidae	Tipulidae	-
Arthropoda	Hexapoda	Diptera	Tipulidae	Ulomorpha sp.	-
Arthropoda	Hexapoda	Ephemeroptera	Ameletidae	Ameletus lineatus	2.40
Arthropoda	Hexapoda	Ephemeroptera	Ameletidae	Ameletus sp.	2.38
Arthropoda	Hexapoda	Ephemeroptera	Ameletidae	Ameletus tertius	2.38
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Acentrellaalachua	3.00
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Acentrella barbarae	-
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Acentrella carolina	2.50
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Acentrella femorella	5.50
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Acentrella nadineae	1.90
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Acentrella parvula	4.80
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Acentrella sp.	2.50
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Acentrella turbida	2.00
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Acentrella turbida gr.	2.00
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Acerpenna macdunnoughi	-
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Acerpenna pygmaea	3.70

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Acerpenna sp.	3.88
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Anafroptilum minor	2.00
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Baetidae	-
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Baetis armillatus	5.40
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Baetis brunneicolor	-
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Baetis dubium	5.40
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Baetis flavistriga	6.80
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Baetis hageni	1.62
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Baetis intercalaris	5.00
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Baetis intercalaris/flavistriga	4.99
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Baetis pluto	3.40
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Baetis punctiventris	5.40
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Baetis sp.	5.40
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Baetis tricaudatus	1.50
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Baetopus trishae	0.10
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Barbaetis benfieldi	-
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Callibaetis sp.	9.20
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Cloeon sp.	7.30
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Dipheter hageni	1.10
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Heterocloeon amplum	3.40
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Heterocloeon bernerii	3.48
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Heterocloeon curiosum	2.10
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Heterocloeon petersi	-
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Heterocloeon sp.	3.70
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Heterocloeon/Plauditus sp.	-
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Iswaeon anoka	4.40
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Iswaeon davidi	-
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Iswaeon sp.	-
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Labiobaetis dardanus	-
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Labiobaetis dardanus/ephippiatus	-
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Labiobaetis ephippiatum	3.50
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Labiobaetis frondalis	4.60
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Labiobaetis propinquus	5.80
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Labiobaetis sp.	5.77
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Neocloeon alamance	6.60
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Neocloeon sp.	-
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Neocloeon triangulifer	6.00
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Paracloeodes sp.	8.00
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Plauditus cestus	4.60
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Plauditus cingulatus	2.00
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Plauditus dubius gr.	2.20
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Plauditus gloveri	5.40
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Plauditus punctiventris	4.00
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Plauditus sp.	5.40
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Procloeon appalachia	-
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Procloeon rivulare	-
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Procloeon rubropictum	-
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Procloeon rufostrigatum	-
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Procloeon sp.	1.90
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Procloeon viridoculare	-
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Procloeon/Neocloeon/Anafroptilum	-
Arthropoda	Hexapoda	Ephemeroptera	Baetidae	Pseudocentropiloides usa	6.00
Arthropoda	Hexapoda	Ephemeroptera	Baetiscidae	Baetisca becki	3.20
Arthropoda	Hexapoda	Ephemeroptera	Baetiscidae	Baetisca bernerii	1.40
Arthropoda	Hexapoda	Ephemeroptera	Baetiscidae	Baetisca carolina	4.20
Arthropoda	Hexapoda	Ephemeroptera	Baetiscidae	Baetisca gibbera	1.43
Arthropoda	Hexapoda	Ephemeroptera	Baetiscidae	Baetisca lacustris	3.20
Arthropoda	Hexapoda	Ephemeroptera	Baetiscidae	Baetisca laurentina	3.20
Arthropoda	Hexapoda	Ephemeroptera	Baetiscidae	Baetisca obesa	3.20
Arthropoda	Hexapoda	Ephemeroptera	Baetiscidae	Baetisca rogersi	3.20

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Ephemeroptera	Baetiscidae	Baetisca sp.	3.20
Arthropoda	Hexapoda	Ephemeroptera	Baetiscidae	Baetiscidae	-
Arthropoda	Hexapoda	Ephemeroptera	Caenidae	Amercaenis cusabo	1.00
Arthropoda	Hexapoda	Ephemeroptera	Caenidae	Amercaenis sp.	1.00
Arthropoda	Hexapoda	Ephemeroptera	Caenidae	Brachycercus nitidus	3.01
Arthropoda	Hexapoda	Ephemeroptera	Caenidae	Brachycercus sp.	2.10
Arthropoda	Hexapoda	Ephemeroptera	Caenidae	Caenis amica	6.80
Arthropoda	Hexapoda	Ephemeroptera	Caenidae	Caenis anceps	6.80
Arthropoda	Hexapoda	Ephemeroptera	Caenidae	Caenis diminuta	6.80
Arthropoda	Hexapoda	Ephemeroptera	Caenidae	Caenis diminuta/punctata	6.80
Arthropoda	Hexapoda	Ephemeroptera	Caenidae	Caenis hilaris	7.41
Arthropoda	Hexapoda	Ephemeroptera	Caenidae	Caenis latipennis	7.41
Arthropoda	Hexapoda	Ephemeroptera	Caenidae	Caenis maccafferti	6.80
Arthropoda	Hexapoda	Ephemeroptera	Caenidae	Caenis punctata	6.80
Arthropoda	Hexapoda	Ephemeroptera	Caenidae	Caenis sp.	6.80
Arthropoda	Hexapoda	Ephemeroptera	Caenidae	Cercobrachys etowha	1.00
Arthropoda	Hexapoda	Ephemeroptera	Caenidae	Cercobrachys sp.	1.00
Arthropoda	Hexapoda	Ephemeroptera	Caenidae	Sparbarus maculatus	3.01
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Attenella attenuata	1.10
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Dannella lita	0.001
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Dannella provonshai	-
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Dannella simplex	3.40
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Dannella sp.	3.60
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Drunella allegheniensis	0.30
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Drunella allegheniensis/tuberculata	-
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Drunella conestee	0.001
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Drunella cornutella	0.001
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Drunella lata	0.001
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Drunella longicornis	-
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Drunella sp.	-
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Drunella tuberculata	0.001
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Drunella walkeri	0.60
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Drunella wayah	0.001
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Ephemerella argo	0.001
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Ephemerella aurivillii	1.00
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Ephemerella catawba	0.001
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Ephemerella catawba/dorothea	4.00
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Ephemerella crenula	2.10
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Ephemerella dorothea	3.30
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Ephemerella floripara	2.00
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Ephemerella frisoni	2.10
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Ephemerella hispida	0.10
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Ephemerella inconstans	2.04
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Ephemerella invaria gr.	2.60
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Ephemerella needhami	0.001
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Ephemerella rossi gr.	0.001
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Ephemerella rotunda	1.80
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Ephemerella sp.	2.10
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Ephemerella subvaria	0.001
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Ephemerellidae	-
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Eurylophella bicolor	4.80
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Eurylophella coxalis	3.36
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Eurylophella doris	7.00
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Eurylophella enoensis	4.00
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Eurylophella funeralis	2.50
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Eurylophella lutulenta	4.00
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Eurylophella minimella	2.00
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Eurylophella prudentalis	4.34
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Eurylophella sp.	4.00
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Eurylophella temporalis	4.80

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Eurylophella temporalis gr.	4.80
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Eurylophella verisimilis	3.90
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Penelomax septentrionalis	2.10
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Serratella carolina	0.001
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Serratella serrata	1.40
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Serratella serratoides	1.70
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Serratella sordida	1.70
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Serratella sp.	1.70
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Serratella spiculosa	0.10
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Teloganopsis deficiens	2.60
Arthropoda	Hexapoda	Ephemeroptera	Ephemerellidae	Tsalia bernerii	0.001
Arthropoda	Hexapoda	Ephemeroptera	Ephemeridae	Ephemera blanda	2.40
Arthropoda	Hexapoda	Ephemeroptera	Ephemeridae	Ephemera guttalata	0.001
Arthropoda	Hexapoda	Ephemeroptera	Ephemeridae	Ephemera simulans	2.00
Arthropoda	Hexapoda	Ephemeroptera	Ephemeridae	Ephemera sp.	2.00
Arthropoda	Hexapoda	Ephemeroptera	Ephemeridae	Ephemera varia	2.00
Arthropoda	Hexapoda	Ephemeroptera	Ephemeridae	Ephemeridae	-
Arthropoda	Hexapoda	Ephemeroptera	Ephemeridae	Hexagenia bilineata	4.40
Arthropoda	Hexapoda	Ephemeroptera	Ephemeridae	Hexagenia limbata	4.40
Arthropoda	Hexapoda	Ephemeroptera	Ephemeridae	Hexagenia munda	4.40
Arthropoda	Hexapoda	Ephemeroptera	Ephemeridae	Hexagenia rigida	4.40
Arthropoda	Hexapoda	Ephemeroptera	Ephemeridae	Hexagenia sp.	4.40
Arthropoda	Hexapoda	Ephemeroptera	Ephemeridae	Litobranchea recurvata	0.001
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Cinygmula subaequalis	0.001
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Epeorus dispar	1.00
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Epeorus pleuralis	1.50
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Epeorus sp.	1.60
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Epeorus vitreus	1.20
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Epeorus vitreus gr.	1.22
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Heptagenia julia	0.001
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Heptagenia marginalis	2.20
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Heptagenia marginalis gr.	2.20
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Heptagenia pulla	2.20
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Heptagenia sp.	1.90
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Heptageniidae	-
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Iron sp.	1.27
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Leucrocota aphrodite	2.90
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Leucrocota hebe	2.00
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Leucrocota sp.	2.00
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Maccaffertium bipunctatum	-
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Maccaffertium carlsoni	2.10
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Maccaffertium exiguum	3.80
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Maccaffertium integrum	5.80
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Maccaffertium ithaca	3.00
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Maccaffertium lenati	2.50
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Maccaffertium mediopunctatum	4.20
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Maccaffertium meririvulanum	0.50
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Maccaffertium mexicanum	4.70
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Maccaffertium modestum	5.70
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Maccaffertium nepotellum	-
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Maccaffertium pudicum	2.10
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Maccaffertium pulchellum	-
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Maccaffertium smithae	5.50
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Maccaffertium sp.	-
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Maccaffertium terminatum	4.40
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Maccaffertium vicarium	1.50
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Macdunnoa brunnea	0.58
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Nixe flowersi	1.00
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Nixe nr inconspicua	1.00
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Nixe sp.	0.001

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Pseudiron centralis	-
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Rhithrogena amica	0.30
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Rhithrogena exilis	0.001
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Rhithrogena fuscifrons	0.30
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Rhithrogena sp.	0.001
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Rhithrogena uhari	0.001
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Stenacron carolina	1.30
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Stenacron gilderslevi	-
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Stenacron interpunctatum	6.40
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Stenacron pallidum	2.80
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Stenacron sp.	-
Arthropoda	Hexapoda	Ephemeroptera	Heptageniidae	Stenonema femoratum	6.90
Arthropoda	Hexapoda	Ephemeroptera	Isonychiidae	Isonychia sp.	3.60
Arthropoda	Hexapoda	Ephemeroptera	Leptohyphidae	Asioplax dolani	1.37
Arthropoda	Hexapoda	Ephemeroptera	Leptohyphidae	Leptohyphidae	-
Arthropoda	Hexapoda	Ephemeroptera	Leptohyphidae	Tricorythodes robacki	-
Arthropoda	Hexapoda	Ephemeroptera	Leptohyphidae	Tricorythodes sp.	5.00
Arthropoda	Hexapoda	Ephemeroptera	Leptophlebiidae	Choroterpes basalis	-
Arthropoda	Hexapoda	Ephemeroptera	Leptophlebiidae	Habrophlebia sp.	-
Arthropoda	Hexapoda	Ephemeroptera	Leptophlebiidae	Habrophlebia vibrans	0.30
Arthropoda	Hexapoda	Ephemeroptera	Leptophlebiidae	Habrophlebiodes sp.	1.00
Arthropoda	Hexapoda	Ephemeroptera	Leptophlebiidae	Leptophlebia bradleyi	3.00
Arthropoda	Hexapoda	Ephemeroptera	Leptophlebiidae	Leptophlebia cupida	6.00
Arthropoda	Hexapoda	Ephemeroptera	Leptophlebiidae	Leptophlebia intermedia	6.00
Arthropoda	Hexapoda	Ephemeroptera	Leptophlebiidae	Leptophlebia sp.	6.00
Arthropoda	Hexapoda	Ephemeroptera	Leptophlebiidae	Leptophlebiidae	-
Arthropoda	Hexapoda	Ephemeroptera	Leptophlebiidae	Leptoxis sp.	1.70
Arthropoda	Hexapoda	Ephemeroptera	Leptophlebiidae	Paraleptophlebia sp.	1.20
Arthropoda	Hexapoda	Ephemeroptera	Metretopodidae	Metretopodidae	-
Arthropoda	Hexapoda	Ephemeroptera	Metretopodidae	Siphloplecton sp.	3.31
Arthropoda	Hexapoda	Ephemeroptera	Metretopodidae	Siphloplecton speciosum	-
Arthropoda	Hexapoda	Ephemeroptera	NA	Ephemeroptera	-
Arthropoda	Hexapoda	Ephemeroptera	Neophemeridae	Neophemera bicolor	-
Arthropoda	Hexapoda	Ephemeroptera	Neophemeridae	Neophemera compressa	0.001
Arthropoda	Hexapoda	Ephemeroptera	Neophemeridae	Neophemera purpurea	1.50
Arthropoda	Hexapoda	Ephemeroptera	Neophemeridae	Neophemera sp.	-
Arthropoda	Hexapoda	Ephemeroptera	Neophemeridae	Neophemera youngi	0.86
Arthropoda	Hexapoda	Ephemeroptera	Oligoneuriidae	Homooneuria cahabensis	-
Arthropoda	Hexapoda	Ephemeroptera	Oligoneuriidae	Homooneuria dolani	-
Arthropoda	Hexapoda	Ephemeroptera	Polymitarcyidae	Ephoron leukon	1.50
Arthropoda	Hexapoda	Ephemeroptera	Polymitarcyidae	Tortopsis puella	-
Arthropoda	Hexapoda	Ephemeroptera	Potamanthidae	Anthopotamus distinctus	1.60
Arthropoda	Hexapoda	Ephemeroptera	Potamanthidae	Anthopotamus myops	-
Arthropoda	Hexapoda	Ephemeroptera	Potamanthidae	Anthopotamus sp.	1.50
Arthropoda	Hexapoda	Ephemeroptera	Siphonuridae	Siphonuridae	-
Arthropoda	Hexapoda	Ephemeroptera	Siphonuridae	Siphonurus mirus	5.81
Arthropoda	Hexapoda	Ephemeroptera	Siphonuridae	Siphonurus quebecensis	5.81
Arthropoda	Hexapoda	Ephemeroptera	Siphonuridae	Siphonurus sp.	6.00
Arthropoda	Hexapoda	Heteroptera	Belostomatidae	Belostoma sp.	9.50
Arthropoda	Hexapoda	Heteroptera	Belostomatidae	Belostoma testaceum	9.80
Arthropoda	Hexapoda	Heteroptera	Belostomatidae	Belostoma/Abodus	-
Arthropoda	Hexapoda	Heteroptera	Belostomatidae	Belostomatidae	-
Arthropoda	Hexapoda	Heteroptera	Belostomatidae	Benacus griseus	-
Arthropoda	Hexapoda	Heteroptera	Belostomatidae	Lethocerus americanus	-
Arthropoda	Hexapoda	Heteroptera	Belostomatidae	Lethocerus sp.	-
Arthropoda	Hexapoda	Heteroptera	Corixidae	Corixidae	9.00
Arthropoda	Hexapoda	Heteroptera	Corixidae	Hesperocorixa sp.	-
Arthropoda	Hexapoda	Heteroptera	Corixidae	Palmacorixa sp.	-
Arthropoda	Hexapoda	Heteroptera	Corixidae	Ramphocorixa sp.	-
Arthropoda	Hexapoda	Heteroptera	Corixidae	Sigara sp.	8.70

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Heteroptera	Corixidae	Trichocorixa calva	-
Arthropoda	Hexapoda	Heteroptera	Corixidae	Trichocorixa sp.	-
Arthropoda	Hexapoda	Heteroptera	Gelastocoridae	Gelastocoridae	-
Arthropoda	Hexapoda	Heteroptera	Gelastocoridae	Gelastocoris oculatus	-
Arthropoda	Hexapoda	Heteroptera	Gerridae	Gerridae	-
Arthropoda	Hexapoda	Heteroptera	Gerridae	Gerris conformis	-
Arthropoda	Hexapoda	Heteroptera	Gerridae	Gerris sp.	-
Arthropoda	Hexapoda	Heteroptera	Gerridae	Limnogonus hesione	-
Arthropoda	Hexapoda	Heteroptera	Gerridae	Limnopus canaliculatus	-
Arthropoda	Hexapoda	Heteroptera	Gerridae	Limnopus sp.	-
Arthropoda	Hexapoda	Heteroptera	Gerridae	Metrobates hesperus	-
Arthropoda	Hexapoda	Heteroptera	Gerridae	Metrobates sp.	-
Arthropoda	Hexapoda	Heteroptera	Gerridae	Neogerris hesione	-
Arthropoda	Hexapoda	Heteroptera	Gerridae	Rheumatobates sp.	-
Arthropoda	Hexapoda	Heteroptera	Gerridae	Trepobates sp.	-
Arthropoda	Hexapoda	Heteroptera	Hebridae	Hebrus sp.	-
Arthropoda	Hexapoda	Heteroptera	Herbridae	Herbridae	-
Arthropoda	Hexapoda	Heteroptera	Herbridae	Merragata herbriones	-
Arthropoda	Hexapoda	Heteroptera	Hydrometridae	Hydrometra australis	-
Arthropoda	Hexapoda	Heteroptera	Hydrometridae	Hydrometra martini	-
Arthropoda	Hexapoda	Heteroptera	Hydrometridae	Hydrometra sp.	-
Arthropoda	Hexapoda	Heteroptera	Mesoveliidae	Mesovelia mulsanti	-
Arthropoda	Hexapoda	Heteroptera	Mesoveliidae	Mesovelia sp.	-
Arthropoda	Hexapoda	Heteroptera	Mesoveliidae	Mesoveliidae	-
Arthropoda	Hexapoda	Heteroptera	NA	Heteroptera	-
Arthropoda	Hexapoda	Heteroptera	Naucoridae	Naucoridae	-
Arthropoda	Hexapoda	Heteroptera	Naucoridae	Pelocoris sp.	7.01
Arthropoda	Hexapoda	Heteroptera	Nepidae	Nepa apiculata	-
Arthropoda	Hexapoda	Heteroptera	Nepidae	Nepidae	-
Arthropoda	Hexapoda	Heteroptera	Nepidae	Ranatra australis	7.80
Arthropoda	Hexapoda	Heteroptera	Nepidae	Ranatra buenoi	7.82
Arthropoda	Hexapoda	Heteroptera	Nepidae	Ranatra kirkaldyi	7.80
Arthropoda	Hexapoda	Heteroptera	Nepidae	Ranatra nigra	7.80
Arthropoda	Hexapoda	Heteroptera	Nepidae	Ranatra sp.	6.30
Arthropoda	Hexapoda	Heteroptera	Notonectidae	Buena sp.	-
Arthropoda	Hexapoda	Heteroptera	Notonectidae	Notonecta irrorata	8.71
Arthropoda	Hexapoda	Heteroptera	Notonectidae	Notonecta sp.	8.71
Arthropoda	Hexapoda	Heteroptera	Notonectidae	Notonectidae	-
Arthropoda	Hexapoda	Heteroptera	Pleidae	Neoplestrida sp.	-
Arthropoda	Hexapoda	Heteroptera	Vellidae	Microvelia sp.	-
Arthropoda	Hexapoda	Heteroptera	Vellidae	Paravelia sp.	-
Arthropoda	Hexapoda	Heteroptera	Vellidae	Rhagovelia obesa	-
Arthropoda	Hexapoda	Heteroptera	Vellidae	Vellidae	-
Arthropoda	Hexapoda	Lepidoptera	Crambidae	Crambidae	-
Arthropoda	Hexapoda	Lepidoptera	NA	Lepidoptera	-
Arthropoda	Hexapoda	Lepidoptera	Noctuidae	Noctuidae	-
Arthropoda	Hexapoda	Lepidoptera	Pyalidae	Helophorous linearis	-
Arthropoda	Hexapoda	Lepidoptera	Pyalidae	Neargyractis slossonalis	-
Arthropoda	Hexapoda	Lepidoptera	Pyalidae	Neargyractis sp.	-
Arthropoda	Hexapoda	Lepidoptera	Pyalidae	Parapoynx sp.	-
Arthropoda	Hexapoda	Lepidoptera	Pyalidae	Petrophila sp.	3.60
Arthropoda	Hexapoda	Lepidoptera	Pyalidae	Pyalidae	-
Arthropoda	Hexapoda	Megaloptera	Corydalidae	Chauliodes pectinicornis	9.55
Arthropoda	Hexapoda	Megaloptera	Corydalidae	Chauliodes rastricornis	8.42
Arthropoda	Hexapoda	Megaloptera	Corydalidae	Chauliodes sp.	-
Arthropoda	Hexapoda	Megaloptera	Corydalidae	Corydalidae	-
Arthropoda	Hexapoda	Megaloptera	Corydalidae	Corydalis cornutus	5.20
Arthropoda	Hexapoda	Megaloptera	Corydalidae	Neohermes sp.	-
Arthropoda	Hexapoda	Megaloptera	Corydalidae	Nigronia fasciatus	6.10
Arthropoda	Hexapoda	Megaloptera	Corydalidae	Nigronia serricornis	4.60

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Megaloptera	Corydalidae	Nigronia sp.	-
Arthropoda	Hexapoda	Megaloptera	NA	Megaloptera	-
Arthropoda	Hexapoda	Megaloptera	Sialidae	Sialidae	-
Arthropoda	Hexapoda	Megaloptera	Sialidae	Sialis aequalis	7.17
Arthropoda	Hexapoda	Megaloptera	Sialidae	Sialis sp.	7.00
Arthropoda	Hexapoda	NA	NA	Hexapoda	-
Arthropoda	Hexapoda	Neuroptera	Sisyridae	Climacia areolaris	6.50
Arthropoda	Hexapoda	Neuroptera	Sisyridae	Climacia sp.	8.40
Arthropoda	Hexapoda	Neuroptera	Sisyridae	Sisyra sp.	-
Arthropoda	Hexapoda	Neuroptera	Sisyridae	Sisyra vicaria	-
Arthropoda	Hexapoda	Neuroptera	Sisyridae	Sisyridae	-
Arthropoda	Hexapoda	Odonata	Aeshnidae	Aeshna sp.	-
Arthropoda	Hexapoda	Odonata	Aeshnidae	Aeshna umbrosa	-
Arthropoda	Hexapoda	Odonata	Aeshnidae	Aeshna verticalas	-
Arthropoda	Hexapoda	Odonata	Aeshnidae	Aeshnidae	-
Arthropoda	Hexapoda	Odonata	Aeshnidae	Anax junius	-
Arthropoda	Hexapoda	Odonata	Aeshnidae	Anax longipes	-
Arthropoda	Hexapoda	Odonata	Aeshnidae	Anax sp.	-
Arthropoda	Hexapoda	Odonata	Aeshnidae	Basiaeschna janata	7.10
Arthropoda	Hexapoda	Odonata	Aeshnidae	Boyeria grafiana	3.80
Arthropoda	Hexapoda	Odonata	Aeshnidae	Boyeria sp.	-
Arthropoda	Hexapoda	Odonata	Aeshnidae	Boyeria vinosa	5.80
Arthropoda	Hexapoda	Odonata	Aeshnidae	Epiaeschna heros	-
Arthropoda	Hexapoda	Odonata	Aeshnidae	Epiaeschna sp.	-
Arthropoda	Hexapoda	Odonata	Aeshnidae	Gomphaeschna sp.	6.00
Arthropoda	Hexapoda	Odonata	Aeshnidae	Nasiaeschna pentacantha	6.60
Arthropoda	Hexapoda	Odonata	Calopterygidae	Calopterygidae	-
Arthropoda	Hexapoda	Odonata	Calopterygidae	Calopteryx dimidiata	7.78
Arthropoda	Hexapoda	Odonata	Calopterygidae	Calopteryx maculata	8.30
Arthropoda	Hexapoda	Odonata	Calopterygidae	Calopteryx sp.	7.50
Arthropoda	Hexapoda	Odonata	Calopterygidae	Hetaerina americana	4.90
Arthropoda	Hexapoda	Odonata	Calopterygidae	Hetaerina sp.	4.90
Arthropoda	Hexapoda	Odonata	Calopterygidae	Hetaerina tittia	4.90
Arthropoda	Hexapoda	Odonata	Coenagrionidae	Argia apicalis	8.30
Arthropoda	Hexapoda	Odonata	Coenagrionidae	Argia bipunctulata	8.17
Arthropoda	Hexapoda	Odonata	Coenagrionidae	Argia fumipennis	8.17
Arthropoda	Hexapoda	Odonata	Coenagrionidae	Argia sedula	8.46
Arthropoda	Hexapoda	Odonata	Coenagrionidae	Argia sp.	8.30
Arthropoda	Hexapoda	Odonata	Coenagrionidae	Argia tibialis	8.30
Arthropoda	Hexapoda	Odonata	Coenagrionidae	Argia translata	8.17
Arthropoda	Hexapoda	Odonata	Coenagrionidae	Coenagrionidae	-
Arthropoda	Hexapoda	Odonata	Coenagrionidae	Enallagma divigens	8.50
Arthropoda	Hexapoda	Odonata	Coenagrionidae	Enallagma durum	8.50
Arthropoda	Hexapoda	Odonata	Coenagrionidae	Enallagma signatum	8.90
Arthropoda	Hexapoda	Odonata	Coenagrionidae	Enallagma sp.	8.50
Arthropoda	Hexapoda	Odonata	Coenagrionidae	Enallagma/Ischnura sp.	-
Arthropoda	Hexapoda	Odonata	Coenagrionidae	Ischnura sp.	9.50
Arthropoda	Hexapoda	Odonata	Coenagrionidae	Nehalennia irene	5.00
Arthropoda	Hexapoda	Odonata	Coenagrionidae	Nehalennia sp.	-
Arthropoda	Hexapoda	Odonata	Coenagrionidae	Plathemis lydia	9.80
Arthropoda	Hexapoda	Odonata	Coenagrionidae	Telebasis byersi	-
Arthropoda	Hexapoda	Odonata	Cordulegastridae	Cordulegaster diasatops	5.73
Arthropoda	Hexapoda	Odonata	Cordulegastridae	Cordulegaster erroneus	5.70
Arthropoda	Hexapoda	Odonata	Cordulegastridae	Cordulegaster fasciatus	5.70
Arthropoda	Hexapoda	Odonata	Cordulegastridae	Cordulegaster maculata	5.70
Arthropoda	Hexapoda	Odonata	Cordulegastridae	Cordulegaster sayi	5.70
Arthropoda	Hexapoda	Odonata	Cordulegastridae	Cordulegaster sp.	5.70
Arthropoda	Hexapoda	Odonata	Cordulegastridae	Cordulegastridae	5.70
Arthropoda	Hexapoda	Odonata	Corduliidae	Corduliidae	-
Arthropoda	Hexapoda	Odonata	Corduliidae	Epicordulia princeps	5.60

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Odonata	Corduliidae	Epicordulia sp.	5.60
Arthropoda	Hexapoda	Odonata	Corduliidae	Epithea cynosura	8.00
Arthropoda	Hexapoda	Odonata	Corduliidae	Epithea princeps	7.30
Arthropoda	Hexapoda	Odonata	Corduliidae	Epithea semiaquea	8.00
Arthropoda	Hexapoda	Odonata	Corduliidae	Epithea sp.	8.00
Arthropoda	Hexapoda	Odonata	Corduliidae	Helocordulia shelysi	5.80
Arthropoda	Hexapoda	Odonata	Corduliidae	Helocordulia sp.	5.80
Arthropoda	Hexapoda	Odonata	Corduliidae	Helocordulia uhleri	4.86
Arthropoda	Hexapoda	Odonata	Corduliidae	Neurocordulia alabamensis	5.30
Arthropoda	Hexapoda	Odonata	Corduliidae	Neurocordulia molesta	1.80
Arthropoda	Hexapoda	Odonata	Corduliidae	Neurocordulia obsoleta	5.30
Arthropoda	Hexapoda	Odonata	Corduliidae	Neurocordulia sp.	5.30
Arthropoda	Hexapoda	Odonata	Corduliidae	Neurocordulia virginensis	1.10
Arthropoda	Hexapoda	Odonata	Corduliidae	Somatochlora provocans	8.90
Arthropoda	Hexapoda	Odonata	Corduliidae	Somatochlora sp.	8.90
Arthropoda	Hexapoda	Odonata	Corduliidae	Tetragoneuria cynosura	8.50
Arthropoda	Hexapoda	Odonata	Corduliidae	Tetragoneuria semiaquea	-
Arthropoda	Hexapoda	Odonata	Corduliidae	Tetragoneuria sp.	8.57
Arthropoda	Hexapoda	Odonata	Gomphidae	Aphylla sp.	-
Arthropoda	Hexapoda	Odonata	Gomphidae	Arigomphus sp.	5.80
Arthropoda	Hexapoda	Odonata	Gomphidae	Arigomphus villosipes	5.90
Arthropoda	Hexapoda	Odonata	Gomphidae	Arigomphus/Gomphus sp.	5.90
Arthropoda	Hexapoda	Odonata	Gomphidae	Dromogomphus armatus	5.60
Arthropoda	Hexapoda	Odonata	Gomphidae	Dromogomphus sp.	5.60
Arthropoda	Hexapoda	Odonata	Gomphidae	Dromogomphus spinosus	5.60
Arthropoda	Hexapoda	Odonata	Gomphidae	Dromogomphus spoliatus	5.60
Arthropoda	Hexapoda	Odonata	Gomphidae	Erpetogomphus designatus	-
Arthropoda	Hexapoda	Odonata	Gomphidae	Erpetogomphus sp.	-
Arthropoda	Hexapoda	Odonata	Gomphidae	Erpetogomphus/Ophiogomphus	-
Arthropoda	Hexapoda	Odonata	Gomphidae	Gomphidae	-
Arthropoda	Hexapoda	Odonata	Gomphidae	Gomphus sp.	5.90
Arthropoda	Hexapoda	Odonata	Gomphidae	Gomphus spiniceps	6.10
Arthropoda	Hexapoda	Odonata	Gomphidae	Hagenius brevistylus	4.40
Arthropoda	Hexapoda	Odonata	Gomphidae	Lanthus parvulus	0.60
Arthropoda	Hexapoda	Odonata	Gomphidae	Lanthus sp.	1.60
Arthropoda	Hexapoda	Odonata	Gomphidae	Lanthus vernalis	0.80
Arthropoda	Hexapoda	Odonata	Gomphidae	Ophiogomphus anomalus	5.90
Arthropoda	Hexapoda	Odonata	Gomphidae	Ophiogomphus carolinus	5.90
Arthropoda	Hexapoda	Odonata	Gomphidae	Ophiogomphus mainensis	5.54
Arthropoda	Hexapoda	Odonata	Gomphidae	Ophiogomphus sp.	5.90
Arthropoda	Hexapoda	Odonata	Gomphidae	Progomphus obscurus	8.22
Arthropoda	Hexapoda	Odonata	Gomphidae	Progomphus sp.	8.20
Arthropoda	Hexapoda	Odonata	Gomphidae	Stylogomphus albistylus	4.72
Arthropoda	Hexapoda	Odonata	Gomphidae	Stylurus sp.	5.80
Arthropoda	Hexapoda	Odonata	Lestidae	Archilestes grandis	-
Arthropoda	Hexapoda	Odonata	Lestidae	Lestes sp.	9.42
Arthropoda	Hexapoda	Odonata	Lestidae	Lestidae	-
Arthropoda	Hexapoda	Odonata	Libellulidae	Brachymesia gravida	-
Arthropoda	Hexapoda	Odonata	Libellulidae	Celithemis eponina	-
Arthropoda	Hexapoda	Odonata	Libellulidae	Celithemis sp.	-
Arthropoda	Hexapoda	Odonata	Libellulidae	Chromagrion conditum	-
Arthropoda	Hexapoda	Odonata	Libellulidae	Dythemis velox	-
Arthropoda	Hexapoda	Odonata	Libellulidae	Erythemis simplicicollis	9.72
Arthropoda	Hexapoda	Odonata	Libellulidae	Erythemis sp.	-
Arthropoda	Hexapoda	Odonata	Libellulidae	Erythrodiplax berenice	-
Arthropoda	Hexapoda	Odonata	Libellulidae	Erythrodiplax connata	-
Arthropoda	Hexapoda	Odonata	Libellulidae	Erythrodiplax sp.	-
Arthropoda	Hexapoda	Odonata	Libellulidae	Ladona deplanata	-
Arthropoda	Hexapoda	Odonata	Libellulidae	Libellula auripennis	9.40
Arthropoda	Hexapoda	Odonata	Libellulidae	Libellula forensis	9.40

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Odonata	Libellulidae	Libellula lydia	9.40
Arthropoda	Hexapoda	Odonata	Libellulidae	Libellula sp.	9.40
Arthropoda	Hexapoda	Odonata	Libellulidae	Libellulidae	-
Arthropoda	Hexapoda	Odonata	Libellulidae	Macrodiplax sp.	-
Arthropoda	Hexapoda	Odonata	Libellulidae	Nannothemis sp.	-
Arthropoda	Hexapoda	Odonata	Libellulidae	Pachydiplax longipennis	9.60
Arthropoda	Hexapoda	Odonata	Libellulidae	Pantala flavescens	-
Arthropoda	Hexapoda	Odonata	Libellulidae	Pantala sp.	-
Arthropoda	Hexapoda	Odonata	Libellulidae	Perithemis sp.	9.40
Arthropoda	Hexapoda	Odonata	Libellulidae	Perithemis tenera	9.85
Arthropoda	Hexapoda	Odonata	Libellulidae	Sympetrum sp.	7.29
Arthropoda	Hexapoda	Odonata	Libellulidae	Sympetrum vicinum	-
Arthropoda	Hexapoda	Odonata	Libellulidae	Tramea sp.	-
Arthropoda	Hexapoda	Odonata	Macromiidae	Didymops sp.	2.36
Arthropoda	Hexapoda	Odonata	Macromiidae	Didymops transversa	2.36
Arthropoda	Hexapoda	Odonata	Macromiidae	Macromia alleganiensis	6.20
Arthropoda	Hexapoda	Odonata	Macromiidae	Macromia georgiana	6.20
Arthropoda	Hexapoda	Odonata	Macromiidae	Macromia illinoiensis	6.20
Arthropoda	Hexapoda	Odonata	Macromiidae	Macromia sp.	6.20
Arthropoda	Hexapoda	Odonata	Macromiidae	Macromia taeniolata	6.16
Arthropoda	Hexapoda	Odonata	Macromiidae	Macromiidae	-
Arthropoda	Hexapoda	Odonata	NA	Corduliidae/Libellulidae	-
Arthropoda	Hexapoda	Odonata	NA	Odonata	-
Arthropoda	Hexapoda	Plecoptera	Capniidae	Allocaepnia sp.	3.30
Arthropoda	Hexapoda	Plecoptera	Capniidae	Capniidae	-
Arthropoda	Hexapoda	Plecoptera	Capniidae	Nemocapnia carolina	-
Arthropoda	Hexapoda	Plecoptera	Capniidae	Paracapnia angulata	0.12
Arthropoda	Hexapoda	Plecoptera	Capniidae/Leuctridae	Capniidae/Leuctridae	-
Arthropoda	Hexapoda	Plecoptera	Chloroperlidae	Alloperla sp.	1.00
Arthropoda	Hexapoda	Plecoptera	Chloroperlidae	Chloroperla sp.	-
Arthropoda	Hexapoda	Plecoptera	Chloroperlidae	Chloroperlidae	-
Arthropoda	Hexapoda	Plecoptera	Chloroperlidae	Haploperla brevis	1.40
Arthropoda	Hexapoda	Plecoptera	Chloroperlidae	Suwallia marginata	2.60
Arthropoda	Hexapoda	Plecoptera	Chloroperlidae	Sweltsa sp.	0.20
Arthropoda	Hexapoda	Plecoptera	Leuctridae	Leuctra sp.	1.50
Arthropoda	Hexapoda	Plecoptera	Leuctridae	Leuctridae	-
Arthropoda	Hexapoda	Plecoptera	Leuctridae	Paraleuctra sp.	-
Arthropoda	Hexapoda	Plecoptera	Leuctridae	Zealeutra sp.	-
Arthropoda	Hexapoda	Plecoptera	NA	Plecoptera	-
Arthropoda	Hexapoda	Plecoptera	Nemouridae	Amphinemura delosa	3.80
Arthropoda	Hexapoda	Plecoptera	Nemouridae	Amphinemura sp.	3.80
Arthropoda	Hexapoda	Plecoptera	Nemouridae	Amphinemura wui	3.33
Arthropoda	Hexapoda	Plecoptera	Nemouridae	Nemoura sp.	-
Arthropoda	Hexapoda	Plecoptera	Nemouridae	Nemoura venosa	-
Arthropoda	Hexapoda	Plecoptera	Nemouridae	Nemouridae	-
Arthropoda	Hexapoda	Plecoptera	Nemouridae	Paranemoura sp.	-
Arthropoda	Hexapoda	Plecoptera	Nemouridae	Prostoia sp.	5.20
Arthropoda	Hexapoda	Plecoptera	Nemouridae	Shipsa rotunda	0.33
Arthropoda	Hexapoda	Plecoptera	Nemouridae	Soyedina sp.	0.001
Arthropoda	Hexapoda	Plecoptera	Nemouridae	Zapada chila	-
Arthropoda	Hexapoda	Plecoptera	Peltoperlidae	Peltoperlidae	-
Arthropoda	Hexapoda	Plecoptera	Peltoperlidae	Tallaperla sp.	1.30
Arthropoda	Hexapoda	Plecoptera	Peltoperlidae	Viehoperla ada	1.18
Arthropoda	Hexapoda	Plecoptera	Peltoperlidae	Viehoperla sp.	1.18
Arthropoda	Hexapoda	Plecoptera	Perlidae	Acroneuria abnormis	2.10
Arthropoda	Hexapoda	Plecoptera	Perlidae	Acroneuria arenosa	2.40
Arthropoda	Hexapoda	Plecoptera	Perlidae	Acroneuria arenosa/evoluta	-
Arthropoda	Hexapoda	Plecoptera	Perlidae	Acroneuria arida	-
Arthropoda	Hexapoda	Plecoptera	Perlidae	Acroneuria carolinensis	1.20
Arthropoda	Hexapoda	Plecoptera	Perlidae	Acroneuria evoluta	1.70

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Acroneuria filicis</i>	-
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Acroneuria internata</i>	-
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Acroneuria lycorias</i>	2.10
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Acroneuria mela</i>	0.89
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Acroneuria perplexa</i>	1.00
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Acroneuria</i> sp.	2.06
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Acroneuria/Eccoptura</i> .	-
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Agetina capitata</i>	0.001
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Attaneuria ruralis</i>	-
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Attaneuria/Perlesta</i> sp.	-
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Beloneuria</i> sp.	0.001
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Eccoptura xanthenes</i>	4.70
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Hansonoperla</i> sp.	-
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Neoperla</i> sp.	2.10
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Paragnetina fumosa</i>	3.60
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Paragnetina ichusa</i>	0.001
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Paragnetina ichusa/media</i>	0.20
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Paragnetina immarginata</i>	1.10
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Paragnetina kansensis</i>	1.90
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Paragnetina media</i>	1.00
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Paragnetina</i> sp.	1.54
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Perlesta placida</i>	4.72
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Perlesta</i> sp.	2.90
Arthropoda	Hexapoda	Plecoptera	Perlidae	Perlidae	-
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Perlinella drymo</i>	1.30
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Perlinella ephyre</i>	1.26
Arthropoda	Hexapoda	Plecoptera	Perlidae	<i>Perlinella</i> sp.	-
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Agetina annulipes</i>	0.001
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Agetina flavescens</i>	0.001
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Agetina</i> sp.	1.10
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Clioperla clio</i>	5.20
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Cultus decisus</i>	1.50
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Cultus decisus</i> complex	1.50
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Cultus verticalis</i>	-
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Diploperla duplicata</i>	2.80
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Diploperla kanawholensis/morgani</i>	1.44
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Diploperla</i> sp.	-
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Helopicus bogaloosa</i>	0.001
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Helopicus</i> sp.	0.81
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Helopicus subvarians</i>	1.20
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Hydroperla</i> sp.	-
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Isogenoides hansonii</i>	0.54
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Isogenoides NR hastatus</i>	-
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Isogenus crosbyi</i>	-
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Isogenus</i> sp.	-
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Isooperla bilineata</i>	5.44
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Isooperla dicala</i>	2.10
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Isooperla holochlora</i>	0.001
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Isooperla kirchneri</i> complex	2.50
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Isooperla lata</i>	0.001
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Isooperla marlynia</i>	3.20
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Isooperla namata</i> gr.	2.00
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Isooperla nr frisoni</i>	3.20
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Isooperla nr holochlora</i>	0.001
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Isooperla nr slossonae</i>	1.20
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Isooperla orata</i>	0.001
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Isooperla similis</i>	0.08
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Isooperla similis/pseudosimilis</i> gr.	0.80
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Isooperla slossonae</i>	1.80
Arthropoda	Hexapoda	Plecoptera	Perlodidae	<i>Isooperla</i> sp.	3.20

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Plecoptera	Perlodidae	Isoperla sp. 10	0.001
Arthropoda	Hexapoda	Plecoptera	Perlodidae	Isoperla transmarina	5.20
Arthropoda	Hexapoda	Plecoptera	Perlodidae	Malirekus hastatus	1.00
Arthropoda	Hexapoda	Plecoptera	Perlodidae	Perlodidae	-
Arthropoda	Hexapoda	Plecoptera	Perlodidae	Perlodidae/Chloroperlidae	-
Arthropoda	Hexapoda	Plecoptera	Perlodidae	Remenus bilobatus	0.28
Arthropoda	Hexapoda	Plecoptera	Perlodidae	Remenus sp.	0.90
Arthropoda	Hexapoda	Plecoptera	Perlodidae	Yugus arinus	0.001
Arthropoda	Hexapoda	Plecoptera	Perlodidae	Yugus bulbosus	0.001
Arthropoda	Hexapoda	Plecoptera	Perlodidae	Yugus bulbosus gr.	0.001
Arthropoda	Hexapoda	Plecoptera	Perlodidae	Yugus sp.	0.001
Arthropoda	Hexapoda	Plecoptera	Pteronarcyidae	Pteronarcyidae	1.64
Arthropoda	Hexapoda	Plecoptera	Pteronarcyidae	Pteronarcys biloba	0.001
Arthropoda	Hexapoda	Plecoptera	Pteronarcyidae	Pteronarcys comstocki	-
Arthropoda	Hexapoda	Plecoptera	Pteronarcyidae	Pteronarcys dorsata	2.40
Arthropoda	Hexapoda	Plecoptera	Pteronarcyidae	Pteronarcys proteus	0.40
Arthropoda	Hexapoda	Plecoptera	Pteronarcyidae	Pteronarcys scotti	-
Arthropoda	Hexapoda	Plecoptera	Pteronarcyidae	Pteronarcys sp.	1.80
Arthropoda	Hexapoda	Plecoptera	Taeniopterygidae	Bolotoperla rossi	-
Arthropoda	Hexapoda	Plecoptera	Taeniopterygidae	Oemopteryx contorta	-
Arthropoda	Hexapoda	Plecoptera	Taeniopterygidae	Strophopteryx sp.	3.30
Arthropoda	Hexapoda	Plecoptera	Taeniopterygidae	Taenionema atlanticum	-
Arthropoda	Hexapoda	Plecoptera	Taeniopterygidae	Taeniopterygidae	-
Arthropoda	Hexapoda	Plecoptera	Taeniopterygidae	Taeniopteryx atlanticum	6.00
Arthropoda	Hexapoda	Plecoptera	Taeniopterygidae	Taeniopteryx burksi	6.60
Arthropoda	Hexapoda	Plecoptera	Taeniopterygidae	Taeniopteryx lita	6.00
Arthropoda	Hexapoda	Plecoptera	Taeniopterygidae	Taeniopteryx maura	6.00
Arthropoda	Hexapoda	Plecoptera	Taeniopterygidae	Taeniopteryx maura	5.37
Arthropoda	Hexapoda	Plecoptera	Taeniopterygidae	Taeniopteryx metequi	1.42
Arthropoda	Hexapoda	Plecoptera	Taeniopterygidae	Taeniopteryx paravulus	6.00
Arthropoda	Hexapoda	Plecoptera	Taeniopterygidae	Taeniopteryx sp.	6.00
Arthropoda	Hexapoda	Plecoptera	Taeniopterygidae	Taeniopteryx ugola	6.00
Arthropoda	Hexapoda	Trichoptera	Brachycentridae	Brachycentridae	-
Arthropoda	Hexapoda	Trichoptera	Brachycentridae	Brachycentrus appalachia	1.00
Arthropoda	Hexapoda	Trichoptera	Brachycentridae	Brachycentrus chelatus	0.60
Arthropoda	Hexapoda	Trichoptera	Brachycentridae	Brachycentrus incanus	2.20
Arthropoda	Hexapoda	Trichoptera	Brachycentridae	Brachycentrus lateralis	1.90
Arthropoda	Hexapoda	Trichoptera	Brachycentridae	Brachycentrus nigrosoma	3.10
Arthropoda	Hexapoda	Trichoptera	Brachycentridae	Brachycentrus numerosus	1.70
Arthropoda	Hexapoda	Trichoptera	Brachycentridae	Brachycentrus sp.	2.20
Arthropoda	Hexapoda	Trichoptera	Brachycentridae	Brachycentrus spinae	0.001
Arthropoda	Hexapoda	Trichoptera	Brachycentridae	Micrasema bennetti	0.001
Arthropoda	Hexapoda	Trichoptera	Brachycentridae	Micrasema burksi	0.001
Arthropoda	Hexapoda	Trichoptera	Brachycentridae	Micrasema charonis	1.00
Arthropoda	Hexapoda	Trichoptera	Brachycentridae	Micrasema rickeri	0.001
Arthropoda	Hexapoda	Trichoptera	Brachycentridae	Micrasema rusticum	0.001
Arthropoda	Hexapoda	Trichoptera	Brachycentridae	Micrasema scotti	-
Arthropoda	Hexapoda	Trichoptera	Brachycentridae	Micrasema sp.	-
Arthropoda	Hexapoda	Trichoptera	Brachycentridae	Micrasema sprulesi	-
Arthropoda	Hexapoda	Trichoptera	Brachycentridae	Micrasema wataga	2.20
Arthropoda	Hexapoda	Trichoptera	Calamoceratidae	Anisocentropus pyraloides	1.30
Arthropoda	Hexapoda	Trichoptera	Calamoceratidae	Calamoceratidae	-
Arthropoda	Hexapoda	Trichoptera	Calamoceratidae	Heteroplectron americanum	2.00
Arthropoda	Hexapoda	Trichoptera	Dipseudopsidae	Phylocentropus carolinus	6.20
Arthropoda	Hexapoda	Trichoptera	Dipseudopsidae	Phylocentropus lucidus	-
Arthropoda	Hexapoda	Trichoptera	Dipseudopsidae	Phylocentropus placidus	-
Arthropoda	Hexapoda	Trichoptera	Dipseudopsidae	Phylocentropus sp.	4.80
Arthropoda	Hexapoda	Trichoptera	Glossosomatidae	Agapetus sp.	0.001
Arthropoda	Hexapoda	Trichoptera	Glossosomatidae	Agraylea multipunctata	-
Arthropoda	Hexapoda	Trichoptera	Glossosomatidae	Agraylea sp.	-

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Trichoptera	Glossosomatidae	Culoptila sp.	-
Arthropoda	Hexapoda	Trichoptera	Glossosomatidae	Glossosoma sp.	1.40
Arthropoda	Hexapoda	Trichoptera	Glossosomatidae	Glossosomatidae	-
Arthropoda	Hexapoda	Trichoptera	Glossosomatidae	Matrioptila jeanae	0.001
Arthropoda	Hexapoda	Trichoptera	Glossosomatidae	Protoptila sp.	2.30
Arthropoda	Hexapoda	Trichoptera	Goeridae	Goera calcarata	1.00
Arthropoda	Hexapoda	Trichoptera	Goeridae	Goera fuscula	0.40
Arthropoda	Hexapoda	Trichoptera	Goeridae	Goera sp.	0.70
Arthropoda	Hexapoda	Trichoptera	Goeridae	Goera stylata	-
Arthropoda	Hexapoda	Trichoptera	Goeridae	Goeridae	-
Arthropoda	Hexapoda	Trichoptera	Goeridae	Goerita sp.	-
Arthropoda	Hexapoda	Trichoptera	Helicopsychidae	Helicopsyche borealis	0.001
Arthropoda	Hexapoda	Trichoptera	Helicopsychidae	Helicopsyche paralimnella	0.001
Arthropoda	Hexapoda	Trichoptera	Helicopsychidae	Helicopsyche sp.	0.001
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Arctopsyche irrorata	0.001
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Cheumatopsyche sp.	6.60
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Diplectrona metaqui	-
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Diplectrona modesta	2.30
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Diplectrona sp.	-
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche (C.) alhedra	0.001
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche (C.) bifida	2.20
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche (C.) bronta	2.30
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche (C.) etnieri	-
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche (C.) macleodi	0.70
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche (C.) morosa	2.30
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche (C.) slossonae	0.001
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche (C.) sp.	-
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche (C.) sparna	2.50
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche (C.) ventura	0.10
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche (C.) walkeri	1.00
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche betteni	7.90
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche betteni/elissoma	-
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche bidens	-
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche carolina	-
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche decalda	3.20
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche demora	2.60
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche elissoma	-
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche frisoni	-
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche hageni	-
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche incommoda	4.60
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche leonardi	-
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche macleodi	0.70
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche mississippiensis	-
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche morosa	2.30
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche phalerata	3.70
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche rossi/simulans	4.80
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche scalaris	2.60
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche simulans	-
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche slossonae	0.10
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche sp.	-
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche sparna	2.50
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche venularis	5.10
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsyche venularis/rossi/simulans	-
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Hydropsychidae	-
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Macrostemum carolina	3.52
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Macrostemum sp.	3.40
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Parapsyche apicalis	-
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Parapsyche cardis	0.001
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Parapsyche sp.	-
Arthropoda	Hexapoda	Trichoptera	Hydropsychidae	Potamyia flava	-

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Trichoptera	Hydroptilidae	Dibusa angata	-
Arthropoda	Hexapoda	Trichoptera	Hydroptilidae	Dibusa/Stactiobella sp.	-
Arthropoda	Hexapoda	Trichoptera	Hydroptilidae	Hydroptila sp.	6.50
Arthropoda	Hexapoda	Trichoptera	Hydroptilidae	Hydroptilidae	-
Arthropoda	Hexapoda	Trichoptera	Hydroptilidae	Leucotrichia pictipes	4.60
Arthropoda	Hexapoda	Trichoptera	Hydroptilidae	Mayatrichia ayama	-
Arthropoda	Hexapoda	Trichoptera	Hydroptilidae	Neotrichia collata	-
Arthropoda	Hexapoda	Trichoptera	Hydroptilidae	Neotrichia sp.	-
Arthropoda	Hexapoda	Trichoptera	Hydroptilidae	Ochrotrichia sp.	3.95
Arthropoda	Hexapoda	Trichoptera	Hydroptilidae	Orthotrichia sp.	8.29
Arthropoda	Hexapoda	Trichoptera	Hydroptilidae	Oxyethira sp.	2.22
Arthropoda	Hexapoda	Trichoptera	Hydroptilidae	Palaeagapetus celsus	-
Arthropoda	Hexapoda	Trichoptera	Hydroptilidae	Stactobiella sp.	1.29
Arthropoda	Hexapoda	Trichoptera	Lepidostomatidae	Lepidostoma sp.	1.00
Arthropoda	Hexapoda	Trichoptera	Lepidostomatidae	Lepidostomatidae	-
Arthropoda	Hexapoda	Trichoptera	Lepidostomatidae	Theliopsyche sp.	-
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea alces	2.20
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea ancylus	2.80
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea ancylus/flavus	2.01
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea cama	2.50
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea cancellata	2.20
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea diluta	2.20
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea enodis	2.01
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea excisa	0.001
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea flava	0.001
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea gaymoni	2.20
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea joanna	0.001
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea maculata	6.20
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea mentiea	0.001
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea misca	2.01
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea neffi	2.20
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea nepha	2.00
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea nr mentiea	2.20
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea nr transversa	2.54
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea ophioderus	2.38
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea punctata	2.20
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea resurgens	2.87
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea slossonae	2.20
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea sp.	2.20
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea tarsipunctata	2.20
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Ceraclea transversa	2.80
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Leptoceridae	-
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Leptocerus americanus	-
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Mystacides sepulchralis	2.60
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Nectopsyche candida	6.50
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Nectopsyche exquisita	4.30
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Nectopsyche exquisita/candida	-
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Nectopsyche pavidata	3.90
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Nectopsyche sp.	2.94
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Oecetis avara	5.10
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Oecetis cinerascens	5.10
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Oecetis georgia	3.60
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Oecetis inconspicua complex	1.90
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Oecetis morsei	0.001
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Oecetis morsei/sphyra	5.10
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Oecetis nocturna	5.00
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Oecetis osteni	5.10
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Oecetis persimilis	4.60
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Oecetis persimilis/georgia	5.10
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Oecetis scala gr.	2.70

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Oecetis sp.	5.10
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Oecetis Sp. A (Floyd, 95)	2.00
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Oecetis sp. D (Floyd, 95)	0.10
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Oecetis Sp. E (Floyd, 95)	4.70
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Oecetis Sp. F (Floyd, 95)	3.50
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Setodes arenatus	0.50
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Setodes sp.	0.001
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Setodes stehri	0.50
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Triaenodes cumberlandensis	4.46
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Triaenodes flavescens	4.10
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Triaenodes ignitus	4.80
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Triaenodes injustus	2.70
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Triaenodes marginatus	4.10
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Triaenodes melacus	4.10
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Triaenodes melacus/cumberlandensis	4.10
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Triaenodes non-ignitus	4.46
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Triaenodes nr baris	4.46
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Triaenodes ochraceus	4.46
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Triaenodes perna	4.06
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Triaenodes perna/helo	3.80
Arthropoda	Hexapoda	Trichoptera	Leptoceridae	Triaenodes sp.	4.10
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Anabolia consocia	-
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Apatania sp.	0.60
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Hesperophylax sp.	-
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Hydatophylax argus	2.40
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Hydatophylax sp.	-
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Ironoquia punctatissima	6.70
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Ironoquia sp.	7.30
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Limnephilidae	-
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Limnephilus sp.	-
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Limnephilus submonilifer	-
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Platycentropus	-
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Platycentropus radiatus	-
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Platycentropus uniformis	-
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Pycnopsyche antica	2.50
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Pycnopsyche antica/guttifer	2.52
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Pycnopsyche divergens	2.50
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Pycnopsyche gentilis	1.80
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Pycnopsyche gentilis/flavata	0.57
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Pycnopsyche guttifer	2.20
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Pycnopsyche lepida	3.90
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Pycnopsyche lepida gr.	3.90
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Pycnopsyche luculenta	2.50
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Pycnopsyche luculenta/sonso	2.50
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Pycnopsyche scabripennis	2.50
Arthropoda	Hexapoda	Trichoptera	Limnephilidae	Pycnopsyche sp.	2.50
Arthropoda	Hexapoda	Trichoptera	Molannidae	Molanna blenda	1.60
Arthropoda	Hexapoda	Trichoptera	Molannidae	Molanna sp.	-
Arthropoda	Hexapoda	Trichoptera	Molannidae	Molanna tryphena	2.40
Arthropoda	Hexapoda	Trichoptera	Molannidae	Molanna uniophila	-
Arthropoda	Hexapoda	Trichoptera	Molannidae	Molannidae	-
Arthropoda	Hexapoda	Trichoptera	NA	Goeridae/Uenoidae	-
Arthropoda	Hexapoda	Trichoptera	NA	Trichoptera	-
Arthropoda	Hexapoda	Trichoptera	Odontoceridae	Odontoceridae	-
Arthropoda	Hexapoda	Trichoptera	Odontoceridae	Pseudogoera singularis	-
Arthropoda	Hexapoda	Trichoptera	Odontoceridae	Psilotreta frontalis	0.001
Arthropoda	Hexapoda	Trichoptera	Odontoceridae	Psilotreta labida	0.001
Arthropoda	Hexapoda	Trichoptera	Odontoceridae	Psilotreta sp.	0.50
Arthropoda	Hexapoda	Trichoptera	Philopotamidae	Chimarra aterrima	2.76
Arthropoda	Hexapoda	Trichoptera	Philopotamidae	Chimarra aterrima gr.	2.76

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Trichoptera	Philopotamidae	Chimarra obscura	2.76
Arthropoda	Hexapoda	Trichoptera	Philopotamidae	Chimarra socia	2.76
Arthropoda	Hexapoda	Trichoptera	Philopotamidae	Chimarra sp.	3.30
Arthropoda	Hexapoda	Trichoptera	Philopotamidae	Dolophilodes distincta	0.81
Arthropoda	Hexapoda	Trichoptera	Philopotamidae	Dolophilodes sp.	1.00
Arthropoda	Hexapoda	Trichoptera	Philopotamidae	Philopotamidae	-
Arthropoda	Hexapoda	Trichoptera	Philopotamidae	Wormaldia sp.	2.40
Arthropoda	Hexapoda	Trichoptera	Phryganeidae	Agrypnia sp.	-
Arthropoda	Hexapoda	Trichoptera	Phryganeidae	Agrypnia vestita	-
Arthropoda	Hexapoda	Trichoptera	Phryganeidae	Oligostomis pardalis	6.20
Arthropoda	Hexapoda	Trichoptera	Phryganeidae	Phryganeidae	-
Arthropoda	Hexapoda	Trichoptera	Phryganeidae	Phryganea sayi	-
Arthropoda	Hexapoda	Trichoptera	Phryganeidae	Ptilostomis sp.	5.90
Arthropoda	Hexapoda	Trichoptera	Polycentropodidae	Cernotina sp.	-
Arthropoda	Hexapoda	Trichoptera	Polycentropodidae	Cernotina spicata	-
Arthropoda	Hexapoda	Trichoptera	Polycentropodidae	Cymellus fraternus	6.80
Arthropoda	Hexapoda	Trichoptera	Polycentropodidae	Neureclipsis sp.	4.00
Arthropoda	Hexapoda	Trichoptera	Polycentropodidae	Nyctiophylax celta	0.70
Arthropoda	Hexapoda	Trichoptera	Polycentropodidae	Nyctiophylax moestus	3.80
Arthropoda	Hexapoda	Trichoptera	Polycentropodidae	Nyctiophylax nephphilus	0.60
Arthropoda	Hexapoda	Trichoptera	Polycentropodidae	Nyctiophylax nr sp. B (Flint)	0.85
Arthropoda	Hexapoda	Trichoptera	Polycentropodidae	Nyctiophylax sp.	0.80
Arthropoda	Hexapoda	Trichoptera	Polycentropodidae	Nyctiophylax uncus	0.80
Arthropoda	Hexapoda	Trichoptera	Polycentropodidae	Paranyctiophylax sp.	-
Arthropoda	Hexapoda	Trichoptera	Polycentropodidae	Polycentropodidae	-
Arthropoda	Hexapoda	Trichoptera	Polycentropodidae	Polycentropus sp.	3.53
Arthropoda	Hexapoda	Trichoptera	Polycentropodidae	Polycentropus/Cernotina	3.53
Arthropoda	Hexapoda	Trichoptera	Psychomyiidae	Lype diversa	3.90
Arthropoda	Hexapoda	Trichoptera	Psychomyiidae	Psychomyiidae	-
Arthropoda	Hexapoda	Trichoptera	Psychomyiidae	Psychomyia flavida	3.00
Arthropoda	Hexapoda	Trichoptera	Psychomyiidae	Psychomyia nomada	2.00
Arthropoda	Hexapoda	Trichoptera	Psychomyiidae	Psychomyia sp.	-
Arthropoda	Hexapoda	Trichoptera	Psychomyiidae	Psychomyiidae	-
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila acutiloba	0.001
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila amicus	-
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila appalachia	0.001
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila appalachia/nigrita	-
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila atrata	0.001
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila banksi	-
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila banksi/invaria complex	-
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila carolina	0.40
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila carolina gr.	0.40
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila carpenteri	-
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila formosa	0.10
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila fuscula	1.60
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila glaberrima	-
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila invaria	-
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila ledra/fenestra	4.60
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila manistte	-
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila melita	0.001
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila minora	0.001
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila mycta	-
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila nigrita	0.001
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila nr lobifera	-
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila sp.	-
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila torva	1.50
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila vibox	-
Arthropoda	Hexapoda	Trichoptera	Rhyacophilidae	Rhyacophila vuphipes	0.001
Arthropoda	Hexapoda	Trichoptera	Sericostomatidae	Agarodes georgius	-
Arthropoda	Hexapoda	Trichoptera	Sericostomatidae	Agarodes griseus	-

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Arthropoda	Hexapoda	Trichoptera	Sericostomatidae	Agarodes libalis	-
Arthropoda	Hexapoda	Trichoptera	Sericostomatidae	Agarodes sp.	0.69
Arthropoda	Hexapoda	Trichoptera	Sericostomatidae	Agarodes wallacei	-
Arthropoda	Hexapoda	Trichoptera	Sericostomatidae	Fattigia pele	0.001
Arthropoda	Hexapoda	Trichoptera	Sericostomatidae	Sericostomatidae	-
Arthropoda	Hexapoda	Trichoptera	Thremmatidae	Neophylax antiqua	-
Arthropoda	Hexapoda	Trichoptera	Thremmatidae	Neophylax concinnus	1.45
Arthropoda	Hexapoda	Trichoptera	Thremmatidae	Neophylax consimilis	0.30
Arthropoda	Hexapoda	Trichoptera	Thremmatidae	Neophylax fuscus	0.001
Arthropoda	Hexapoda	Trichoptera	Thremmatidae	Neophylax mitchelli	0.001
Arthropoda	Hexapoda	Trichoptera	Thremmatidae	Neophylax oligius	2.40
Arthropoda	Hexapoda	Trichoptera	Thremmatidae	Neophylax ornatus	1.30
Arthropoda	Hexapoda	Trichoptera	Thremmatidae	Neophylax sp.	1.60
Mollusca	Gastropoda	Basommatophora	Ancylidae	Ancylidae	-
Mollusca	Gastropoda	Basommatophora	Ancylidae	Ferrissia fragilis.	6.55
Mollusca	Gastropoda	Basommatophora	Ancylidae	Ferrissia rivularis	6.55
Mollusca	Gastropoda	Basommatophora	Ancylidae	Ferrissia sp.	6.60
Mollusca	Gastropoda	Basommatophora	Ancylidae	Hebetancylus excentricus	-
Mollusca	Gastropoda	Basommatophora	Ancylidae	Laevapex fuscus	6.60
Mollusca	Gastropoda	Basommatophora	Ancylidae	Laevapex sp.	7.49
Mollusca	Gastropoda	Basommatophora	Lymnaeidae	Lymnaea columella	7.65
Mollusca	Gastropoda	Basommatophora	Lymnaeidae	Lymnaea sp.	-
Mollusca	Gastropoda	Basommatophora	Lymnaeidae	Pseudosuccinea columella	7.70
Mollusca	Gastropoda	Basommatophora	Lymnaeidae	Stagnicola sp.	8.10
Mollusca	Gastropoda	Basommatophora	Lymnaeidae	Succinea ovalis	-
Mollusca	Gastropoda	Basommatophora	Physidae	Physa acuta	8.70
Mollusca	Gastropoda	Basommatophora	Physidae	Physa pomilia	8.70
Mollusca	Gastropoda	Basommatophora	Physidae	Physa sp.	8.70
Mollusca	Gastropoda	Basommatophora	Physidae	Physella sp.	8.70
Mollusca	Gastropoda	Basommatophora	Planorbidae	Gyraulus deflectus	5.00
Mollusca	Gastropoda	Basommatophora	Planorbidae	Gyraulus parvus	6.00
Mollusca	Gastropoda	Basommatophora	Planorbidae	Gyraulus sp.	4.20
Mollusca	Gastropoda	Basommatophora	Planorbidae	Helisoma anceps	6.60
Mollusca	Gastropoda	Basommatophora	Planorbidae	Helisoma sp.	6.23
Mollusca	Gastropoda	Basommatophora	Planorbidae	Helisoma trivolvis	5.90
Mollusca	Gastropoda	Basommatophora	Planorbidae	Menetus dilitatus	7.60
Mollusca	Gastropoda	Basommatophora	Planorbidae	Menetus sp.	8.23
Mollusca	Gastropoda	Basommatophora	Planorbidae	Micromenetus dilatatus	8.20
Mollusca	Gastropoda	Basommatophora	Planorbidae	Planorbella sp.	6.82
Mollusca	Gastropoda	Basommatophora	Planorbidae	Planorbella trivolvis	5.90
Mollusca	Gastropoda	Basommatophora	Planorbidae	Planorbidae	-
Mollusca	Gastropoda	Basommatophora	Planorbidae	Promenetus exacuus	5.00
Mollusca	Gastropoda	Mesogastropoda	Hydrobiidae	Ammicola limosa	5.20
Mollusca	Gastropoda	Mesogastropoda	Hydrobiidae	Ammicola sp.	4.10
Mollusca	Gastropoda	Mesogastropoda	Hydrobiidae	Birgella sp.	6.40
Mollusca	Gastropoda	Mesogastropoda	Hydrobiidae	Gillia altilis	-
Mollusca	Gastropoda	Mesogastropoda	Hydrobiidae	Hydrobiidae	-
Mollusca	Gastropoda	Mesogastropoda	Hydrobiidae	Littoridinops tenuipes	-
Mollusca	Gastropoda	Mesogastropoda	NA	Mesogastropoda	-
Mollusca	Gastropoda	Mesogastropoda	Pleuroceridae	Elimia sp.	2.70
Mollusca	Gastropoda	Mesogastropoda	Pleuroceridae	Pleurocera catenaria	2.70
Mollusca	Gastropoda	Mesogastropoda	Pleuroceridae	Pleurocera proxima	2.70
Mollusca	Gastropoda	Mesogastropoda	Pleuroceridae	Pleurocera sp.	2.70
Mollusca	Gastropoda	Mesogastropoda	Pleuroceridae	Pleuroceridae	-
Mollusca	Gastropoda	Mesogastropoda	Valvatidae	Valvata bicarinata	8.00
Mollusca	Gastropoda	Mesogastropoda	Valvatidae	Valvata sp.	-
Mollusca	Gastropoda	Mesogastropoda	Viviparidae	Campeloma decisum	5.80
Mollusca	Gastropoda	Mesogastropoda	Viviparidae	Campeloma sp.	5.80
Mollusca	Gastropoda	Mesogastropoda	Viviparidae	Cipangopaludina japonica	-
Mollusca	Gastropoda	Mesogastropoda	Viviparidae	Viviparidae	-

Appendix 5. SC Master List of Benthic Macroinvertebrates with Tolerance Values

SC Master List of Benthic Macroinvertebrates

Phylum	Class	Order	Family	Genus species	TV
Mollusca	Gastropoda	Mesogastropoda	Viviparidae	Viviparus georgianus	-
Mollusca	Gastropoda	Mesogastropoda	Viviparidae	Viviparus intertextus	-
Mollusca	Gastropoda	Mesogastropoda	Viviparidae	Viviparus sp.	-
Mollusca	Gastropoda	NA	NA	Gastropoda	-
Mollusca	Gastropoda	Neotaenioglossa	Hydrobiidae	Somatogyrus sp.	6.40
Mollusca	Gastropoda	Neotaenioglossa	Hydrobiidae	Somatogyrus virginicus	-
Mollusca	Pelecypoda	Heterodonta	Corbiculidae	Corbicula fluminea	6.60
Mollusca	Pelecypoda	Heterodonta	Mactridae	Rangia cuneata	-
Mollusca	Pelecypoda	Heterodonta	Sphaeriidae	Eupera cubensis	5.70
Mollusca	Pelecypoda	Heterodonta	Sphaeriidae	Musculium sp.	7.50
Mollusca	Pelecypoda	Heterodonta	Sphaeriidae	Pisidium sp.	6.60
Mollusca	Pelecypoda	Heterodonta	Sphaeriidae	Sphaeriidae	-
Mollusca	Pelecypoda	Heterodonta	Sphaeriidae	Sphaerium sp.	7.20
Mollusca	Pelecypoda	Heterodonta	Sphaeriidae	Sphaerium/Musculium sp.	-
Mollusca	Pelecypoda	NA	NA	Pelecypoda	-
Mollusca	Pelecypoda	Unionoida	Unionidae	Alasmidonta undulata	1.20
Mollusca	Pelecypoda	Unionoida	Unionidae	Alasmidonta varicosa	0.10
Mollusca	Pelecypoda	Unionoida	Unionidae	Elliptio angustata	4.90
Mollusca	Pelecypoda	Unionoida	Unionidae	Elliptio complanata	4.70
Mollusca	Pelecypoda	Unionoida	Unionidae	Elliptio complanata/icterina	4.90
Mollusca	Pelecypoda	Unionoida	Unionidae	Elliptio congaraea	4.90
Mollusca	Pelecypoda	Unionoida	Unionidae	Elliptio fisheriana	4.90
Mollusca	Pelecypoda	Unionoida	Unionidae	Elliptio icterina	4.90
Mollusca	Pelecypoda	Unionoida	Unionidae	Elliptio producta	4.90
Mollusca	Pelecypoda	Unionoida	Unionidae	Elliptio roanokensis	4.90
Mollusca	Pelecypoda	Unionoida	Unionidae	Elliptio sp.	4.90
Mollusca	Pelecypoda	Unionoida	Unionidae	Lampsilis cariosa	-
Mollusca	Pelecypoda	Unionoida	Unionidae	Lampsilis splendida	-
Mollusca	Pelecypoda	Unionoida	Unionidae	Leptodea ochracea	-
Mollusca	Pelecypoda	Unionoida	Unionidae	Ligumia nasuta	-
Mollusca	Pelecypoda	Unionoida	Unionidae	Pyganodon cataracta	-
Mollusca	Pelecypoda	Unionoida	Unionidae	Unio merus carolinianus	-
Mollusca	Pelecypoda	Unionoida	Unionidae	Unionidae	-
Mollusca	Pelecypoda	Unionoida	Unionidae	Utterbackia imbecillis	-
Mollusca	Pelecypoda	Unionoida	Unionidae	Villosa delumbis	-
Mollusca	Pelecypoda	Unionoida	Unionidae	Villosa sp.	-
Nematoda	NA	NA	NA	Nematoda	-
Nematomorpha	NA	NA	NA	Nematomorpha	-
Nemertea	Enopla	Hoploneurtea	Tetrastemmatidae	Prostoma graecense	6.60
Platyhelminthes	NA	NA	NA	Platyhelminthes	-
Platyhelminthes	Turbellaria	NA	NA	Turbellaria	-
Platyhelminthes	Turbellaria	Tricladida	NA	Tricladida	-
Platyhelminthes	Turbellaria	Tricladida	Planariidae	Cura foremanii	5.50
Platyhelminthes	Turbellaria	Tricladida	Planariidae	Dugesia sp.	7.50
Platyhelminthes	Turbellaria	Tricladida	Planariidae	Dugesia tigrina	7.10
Platyhelminthes	Turbellaria	Tricladida	Planariidae	Planariidae	7.50

* SC tolerance values based on values calculated by North Carolina DEQ.

Appendix 6. Macroinvertebrate Bench Sheet

2017							
Heptageniidae							
Cinygmula subequalis							
Epeorus pleuralis							
Epeorus vitreus gp.							
Epeorus pleuralis gp.							
Epeorus sp.							
Heptagenia sp.							
Leucrocuta sp.							
Maccaffertium carlsoni							
Maccaffertium exiguum							
Maccaffertium mexicanum							
Maccaffertium modestum							
Maccaffertium pudicum							
Maccaffertium (patterned) sp.							
Maccaffertium sp.							
Maccaffertium terminatum							
Rithrogena sp.							
Stenacron interpunctatum							
Stenacron pallidum							
Stenacron sp.							
Stenonema femoratum							
Isonychiadea							
Isonychia sp.							
Leptohiphidae							
Asioplax dolani							
Tricorythodes sp.							
Leptophlebiidae							
Habrophlebiodes sp.							
Leptophlebia sp.							
Paraleptophlebia sp.							
Neophemeridae							
Neophemera purpurea							
Plecoptera							
Chloroperlidae							
Leuctridae							
Leuctra sp.							
Nemouridae							
Amphinemura sp.							
Peltoperlidae							
Tallaperla sp.							
Perlidae							
Acroneuria abnormis							
Acroneuria arenosa/evoluta							
Acroneuria sp.							
Acroneuria/Eccoptura.							
Beloneuria sp.							
Eccoptura xanthenes							
Neoperla sp.							
Paragnetina fumosa							
Paragnetina immarginata							
Paragnetina kansensis							
Paragnetina sp.							
Perlesta sp.							
Perlodidae							
Clioperla clio							

Appendix 6. Macroinvertebrate Bench Sheet

2017							
Isoperla sp.							
Malirekus hastatus							
Remenus sp.							
Pteronarcidae							
Pteronarcys dorsata							
Pteronarcys sp.							
Taeniopterygidae							
Strophopteryx sp.							
Taeniopteryx sp.							
Trichoptera							
Brachycentridae							
Brachycentrus chelatus							
Brachycentrus nigrosoma							
Brachycentrus numerosus							
Brachycentrus sp.							
Micrasema sp.							
Micrasema wataga							
Calamoceratidae							
Anisocentropus pyraloides							
Heteroplectron americanum							
Dipseudopsidae							
Phylocentropus sp.							
Glossosomatidae							
Glossosoma sp.							
Helicopsychidae							
Helicopsyche borealis							
Hydropsychidae							
Hydropsyche (C.) sp.							
Cheumatopsyche sp.							
Diplectrona modesta							
Hydropsyche betteni							
Hydropsyche elissoma							
Hydropsyche incommoda							
Hydropsyche simulans/rossi							
Hydropsyche (C.) sparna							
Hydropsyche (H.) sp.							
Hydropsyche venularis							
H. venularis/rossi/simulans							
Macrostemum sp.							
Hydroptilidae							
Hydroptila sp.							
Lepidostomatidae							
Lepidostoma sp.							
Leptoceridae							
Ceraclea ancylus/flavus							
Ceraclea near transversa							
Ceraclea sp.							
Ceraclea transversa							
Mystacides spulchralis							
Nectopsyche candida							
Nectopsyche exquisita/candida							
Nectopsyche exquisita							
Nectopsyche pavidata							
Nectopsyche sp.							
Oecetis georgia							

Appendix 6. Macroinvertebrate Bench Sheet

2017							
Paralauterborniella nigrohalteralis							
Paratanytarsus longistilus							
Paratanytarsus sp.							
Paratendipes albimanus							
Paratendipes sp.							
Paratendipes subequalis							
Phaenopsectra obediens gr							
Phaenopsectra punctipes gr							
Phaenopsectra sp.							
Tribelos/Phaenopsectra							
Polypedilum aviceps							
Polypedilum epleri/fallax							
Polypedilum flavum							
Polypedilum halterale group							
Polypedilum illinoense							
Polypedilum laetum							
Polypedilum scalaenum gr							
Polypedilum sp.							
Polypedilum trigonus							
Polypedilum tritum							
Pseudochironomus sp.							
Rheotanytarsus exiguus gr							
Rheotanytarsus pellucidus							
Rheotanytarsus sp.							
Robackia demeijerei							
Saetheria hirta							
Saetheria sp.							
Stelechomyia perpulchra							
Stempellina sp.							
Stempellina sp. C							
Stempellinella fimbriata							
Stempellinella sp.							
Stenochironomus sp.							
Stictochironomus caffrarius							
Stictochironomus devinctus							
Stictochironomus sp.							
Sublettea sp.							
Tanytarsini							
Tanytarsus sp.							
Tribelos fusicorne							
Tribelos jucundum							
Tribelos sp.							
Xenochironomus xenolabis							
Xestochironomus sp.							
Zavrelia sp.							
Zavreliella marmorata							
Zavrelimyia sp.							
Diamesinae							
Diamesa sp.							
Potthastia longimana							
Orthoclaadiinae							
Acricotopus sp.							
Brillia flavifrons							
Brillia sp.							
Cardiocladius obscurus							

Appendix 6. Macroinvertebrate Bench Sheet

2017							
Cardiocladius sp.							
Corynoneura sp.							
Cricotopus bicinctus							
Cricotopus sp.							
Cricotopus/Orthocladius							
Diplocladius cultriger							
Epoicocladius flavens							
Epoicocladius sp.							
Eukiefferiella claripennis gr							
Eukiefferiella devonica gp							
Eukiefferiella sp.							
Eukiefferiella/Tvetenia							
Euryhapsis sp.							
Heterotrissocladius marcidus							
Heterotrissocladius sp.							
Hydrobaenus sp.							
Krensosmittia sp.							
Limnophyes sp.							
Lopescladius sp.							
Nanocladius sp.							
Orthoclaadiinae species C							
Orthocladius (S.) annectens							
Orthocladius lignicola							
Orthocladius (O.) oliveri							
Orthocladius sp.							
Parachaetocladius sp.							
Paracricotopus sp.							
Parakiefferiella coronata							
Parakiefferiella sp.							
Parametriocnemus sp.							
Parametriocnemus/Paraphaenocladius							
Paraphaenocladius sp.							
Psectrocladius elatus							
Psectrocladius sp.							
Rheocricotopus robacki							
Rheocricotopus sp.							
Rheocricotopus tuberculatus							
Rheosmittia sp.							
Synorthocladius sp.							
Thienemanniella lobapodema							
Thienemanniella sp.							
Thienemanniella xena							
Tvetenia sp.							
Tvetenia vitracies							
Uniella multivirga							
Xylotopus par							
Podonominae							
Prodiamesinae							
Odontomesa fulva							
Prodiamesa olivacea							
Tanypodinae							
Ablabesmyia (Asayia) annulata							
Ablabesmyia hauberi							
Ablabesmyia (Karelia) sp.							
Ablabesmyia mallochi							

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