FINAL REPORT
BENTHIC MACROINVERTEBRATE SURVEY
OLD HICKORY PROJECT
FALL 2000

FOR
US ARMY CORPS OF ENGINEERS
NASHVILLE DISTRICT

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SUMMARY

On August 8 and 30, and October 17, 2000, personnel from the Nashville District, Corps of Engineers, Water Management Section (Hydrology and Hydraulics Branch, Engineering-Construction Division) collected water quality and benthic macroinvertebrate samples from seven locations (Drakes Creek Miles 1.9 and 4.9, Bledsoe Creek Mile 10.3, Bartons Creek Mile 7.1, Cedar Creek Mile 7.0 and Cumberland River Miles 216.9 and 245.0) in the Old Hickory Project area.

Benthic macroinvertebrate community structure at each location and comparison of the sites were assessed using: taxa richness, Shannon's Index of Diversity, evenness, percent contribution of dominant taxa, EPT taxa, scraper and filtering collectors ratio, EPT to Chironomidae abundance ratio, Hilsenhoff's Biotic Index, Jaccard's Coefficient and percent similarity. Cluster analyses were accomplished using 1-Jaccard's Coefficient and percent dissimilarity. The clusters were interpreted graphically to relate similar communities. The number of organisms and taxa per Hess were also evaluated statistically using analyses of variance and means separation tests.

A minimum of 93 species of benthic macroinvertebrates was taken from the seven sites within the Old Hickory Project area. Forty-nine species were taken from Drakes Creek Mile 4.9, Cedar Creek Mile 7.0 had 48, Bledsoe Creek Mile 10.3 had 47, Bartons Creek Mile 7.1 had 46, Cumberland River Mile 245.0 had 21, Cumberland River Mile 216.9 had 20 and Drakes Creek Mile 1.9 had 16 species. In terms of density, Drakes Creek Mile 1.9 had the most with ~53,580 individuals/m^2, followed by Cumberland River Mile 216.9 (~14,886/m^2), Cedar Creek Mile 7.0 (~13,894/m^2), Cumberland River Mile 245.0 (~11,368/m^2), Bartons Creek Mile 7.1 (~9,578/ m^2), Drakes Creek Mile 4.9 (~5,496/m^2) and Bledsoe Creek Mile 10.3 (~5,126/m^2).

The four inflow (wadable) sites (Bartons Creek Mile 7.1, Drakes Creek Mile 4.9, Cedar Creek Mile 7.0 and Bledsoe Creek Mile 10.3) were fairly species rich with high density and diverse with an abundance of sensitive species. The four inflow locations supported benthic communities representative of "Fair" at Cedar Creek Mile 7.0 to "Very Good" water quality conditions at the other three inflow locations. Conversely, the three main-stem/embayment reservoir sites (Cumberland River Miles 216.9 and 245.0 and Drakes Creek Mile 1.9) supported

fewer species and benthic communities dominated by tubificid worms and other species tolerant of degraded conditions. The benthic communities at the three main stem/embayment locations are indicative of "Fairly Poor" to "Poor" water quality conditions with significant organic pollution.

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INTRODUCTION

On August 8 and 30, and October 17, 2000, personnel from the Nashville District, Corps of Engineers Water Management Section (Hydrology and Hydraulics Branch, Engineering-Construction Division) collected water quality and benthic macroinvertebrate samples from seven locations in the Old Hickory Reservoir Project area. The Water Management Section maintains a baseline, water quality data collection and monitoring program. A wide range of physical, chemical and biological data is collected, analyzed and reported from various locations representing tailwaters, impounded sites and reservoir inflows for the ten Nashville District reservoirs in the Cumberland River Basin. During calendar year 2000, biological data collections included extensive quantitative sampling for benthic macroinvertebrates at all ten Cumberland River Basin projects.

SAMPLING LOCATIONS

Sampling locations in the Old Hickory Project area in the Cumberland River Basin are shown in Figure 1. The following is a brief description of the seven benthic macroinvertebrate sampling sites.

3OLD10050-Drakes Creek Mile 4.9, Latitude $36^0$19’00”, Longitude $86^0$23’10”, inflow location.

3OLD10054-Bledsoe Creek Mile 10.3, Latitude $36^0$26’45”, Longitude $86^0$19’57”, inflow location.

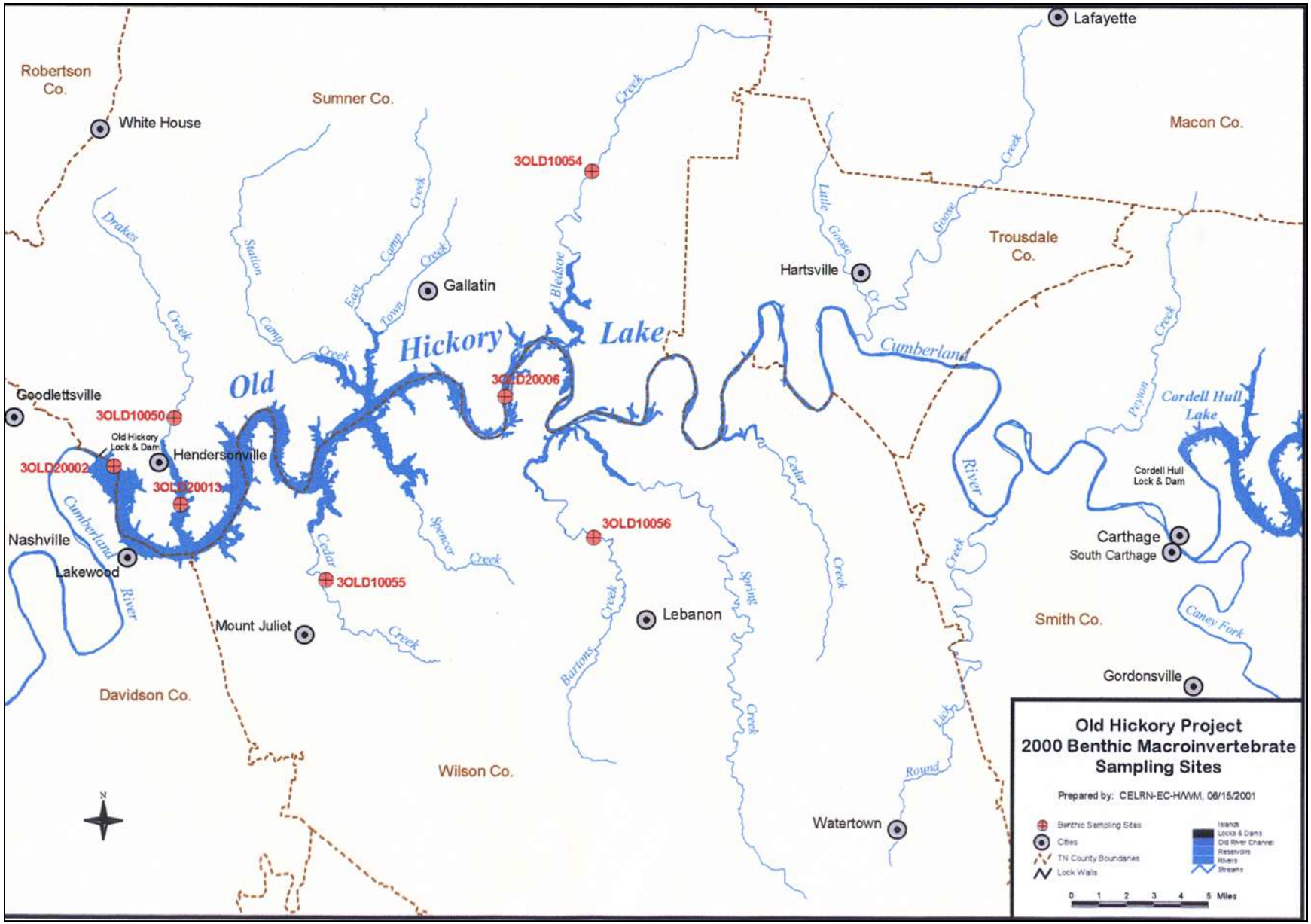
3OLD10055-Cedar Creek Mile 7.0, Latitude $36^0$13’53”, Longitude $86^0$20’22”, inflow location.

3OLD10056-Bartons Creek Mile 7.1, Latitude $36^0$15’12”, Longitude $86^0$19’54”, inflow location

3OLD20002-Cumberland River Mile 216.9, Latitude $36^0$17’26”, Longitude $86^0$39’48”, main channel location.

3OLD20006-Cumberland River Mile 245.0, Latitude $36^0$19’46”, longitude $86^0$23’52”, main channel location

3OLD20013-Drakes Creek Mile 1.9, Latitude $36^0$16’16”, Longitude $86^0$36’04”, embayment location.


Robertson Co.
White House
Sumner Co.
Lafayette
Macon Co.
3OLD10054
Drakes Creek
Station Camp Creek
East Camp Town Creek
Gallatin
Bledsoe Creek
Little Goose Creek
Goose Creek
Hartsville
Trousdale Co.
Old Hickory Lake
Cumberland
Peyton Creek
Cordell Hull Lake
Goodlettsville
3OLD10050
Old Hickory Lock & Dam
Hendersonville
3OLD20002
3OLD20013
3OLD20006
Cedar Creek
River
Cordell Hull Lock & Dam
Nashville
Lakewood
Cumberland River
Spencer Creek
3OLD10056
Carthage
South Carthage
3OLD10055
Mount Juliet
Lebanon
Spring Creek
Caney Fork
Smith Co.
Barton Creek
Gordonsville
Davidson Co.
Wilson Co.
Round Lick Creek
Watertown
N
Old Hickory Project
2000 Benthic Macroinvertebrate Sampling Sites
Prepared by: CELRN-EC-H/WM, 08/15/2001
Benthic Sampling Sites
Cities
TN County Boundaries
Lock Walls
Islands
Locks & Dams
Old River Channel
Reservoirs
Rivers
Streams
0 1 2 3 4 5 Miles

BACKGROUND

As found in other similar studies, the alteration of the physical or chemical norms of an aquatic environment has the potential to influence nearly all organisms residing in that environment (Goodnight 1973). A community represented by numerous species with no particular numerical domination evident in the population is usually indicative of an unstressed environment (Weber 1973, Klemm et al. 1990). Conversely, a benthic community composed of a few species with large numbers of individuals typifies a stressed community from which intolerant species have been reduced or eliminated by a pollutant or substrate change. The populations of tolerant species expand due to reduced competition or increased resources, or both. The often dramatic benthic community shifts, which can occur in stressed ecosystems, are due to the varying sensitivities of the different macroinvertebrate species. Mayflies (Ephemeroptera), stoneflies (Plecoptera), and caddisflies (Trichoptera) or EPT species, which spend most of their lives in an aquatic environment, are generally less tolerant of most types of pollution, whereas many flies (Diptera) and worms (Oligochaeta) are more tolerant of environmental stress conditions (Brinkhurst 1962, Beck 1977, Mason 1971, and Merritt and Cummins 1996). Stream reaches may be divided into several ecological categories depending upon whether or not they are subject to stressful agents and, if they are, to what extent or type. They can also be divided into these categories on the basis of the benthic fauna that is supported in that reach.

Attention is usually focused on the macroinvertebrate species because they are more indicative of the relative health of a stream. In addition, macroinvertebrates are found in all habitats, less mobile than other groups of aquatic organisms, easily collected, and most have relatively long periods of development in the aquatic environment. Thus, macroinvertebrate species can be used to indicate deleterious events that have occurred in an aquatic system during any stage of their development.

Clean water streams with variable habitat features often have a high diversity of species with each species represented by a few individuals. Streams receiving organic pollution generally show a decrease in diversity and an increase in density (Gaufin and Tarzwell 1956), while streams receiving toxic products frequently show a decrease in both diversity and density (Cairns et al., 1971).

Increased sedimentation in streams is a problem most often the result of poor agriculture practices and construction activity in the vicinity streams (Waters, 1995). The effects of increased sedimentation vary, but the primary effect is habitat loss caused by the filling of cracks and crevices with sand and silt and general decrease in habitat diversity.

MATERIALS AND METHODS

At stations Drakes Creek Mile 4.9, Bledsoe Creek Mile 10.3, Bartons Creek Mile 7.1, and Cedar Creek Mile 7.0, four replicate quantitative samples were taken with 500 micron mesh Hess sampler (0.09 m^2) from the riffle/run habitat of the stream. Organisms within each area encompassed by the Hess were collected by physically detaching them from the substrate (usually by hand picking or gently sweeping substrate materials with a brush) and/or by agitating the substrate and allowing the current to carry dislodged organisms into the net. No sorting of organisms and debris was attempted in the field. Organisms and debris were carefully transferred into a storage jar and the entire contents preserved with formalin. Labels bearing unique numbers were applied to the exterior of the jars. These numbers and associated information were then recorded on a chain of custody form. All samples were returned to the Nashville District's Water Management Support Center for storage before delivery to Pennington and Associates, Inc. Storage times for the samples ranged from a maximum of four months to a minimum of two months. No deterioration of sample quality was observed during this holding time.

At stations Cumberland River Miles 216.9 and 245.0 and Drakes Creek Mile 1.9, samples were collected by use of a 6" x 6" Petite Ponar grab (0.02322m^2) lowered from a boat. Reservoir sites were sampled on a transect at multiple locations. Sampling sites on the transect always represented the old main channel (thalweg) and one or both of the following locations: right over bank or near right bank, and left overbank or near left bank. The inclusion of right and left near bank sites were the result of reservoir transects located in predominantly riverine zones where the reservoir pool is basically confined within the old river banks. Typically the sampling process involved anchoring and then lowering the Ponar grab to the bottom, taking care to allow the Ponar grab to gently contact the bottom. This was done to minimize "blow out" of the topmost sediments and associated organisms. The Ponar was then retrieved and the contents brought to the surface, dumped into a plastic tub, and processed through a sieve bucket with a 583-micron stainless steel mesh screen. Retained debris and organisms were then placed in a container. The normal procedure was to collect six grab samples at each site along the transect, which were then composited into one sample for laboratory analysis. The samples were

preserved with formalin, labeled with a unique number, and recorded on a chain of custody form. Brief field notes were made. All samples were returned to the Nashville District's Water Management Support Center for storage prior to delivery to the analytical laboratory. Storage times for samples taken at reservoir sites were approximately two months.

In the laboratory, all benthic samples were washed in a 120-micron mesh screen. After washing, the macroinvertebrates were removed from the detritus under 5x magnification and preserved in 85% ethanol. The organisms were identified to the lowest practical taxonomic level using available keys (Pennington and Associates, Inc. 1994) and counted. Identifications were made with a stereomicroscope (7X to 60X). Slide mounts were made of the chironomids, simuliids, oligochaetes and small crustaceans, and identifications were made with a compound microscope. The chironomids, simuliids, and oligochaetes were cleared for 24 hours in cold 10% KOH. Temporary mounts were made in glycerine and the animals returned to 80% ethanol after identification. When permanent mounts were desired, the organisms were transferred to 95% ethanol for 30 minutes and mounted in euperol.

SUBSTRATE DETERMINATION

A classification of substrate based on the size scale proposed by Wentworth (Compton 1962) was used to make field observations of the substrate present at each station. This classification of detrital sediments is by grain diameter and is as follows:

Diameters	Approximate Inch Equivalents	Name of Loose Aggregate
>256 mm	>10 inch	Boulder
64 to 256 mm	2.5 to 10 inch	Cobble
2 to 64 mm	0.08 to 2.5 inch	Gravel
1/16 to 2 mm	0.002 to 0.08 inch	Sand
1/256 to 1/16 mm	0.00015 to 0.002 inch	Silt
<1/256 mm	<0.00015 inch	Clay

Substrate types encountered at the seven sites vary somewhat. In general substrate types at the inflow (wadable stream) sites consisted of cobble and gravel. Reservoir sites consisted of sand, silt, and clay with varying amounts of plant detritus.

COMMUNITY STRUCTURE MEASURES

Brower and Zar (1984) provide a detailed discussion of a variety of techniques for measuring community structure. The use of diversity indices is based upon the observation that normally undisturbed environments support communities with large numbers of species having no individuals present in overwhelming abundance. If the species of a disturbed community are ranked by numerical abundance, there may be relatively few species with large numbers of individuals. Mean diversity is affected by both "richness" of species (or abundance of different species) and by the distribution of individuals among the species. High species diversity indicates a highly complex community.

Species diversity was estimated using Shannon's Index of Diversity (H):

$$H = -\sum p_i \log p_i$$

where p_i is the proportion of the total number of individuals occurring in species i ($p_i=n_i/N$), N is the total number of individuals in all species.

Diversity indices take into account both the species richness and the evenness of the individuals' distribution among the species. Separate measures of these two components of diversity are often desirable. Species richness can be expressed simply as the number of species in the community. Evenness may be expressed by considering how close a set of observed species abundance are to those from an aggregation of species having maximum possible diversity for a given N and s (Brower and Zar 1984).

Evenness is calculated as follows:

$$\text{Pielou } J' = H/H_{max}$$

where H is calculated diversity and H_{max} is maximum possible diversity.

Community similarity between sites is measured by Jaccards Coefficient, Community Loss Index, and Percent Similarity.

$$\text{Jaccards Coefficient} = \frac{C}{S_1 + S_2 - C}$$

$$\text{Community Loss Index} = \frac{S_1 - C}{S_2}$$

where S = Species in each community (S_1 is reference Community in Community loss Index)

C = Species common to both communities

The Community Loss Index is an index of dissimilarity with values increasing as the degree of dissimilarity from the reference station (S_1) increases (Plafkin et al. 1989). Values range from 0 to infinity. Community Loss was not calculated because no station was designated as a reference site.

Percent Similarity, for a two-community comparison, is calculated as follows: The number of individuals in each species is calculated as a fractional portion of the total community. The value for species i in community 1 is compared to the value for species i in community 2. The lower of the two is tabulated. This procedure is followed for each species. The tabulated list (of the lower of each pair of values) is summed. The sum is defined as the Percent Similarity of the two communities.

The software package Number Cruncher Statistical Systems version 2000 was used to evaluate community similarity (Hintze 1998). Cluster analysis sorts sampling units into groups based on the overall resemblance to each other (Lundwig and Reynolds 1988). By using 1-Jaccards Coefficient and Percent Dissimilarity, sampling units are sorted to permit grouping. The cluster analysis combines the distances between sampling units into a matrix table, and two strategies of clustering are used to calculate a distance for N-1 cycles (N=number of sampling units). The cluster analysis is interpreted graphically on a dendrogram to relate the similar communities (Hintze 1998, Ludwig and Reynolds 1988).

The percent contribution of the numerically dominant taxon to the total number of organisms in the community is a rough measure of community balance at the lowest possible taxonomic level (Plafkin et al. 1989). A community, which is dominated by a few species, may be under environmental stress.

The total number of species within the pollution sensitive groups Ephemeroptera, Plecoptera, and Trichoptera is generally considered a measure of water quality and is listed as the EPT Index (Plafkin et al. 1989). The EPT Index generally increases with increasing water quality.

According to Plafkin et al. (1989) the scraper and filtering collector ratio (Sc/FC) reflects the riffle/run community food base and may provide insights into the nature of potential disturbance factors. The ratio of scraper abundance to the combined totals of scrapers and filtering collectors (scrapers / scrapers and filtering collectors) is an adjustment of the scrapers / filtering collectors from a ratio to a measure of percent contribution (Barbour et al. 1992).

The ratio of shredder functional feeding group and total number of individuals (Sh/Total) in the CPOM sample allows evaluation of potential impairment as indicated by the shredder community. Shredders are considered sensitive to riparian zone impacts and are believed to be good indicators of toxic effects when toxicants are absorbed by or associated with the course particulate organic matter (CPOM) (Plafkin et al 1989). This metric was not included in this study because no CPOM samples were obtained at each station.

The EPT and Chironomidae abundance ratio (EPT/Chironomidae) is the relative abundance of the pollution sensitive groups Ephemeroptera, Plecoptera, and Trichoptera to the more tolerant Chironomidae as a measure of community balance (Plafkin et al. 1989). It is believed that good biotic condition is reflected in benthic communities with an even distribution of species among all four major groups and with substantial representation of Ephemeroptera, Plecoptera, and Trichoptera. Populations with a disproportional number of Chironomidae relative to the sensitive groups are most likely an indication of environmental stress (Plafkin et al. 1989).

A scoring approach developed by Plafkin et al. (1989) to estimate community health utilizes many of the community measures previously discussed. This rapid bioassessment is presented in flow chart format in Figure 2.

Metric	Biological Condition Scoring Criteria			
	6	4	2	0
1. Taxa Richness[a]	>80%	60-80%	40-60%	<40%
2. Hilsenhoff Biotic Index (modified)[b]	>85%	70-85%	50-70%	<50%
3. Ratio of Scrapers/Filt. Collectors[a,c]	>50%	35-50%	20-35%	<20%
4. Ratio of EPT and Chironomid Abundance[a]	>75%	50-75%	25-50%	<25%
5. % Contribution of Dominant Taxon[d]	<20%	20-30%	30-40%	>40%
6. EPT Index[a]	>90%	80-90%	70-80%	<70%
7. Community Loss Index[e]	<0.5	0.5-1.5	1.5-4.0	>4.0
8. Ratio of Shredders/Total[a,c]	>50%	35-50%	20-35%	<20%

[a] Score is a ratio of study site to reference site X 100.

[b] Score is a ratio of reference site to study site X 100.

[c] Determination of Functional Feeding Group is independent of taxonomic grouping.

[d] Scoring criteria evaluate actual percent contribution, not percent comparability to the reference station.

[e] Range of values obtained. A comparison to the reference station is incorporated in these indices.

BIOASSESSMENT		
% Comp. to Ref. Score[a]	Biological Condition Category	Attributes
>83%	Nonimpaired	Comparable to the best situation to be expected within an ecoregion. Balanced trophic structure. Optimum community structure (composition and dominance) for stream size and habitat quality.
54-79%	Slightly impaired	Community structure less than expected. Composition (species richness) lower than expected due to loss of some intolerant forms. Percent contribution of tolerant forms increases.
21-50%	Moderately impaired	Fewer species due to loss of most intolerant forms. Reduction in EPT index.
<17%	Severely impaired	Few species present. If high densities of organisms, then dominated by one or two taxa.

[a] Percentage values obtained that are intermediate to the above ranges will require subjective judgement as to the correct placement. Use of the habitat assessment and physiochemical data may be necessary to aid in the decision process.

Figure 2. Biological Condition Scoring Criteria (Plafkin et al. 1989)

BIOTIC INDEX

Both the evenness and diversity indices are based on information of community structure and do not reflect any knowledge of the physiological attributes or ecological affinities of the organisms comprising the community (Howmiller and Scott 1977). Howmiller and Scott (1977) suggest the use of a trophic index for assessing ecological stress using Oligochaete species. After a two-year study of 53 Wisconsin streams, Hilsenhoff (1982) proposed using a biotic index of arthropod populations as a rapid method for evaluating water quality. Hilsenhoff (1987) expanded and improved his biotic index and this index, which is a measure of organic and nutrient pollution, was used in this study.

To calculate the biotic index, species are assigned pollution tolerance values of 0 to 10. A value of 0 is assigned to species found only in unaltered streams of very high water quality, and a value of 10 is assigned to species known to occur in severely polluted or disturbed streams. Intermediate values are assigned to species that occur in streams with intermediate degrees of pollution or disturbance. Where species cannot be identified, genera are assigned values instead. The biotic index is calculated from the formula:

$$BI = \sum \frac{n_i a_i}{N}$$

where n_i is the number of individuals of each species, a_i is the tolerance value assigned to that species and N is the total number of individuals in the sample (Hilsenhoff 1982). The index is an average of tolerance values, and measures saprobity (pertaining to tolerance of organic enrichment) and to some extent trophism.

According to Hilsenhoff (1987) the calculated Biotic Index values reflect the following:

Biotic Index	Water Quality	Degree of Organic Pollution
0.00 - 3.50	Excellent	No apparent organic pollution
3.51 - 4.50	Very Good	Possibly slight organic pollution
4.51 - 5.50	Good	Some organic pollution
5.51 - 6.50	Fair	Fairly significant organic pollution
6.51 - 7.50	Fairly Poor	Significant organic pollution
7.51 - 8.50	Poor	Very significant organic pollution
8.51 - 10.00	Very Poor	Severe organic pollution

Biotic Index values are calculated using tolerance values provided in North Carolina Department of Environment, Health and Natural Resources, Division of Environmental Management Water Quality Section, Standard Operating Procedures Biological Monitoring, Environmental Sciences Branch Ecosystems Analysis Unit, Biological Assessment Group, January, 1997 (North Carolina, Department of Environment, Health and Natural Resources 1997).

Since North Carolina provides water quality classifications for Biotic Index values based on three geographic regions (mountains, piedmont and coastal) it is probably more appropriate to use scoring criteria for the piedmont region. North Carolina's scoring criteria for water quality assessment for the piedmont region are as follows:

NC Biotic Index (Piedmont)	Water Quality
< 5.19	Excellent
5.19 - 5.78	Good
5.79 - 6.48	Good - Fair
6.49 - 7.48	Fair
> 7.48	Poor

STATISTICAL EVALUATION

Sampling efficiency of the field techniques was calculated via a statistical analysis of the quantitative samples using Number Cruncher Statistical Systems Version 2000 (Hintz 1998). The mean number of organisms per sample, the standard deviation, the standard error, and the sampling precision of the mean were calculated for the benthic samples from each station (Elliot 1977). The sampling precision is the primary parameter evaluated and represents the percentage of the actual mean of the population within which the sample mean lies and indicates how accurately the macroinvertebrate community was sampled. According to Elliot (1977), a sampling precision of 20% (80% confidence) or less is usually acceptable in biological studies. The sampling precision (D) is the ratio of the standard error to the arithmetic mean:

$$D = (S.E./Mean)\ 100$$

Since four quantitative samples were taken in each area, some of the population estimates may not be sampled with 80% or greater confidence. As stated by Elliot (1977), the simplest solution to this problem is to take many samples (over 50 samples), but this is not usually an acceptable allocation of resources.

An analysis of variance (F test) was used to compare the stations using the number of organisms and species per sample. According to Sokal and Rohlf (1981), analysis of variance is a technique in statistics where the total variation in a set of data is partitioned into components associated with possible sources of variability. The relative importance of the different sources is then assessed by F-tests between each component of variation and the "error" variation. If the calculated F-value is greater than the tabular F-value at the 0.05 level of significance, then a difference between data sets is greater than the variation within a data set. Following the approach of Chew (1977), mean separation tests are applied to separate and rank the mean values of each data set developed from benthic enumeration.

RESULTS AND DISCUSSION

A list of all aquatic benthic macroinvertebrate species, assigned tolerance values, functional feeding groups and numbers of individuals of each species collected from each stream location are presented in Table 1. Complete listings of all data by sample, station and month are found in the Appendix. A summary of benthic community measures is presented in Table 2. A statistical analysis of sampling efficiency and a comparison of the stations using mean number of organisms per Hess sampler is presented in Table 3. A similar comparison using mean number of species per Hess sampler is found in Table 4. A comparison of the stations using Percent Dissimilarity is found in Figure 3 while similar comparisons using 1-Jaccard's Coefficient is clustered in Figure 4.

A minimum of 93 species of benthic macroinvertebrates was taken from the seven locations in the Old Hickory Project area (Table 1, Appendix). The fauna represented five phyla, 19 orders and 42 families with 24 families being aquatic insects. As expected, the inflow or wadable location had the highest numbers of species while reservoir main channel and embayment sites had the least. Drakes Creek Mile 4.9 had the most with 49 followed by Cedar Creek Mile 7.0 with 48, Bledsoe Creek Mile 10.3 (47), and Bartons Creek Mile 7.1 (46), Cumberland River Mile (CRM) 245.0 (21), CRM 216.9 (20), and Drakes Creek Mile 1.9 (16). In terms of density, the embayment location had the highest densities with Drakes Creek Mile 1.9, having population densities of ~53,580/m^2 followed by at Cumberland River Mile 216.9 with ~14,886/m^2 and Cumberland River Mile 245.0 with ~11,368/m^2. The inflow location, Bledsoe Creek Mile 10.3, had a density of ~5,126 individuals/m^2, Drakes Creek Mile 4.9 had ~5,496/m^2, Cedar Creek Mile 7.0 had ~13,894/m^2 and Bartons Creek Mile 7.1 had ~9,758/m^2

Cedar Creek Mile 7.0 (3OLD10055) had the second highest number of species with 48 and the highest number of individuals for an inflow location with ~13,894/m^2. The pleurocerid snail *Elimia laqueata* (73.8%) was dominant in the community with the riffle beetle *Stenelmis sp*. (10.6%) was also fairly common. The benthic fauna at this location had 8 EPT species. The Biotic Index value for this site (3.13) is representative of "Excellent" water quality with "no apparent organic pollution". This situation much improved over the 1998 study where this site scored "Fair".

Bledsoe Creek Mile 10.3 (3OLD1054), an inflow site draining mostly undeveloped rural land, had a minimum of 47 benthic macroinvertebrate species present in the Hess samples (Table 1, Appendix). Population densities at this site were ~5,126/m^2. The mayfly *Tricorythodes sp.* (46.9%) was dominant at this location with the riffle beetle *Stenelmis sp.* (11.7%) also common. This location had 16 EPT species and a Biotic Index value (5.07) representative of "Good" water quality with some organic pollution.

Drakes Creek Mile 4.9 (3OLD10050), an inflow location in the lower reservoir, still supports a fairly species rich (49) and diverse benthic macroinvertebrate fauna which varies little from that seen in 1997 and 1998. The population densities for this location (~5,496/m^2) were the highest of the inflow locations. The riffle beetle *Stenelmis sp*. (24.2%) was the most common species present at this location with the riffle beetle *Psephenus herricki* (13.2%), the mayfly *Caenis sp*. (11.0%) and the snail *Elimia sp*. (10.6%) also common. This site had the highest number of EPT species (16). The Biotic Index value (4.81) at Drakes Creek Mile 4.9 is representative of a benthic fauna existing under "Very Good" water quality with possibly slight organic pollution.

Bartons Creek Mile 7.1 (3OLD10056) had 46 species, which was much lower than the 55 seen in 1997 but higher than the 37 seen in 1998. This site also had the lowest population densities of the inflow locations with an estimate of ~9,758 individuals/m^2. Bartons Creek, as in 1997 and 1998, had an abundance of the pleurocerid snail *Elimia sp.* (29.3%), and the riffle beetle *Stenelmis sp*. (40.2%). There were 11 EPT species present and the biotic index value (4.19) for this location is considered representative of "Very Good" water quality conditions with possibly slight organic pollution.

The main stem location, Cumberland River Mile 245.0 (3OLD2006), the most upstream main channel location, had 21 benthic species present and overall population densities of ~11,368 individuals/m^2 (Table 1, Appendix). Tubificid worms were dominant at the mid-channel (47.7%) and less common at the left overbank (62.7%) and the right overbank (32.2%) locations. The midge *Chironomus sp*. was also common at the mid-channel location (9.3%). The mayfly *Hexagenia sp.* was the only EPT species taken. The fauna according to Biotic Index scores (6.79-7.59) is considered to exist under "Fairly Poor" to "Poor" water quality conditions with significant to very significant organic pollution.

Cumberland River Mile 216.9 (3OLD20002), just upstream of Old Hickory Lock and Dam, had a total of 20 species of benthic macroinvertebrates present in the Ponar grab samples (Table 1, Appendix). Tubificid worms were abundant throughout the site (16.0% LOB, 36.7% ROB and 57.9% MC) with the midge *Coelotanypus sp.* again, as in 1997 and 1998, also very common at all locations (47.5% LOB, 34.7% ROB and MC 14.9%). There was one EPT species found in the Ponar grab samples. The Biotic Index values (7.96-8.33) for Cumberland River Mile 216.9 are indicative of "Poor" water quality conditions with very significant organic pollution.

The embayment location near the mouth of Drakes Creek at Mile 1.9 (3OLD20013), as in 1997 and 1998, had a low number of species present with 16. Population densities ranged from ~2,870 individuals/m^2 at the right overbank location to ~13,944/m^2 in the mid-channel (Table 1). Tubificid worms were abundant at all locations including the right overbank (53.8%), left overbank (70.8%), and in mid-channel (60.4%). The midge *Chironomus sp*. (15.8% LOB, 29.4% ROB, and 14.3% MC) and the phantom midge *Chaoborus punctipennis* (8.0% LOB, 10.7% ROB, and 24.1% MC) were also abundant at all locations. There were again no EPT species found at this site and the Biotic Index values (7.64-8.01) indicated "Poor" water quality conditions with very significant organic pollution.

Statistical comparisons of the inflow, or wadable, sites sampled by Hess sampler were accomplished on the number of individuals and number of species per sample. The Ponar grab samples were composited so no statistical analyses were attempted on these samples. Statistical comparisons using mean number of individuals (Table 3) found no significant differences among the four inflow sites. Comparisons of mean number of species also showed no significant differences among the four inflow sites (Table 4).

A comparison of the locations, using Percent Dissimilarity (Figure 3) and Jaccard's Coefficient (Figure 4) groups the locations as inflow (wadable) or main stem/embayment (non-wadable) sites. As stated in previous studies, this is a function of two distinct habitat types, high velocity riffle/run at the wadable sites as opposed to low velocities and soft sediments of the reservoir locations. The secondary clusters between locations of the main channel/embayment sites are a reflection of similarity of species and habitat type between the various locations.

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

Cumberland River Mile 216.9

3OLD20002

SPECIES	T.V.**	F.F.G.***	LEFT OVERBANK		RIGHT OVERBANK		MAIN CHANNEL		TOTAL	
			Count	Density No./m²	Count	Density No./m²	Count	Density No./m²	Count	Density No./m²
PLATYHELMINTHES										
Turbellaria										
Tricladida										
Planariidae										
Dugesia tigrina	**7.23**									
NEMATODA	**6.02**		1	7					7	17
MOLLUSCA										
Bivalvia										
Veneroida										
Corbiculidae										
Corbicula fluminea	**6.12**	**FC**					7	50	50	119
Sphaeriidae										
Musculium transversum	***8**	**FC**	10	71	22	157	15	107	336	799
Pisidium sp.	***5**	**FC**					2	14	14	34
Gastropoda										
Mesogastropoda										
Pleuroceridae										
Elimia sp.	**2.46**	**SC**								
Elimia laqueata	**2.46**	**SC**								
Basommatophora										
Lymnaeidae										
Fossaria sp.	***7**	**SC**								
Physidae										
Physella sp.	***9**	**CG**								
Planorbidae	***6**									
Menetus dilatatus	**8.23**	**SC**								

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cumberland River Mile 216.9 3OLD20002 LEFT OVERBANK Count	LEFT OVERBANK Density No./m²	RIGHT OVERBANK Count	RIGHT OVERBANK Density No./m²	MAIN CHANNEL Count	MAIN CHANNEL Density No./m²	TOTAL Count	TOTAL Density No./m²
ANNELIDA										
Oligochaeta										
Haplotaxida										
Lumbricidae										
Naididae	***8**	**CG**								
Pristina sp.	**9.56**	**CG**								
Tubificidae w.h.c.	**7.11**	**CG**	27	193	7	50	29	207	450	1071
Branchiura sowerbyi	**8.28**	**CG**			15	107			107	255
Tubificidae w.o.h.c.	**7.11**	**CG**			51	364	186	1328	1692	4027
Limnodrilus cervix	**9.9**	**CG**					72	514	514	1224
Limnodrilus hoffmeisteri	**9.47**	**CG**	2	14					14	34
Hirudinea										
Glossiphoniidae										
Helobdella stagnalis	**8.63**	**P**								
ARTHROPODA										
Arachnoidea										
Acariformes										
Crustacea										
Ostracoda										
Copepoda										
Cyclopoida					1	7	2	14	21	51
Isopoda										
Asellidae										
Caecidotea sp.	**9.11**	CG								
Lirceus sp.	**7.85**	**CG**								
Amphipoda										

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cumberland River Mile 216.9 3OLD20002 LEFT OVERBANK Count	LEFT OVERBANK Density No./m²	RIGHT OVERBANK Count	RIGHT OVERBANK Density No./m²	MAIN CHANNEL Count	MAIN CHANNEL Density No./m²	TOTAL Count	TOTAL Density No./m²
Crangonyctidae										
Crangonyx sp.	**7.87**	**CG**								
Decapoda										
Cambaridae										
Orconectes sp.	**2.6**	**SH**								
Insecta										
Ephemeroptera										
Baetidae										
Baetis intercalaris	**4.99**	**CG**								
Caenidae										
Caenis sp.	**7.41**	**CG**								
Ephemeridae										
Hexagenia sp.	**4.9**	**CG**			1	7			7	17
Heptageniidae										
Leucrocuta sp.	**2.4**	**SC**								
Stenacron interpunctatum	**6.87**	**SC**								
Stenonema sp.	***4**	**SC**								
Stenonema femoratum	**7.18**	**SC**								
Stenonema mediopunctatum	**3.77**	**SC**								
Isonychiidae										
Isonychia sp.	**3.45**	**FC**								
Leptophlebiidae										
Choroterpes sp.	***2**	**CG**								
Tricorythidae										
Tricorythodes sp.	**5.06**	**CG**								
Odonata										

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cumberland River Mile 216.9 3OLD20002 LEFT OVERBANK Count	LEFT OVERBANK Density No./m²	RIGHT OVERBANK Count	RIGHT OVERBANK Density No./m²	MAIN CHANNEL Count	MAIN CHANNEL Density No./m²	TOTAL Count	TOTAL Density No./m²
Coenagrionidae										
Argia sp.	**8.17**	**P**								
Plecoptera										
Perlidae										
Acroneuria sp.	***1**	**P**								
Acroneuria evoluta	***1**	**P**								
Hemiptera										
Veliidae										
Rhagovelia obesa		**P**								
Megaloptera										
Corydalidae										
Corydalus cornutus	**5.16**	**P**								
Nigronia serricornis										
Sialidae										
Sialis sp.	**7.17**	**P**			4	29			29	68
Trichoptera										
Helicopsychidae	***3**	**SC**								
Helicopsyche borealis	**0**	**SC**								
Hydropsychidae	***4**	**FC**								
Ceratopsyche morosa	**2.63**	**FC**								
Cheumatopsyche sp.	**6.22**	**FC**								
Hydropsyche sp.	***5**	**FC**								
Hydropsyche betteni	**7.78**	**FC**								
Hydroptilidae	***4**	**PI**								
Hydroptila sp.	**6.22**	**PI**								
Leptoceridae	***4**	**CG**								

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cumberland River Mile 216.9 3OLD20002 LEFT OVERBANK Count	LEFT OVERBANK Density No./m²	RIGHT OVERBANK Count	RIGHT OVERBANK Density No./m²	MAIN CHANNEL Count	MAIN CHANNEL Density No./m²	TOTAL Count	TOTAL Density No./m²
Oecetis sp.	4.7	P								
Philopotamidae	*3	FC								
Chimarra obscura	2.76	FC								
Polycentropodidae	*6	FC								
Polycentropus sp.	3.53	FC								
Lepidoptera										
Pyralidae										
Petrophila sp.	2.09	SC								
Coleoptera										
Elmidae	*5	CG								
Dubiraphia sp.	5.93	SC								
Macronychus glabratus	4.58	SH								
Microcylloepus pusillus	2.11	SC								
Optioservus sp.	2.36	SC								
Stenelmis sp.	5.1	SC								
Hydrophilidae		P								
Berosus sp.	8.43	CG								
Limnichidae										
Lutrochus sp.										
Psephenidae	*4	SC								
Ectopria sp.	*4	SC								
Psephenus herricki	2.35	SC								
Diptera										
Ceratopogonidae										
Bezzia/Palpomyia	6.86	P								
Chaboridae										

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cumberland River Mile 216.9 3OLD20002 LEFT OVERBANK Count	LEFT OVERBANK Density No./m²	RIGHT OVERBANK Count	RIGHT OVERBANK Density No./m²	MAIN CHANNEL Count	MAIN CHANNEL Density No./m²	TOTAL Count	TOTAL Density No./m²
Chaoborus punctipennis	**8.5**	**P**					1	7	7	17
Chironomidae			5	36	1	7	1	7	50	119
Ablabesmyia annulata	2.04	P					2	14	14	34
Ablabesmyia mallochi	**7.19**	**P**								
Ablabesmyia rhamphe gp.	**7.37**	**P**								
Chironomus sp.	**9.63**	**CG**	50	357	28	200	95	678	1235	2940
Cladopelma sp.	**3.49**	**CG**								
Coelotanypus sp.	**8**	**P**	86	614	69	493	74	528	1635	3891
Corynoneura sp.	**6.01**	**CG**								
Cricotopus sp.	***7**	**CG**								
Cricotopus trifascia	**2.84**	**SH**								
Cryptochironomus fulvus	**6.38**	**P**					4	29	29	68
Dicrotendipes sp.	**8.1**	**CG**								
Microtendipes sp.	**5.53**	**CG**								
Nilotanypus sp.	**3.9**	**P**								
Paratendipes sp.	**5.11**	**CG**								
Polypedilum flavum (convictum)	**4.93**	**SH**								
Polypedilum fallax	**6.39**	**SH**								
Polypedilum halterale	**7.31**	**SH**								
Polypedilum illinoense	**9**	**SH**								
Procladius sp.	**9.1**	**P**					4	29	29	68
Pseudochironomus sp.	**5.36**	**CG**								
Rheotanytarsus sp.	**5.89**	**FC**								
Stenochironomus sp.	**6.45**	**CG**								
Tanypus sp.	**9.19**	**P**								
Tanytarsus sp.	**6.76**	**FC**					2	14	14	34

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cumberland River Mile 216.9 3OLD20002 LEFT OVERBANK Count	LEFT OVERBANK Density No./m²	RIGHT OVERBANK Count	RIGHT OVERBANK Density No./m²	MAIN CHANNEL Count	MAIN CHANNEL Density No./m²	TOTAL Count	TOTAL Density No./m²
Thienemanniella xena	5.86	CG								
Thienemannimyia sp. gp.	5.86	CG								
Zavrelia sp.	5.3	CG								
Empididae	7.57	P								
Hemerodromia sp.	*6	P								
Simuliidae	*6	FC								
Simulium sp.	4	FC								
Tipulidae	*3	SH								
Hexatoma sp.	4.31	P								
Tipula sp.	7.33	SH								
CHORDATA**										
Osteichthyes										
Percidae										
Etheostoma sp.										
TOTAL NO. OF ORGANISMS			**181**	**1292**	**199**	**1421**	**496**	**3541**	**6255**	**14886**
TOTAL NO. OF TAXA			**7**		**10**		**15**		**20**	

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Drakes Creek Embayment Mile 1.9 3OLD20013							
			LEFT OVERBANK		RIGHT OVERBANK		MAIN CHANNEL		TOTAL	
			Count	Density No./m²	Count	Density No./m²	Count	Density No./m²	Count	Density No./m²
PLATYHELMINTHES										
Turbellaria										
Tricladida										
Planariidae										
Dugesia tigrina	**7.23**									
NEMATODA	**6.02**		2	14					14	34
MOLLUSCA										
Bivalvia										
Veneroida										
Corbiculidae										
Corbicula fluminea	**6.12**	**FC**								
Sphaeriidae										
Musculium transversum	***8**	**FC**	9	64	9	64	13	93	221	527
Pisidium sp.	***5**	**FC**								
Gastropoda										
Mesogastropoda										
Pleuroceridae										
Elimia sp.	**2.46**	**SC**								
Elimia laqueata	**2.46**	**SC**								
Basommatophora										
Lymnaeidae										
Fossaria sp.	***7**	**SC**								
Physidae										
Physella sp.	***9**	**CG**								
Planorbidae	***6**									
Menetus dilatatus	**8.23**	**SC**								

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Drakes Creek Embayment Mile 1.9 3OLD20013 LEFT OVERBANK Count	LEFT OVERBANK Density No./m²	RIGHT OVERBANK Count	RIGHT OVERBANK Density No./m²	MAIN CHANNEL Count	MAIN CHANNEL Density No./m²	TOTAL Count	TOTAL Density No./m²
ANNELIDA										
Oligochaeta										
Haplotaxida										
Lumbricidae										
Naididae	***8**	**CG**								
Pristina sp.	**9.56**	**CG**								
Tubificidae w.h.c.	**7.11**	**CG**	424	3027	162	1157	890	6355	10539	25082
Branchiura sowerbyi	**8.28**	**CG**								
Tubificidae w.o.h.c.	**7.11**	**CG**	141	1007	54	386	230	1642	3035	7222
Limnodrilus cervix	**9.9**	**CG**								
Limnodrilus hoffmeisteri	**9.47**	**CG**					60	428	428	1020
Hirudinea										
Glossiphoniidae										
Helobdella stagnalis	**8.63**	**P**								
ARTHROPODA										
Arachnoidea										
Acariformes										
Crustacea										
Ostracoda			8	57					57	136
Copepoda										
Cyclopoida			8	57					57	136
Isopoda										
Asellidae										
Caecidotea sp.	**9.11**	CG								
Lirceus sp.	**7.85**	**CG**								
Amphipoda										

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Drakes Creek Embayment Mile 1.9 3OLD20013							
			LEFT OVERBANK		RIGHT OVERBANK		MAIN CHANNEL		TOTAL	
			Count	Density No./m^2	Count	Density No./m^2	Count	Density No./m^2	Count	Density No./m^2
Crangonyctidae										
Crangonyx sp.	**7.87**	**CG**								
Decapoda										
Cambaridae										
Orconectes sp.	**2.6**	**SH**								
Insecta										
Ephemeroptera										
Baetidae										
Baetis intercalaris	**4.99**	**CG**								
Caenidae										
Caenis sp.	**7.41**	**CG**								
Ephemeridae										
Hexagenia sp.	**4.9**	**CG**								
Heptageniidae										
Leucrocuta sp.	**2.4**	**SC**								
Stenacron interpunctatum	**6.87**	**SC**								
Stenonema sp.	***4**	**SC**								
Stenonema femoratum	**7.18**	**SC**								
Stenonema mediopunctatum	**3.77**	**SC**								
Isonychiidae										
Isonychia sp.	**3.45**	**FC**								
Leptophlebiidae										
Choroterpes sp.	***2**	**CG**								
Tricorythidae										
Tricorythodes sp.	**5.06**	**CG**								
Odonata										

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Drakes Creek Embayment Mile 1.9 3OLD20013							
			LEFT OVERBANK		RIGHT OVERBANK		MAIN CHANNEL		TOTAL	
			Count	Density No./m²	Count	Density No./m²	Count	Density No./m²	Count	Density No./m²
Coenagrionidae										
Argia sp.	**8.17**	**P**								
Plecoptera										
Perlidae										
Acroneuria sp.	***1**	**P**								
Acroneuria evoluta	***1**	**P**								
Hemiptera										
Veliidae										
Rhagovelia obesa		**P**								
Megaloptera										
Corydalidae										
Corydalus cornutus	**5.16**	**P**								
Nigronia serricornis										
Sialidae										
Sialis sp.	**7.17**	**P**								
Trichoptera										
Helicopsychidae	***3**	**SC**								
Helicopsyche borealis	**0**	**SC**								
Hydropsychidae	***4**	**FC**								
Ceratopsyche morosa	**2.63**	**FC**								
Cheumatopsyche sp.	**6.22**	**FC**								
Hydropsyche sp.	***5**	**FC**								
Hydropsyche betteni	**7.78**	**FC**								
Hydroptilidae	***4**	**PI**								
Hydroptila sp.	**6.22**	**PI**								
Leptoceridae	***4**	**CG**								

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Drakes Creek Embayment Mile 1.9 3OLD20013							
			LEFT OVERBANK		RIGHT OVERBANK		MAIN CHANNEL		TOTAL	
			Count	Density No./m²	Count	Density No./m²	Count	Density No./m²	Count	Density No./m²
Oecetis sp.	**4.7**	**P**								
Philopotamidae	***3**	**FC**								
Chimarra obscura	**2.76**	**FC**								
Polycentropodidae	***6**	**FC**								
Polycentropus sp.	**3.53**	**FC**								
Lepidoptera										
Pyralidae										
Petrophila sp.	**2.09**	**SC**								
Coleoptera										
Elmidae	***5**	**CG**								
Dubiraphia sp.	**5.93**	**SC**								
Macronychus glabratus	**4.58**	**SH**								
Microcylloepus pusillus	**2.11**	**SC**								
Optioservus sp.	**2.36**	**SC**					10	71	71	170
Stenelmis sp.	**5.1**	**SC**								
Hydrophilidae		**P**								
Berosus sp.	**8.43**	**CG**								
Limnichidae										
Lutrochus sp.										
Psephenidae	***4**	**SC**								
Ectopria sp.	***4**	**SC**								
Psephenus herricki	**2.35**	**SC**								
Diptera										
Ceratopogonidae										
Bezzia/Palpomyia	**6.86**	**P**								
Chaboridae										

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

			Drakes Creek Embayment Mile 1.9 3OLD20013							
SPECIES	**T.V.****	**F.F.G.*****	**LEFT OVERBANK**		**RIGHT OVERBANK**		**MAIN CHANNEL**		**TOTAL**	
			Count	**Density No./m²**	**Count**	**Density No./m²**	**Count**	**Density No./m²**	**Count**	**Density No./m²**
Chaoborus punctipennis	**8.5**	**P**	64	457	43	307	470	3356	4120	9805
Chironomidae			3	21	1	7			29	68
Ablabesmyia annulata	2.04	P	3	21					21	51
Ablabesmyia mallochi	**7.19**	**P**								
Ablabesmyia rhamphe gp.	**7.37**	**P**								
Chironomus sp.	**9.63**	**CG**	126	900	118	843	280	1999	3741	8904
Cladopelma sp.	**3.49**	**CG**			3	21			21	51
Coelotanypus sp.	**8**	**P**	7	50	3	21			71	170
Corynoneura sp.	**6.01**	**CG**								
Cricotopus sp.	***7**	**CG**								
Cricotopus trifascia	**2.84**	**SH**								
Cryptochironomus fulvus	**6.38**	**P**			5	36			36	85
Dicrotendipes sp.	**8.1**	**CG**								
Microtendipes sp.	**5.53**	**CG**								
Nilotanypus sp.	**3.9**	**P**								
Paratendipes sp.	**5.11**	**CG**								
Polypedilum flavum (convictum)	**4.93**	**SH**								
Polypedilum fallax	**6.39**	**SH**								
Polypedilum halterale	**7.31**	**SH**								
Polypedilum illinoense	**9**	**SH**								
Procladius sp.	**9.1**	**P**	3	21	4	29			50	119
Pseudochironomus sp.	**5.36**	**CG**								
Rheotanytarsus sp.	**5.89**	**FC**								
Stenochironomus sp.	**6.45**	**CG**								
Tanypus sp.	**9.19**	**P**								
Tanytarsus sp.	**6.76**	**FC**								

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Drakes Creek Embayment Mile 1.9 3OLD20013 LEFT OVERBANK Count	LEFT OVERBANK Density No./m²	RIGHT OVERBANK Count	RIGHT OVERBANK Density No./m²	MAIN CHANNEL Count	MAIN CHANNEL Density No./m²	TOTAL Count	TOTAL Density No./m²
Thienemanniella xena	5.86	CG								
Thienemannimyia sp. gp.	5.86	CG								
Zavrelia sp.	5.3	CG								
Empididae	7.57	P								
Hemerodromia sp.	*6	P								
Simuliidae	*6	FC								
Simulium sp.	4	FC								
Tipulidae	*3	SH								
Hexatoma sp.	4.31	P								
Tipula sp.	7.33	SH								
CHORDATA**										
Osteichthyes										
Percidae										
Etheostoma sp.										
TOTAL NO. OF ORGANISMS			**798**	**5698**	**402**	**2870**	**1953**	**13944**	**22512**	**53580**
TOTAL NO. OF TAXA			**12**		**10**		**7**		**16**	

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cumberland River Mile 245.0 3OLD20006 LEFT OVERBANK Count	LEFT OVERBANK Density No./m²	RIGHT OVERBANK Count	RIGHT OVERBANK Density No./m²	MAIN CHANNEL Count	MAIN CHANNEL Density No./m²	TOTAL Count	TOTAL Density No./m²
PLATYHELMINTHES										
Turbellaria										
Tricladida										
Planariidae										
Dugesia tigrina	**7.23**									
NEMATODA	**6.02**									
MOLLUSCA										
Bivalvia										
Veneroida										
Corbiculidae										
Corbicula fluminea	**6.12**	**FC**			1	7	4	29	36	85
Sphaeriidae										
Musculium transversum	***8**	**FC**	12	86	38	271	14	100	457	1088
Pisidium sp.	***5**	**FC**								
Gastropoda										
Mesogastropoda										
Pleuroceridae										
Elimia sp.	**2.46**	**SC**								
Elimia laqueata	**2.46**	**SC**								
Basommatophora										
Lymnaeidae										
Fossaria sp.	***7**	**SC**								
Physidae										
Physella sp.	***9**	**CG**								
Planorbidae	***6**									
Menetus dilatatus	**8.23**	**SC**								

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cumberland River Mile 245.0 3OLD20006 LEFT OVERBANK Count	LEFT OVERBANK Density No./m²	RIGHT OVERBANK Count	RIGHT OVERBANK Density No./m²	MAIN CHANNEL Count	MAIN CHANNEL Density No./m²	TOTAL Count	TOTAL Density No./m²
ANNELIDA										
Oligochaeta										
Haplotaxida										
Lumbricidae										
Naididae	***8**	**CG**								
Pristina sp.	**9.56**	**CG**								
Tubificidae w.h.c.	**7.11**	**CG**	21	150	6	43	23	164	357	850
Branchiura sowerbyi	**8.28**	**CG**			3	21			21	51
Tubificidae w.o.h.c.	**7.11**	**CG**	80	571	42	300	100	714	1585	3772
Limnodrilus cervix	**9.9**	**CG**								
Limnodrilus hoffmeisteri	**9.47**	**CG**	5	36	6	43	31	221	300	714
Hirudinea										
Glossiphoniidae										
Helobdella stagnalis	**8.63**	**P**					62	443	443	1054
ARTHROPODA										
Arachnoidea										
Acariformes										
Crustacea										
Ostracoda										
Copepoda										
Cyclopoida										
Isopoda										
Asellidae										
Caecidotea sp.	**9.11**	CG								
Lirceus sp.	**7.85**	**CG**								
Amphipoda										

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cumberland River Mile 245.0 3OLD20006 LEFT OVERBANK Count	LEFT OVERBANK Density No./m²	RIGHT OVERBANK Count	RIGHT OVERBANK Density No./m²	MAIN CHANNEL Count	MAIN CHANNEL Density No./m²	TOTAL Count	TOTAL Density No./m²
Crangonyctidae										
Crangonyx sp.	**7.87**	**CG**								
Decapoda										
Cambaridae										
Orconectes sp.	**2.6**	**SH**								
Insecta										
Ephemeroptera										
Baetidae										
Baetis intercalaris	**4.99**	**CG**								
Caenidae										
Caenis sp.	**7.41**	**CG**								
Ephemeridae										
Hexagenia sp.	**4.9**	**CG**	16	114	20	143	11	79	336	799
Heptageniidae										
Leucrocuta sp.	**2.4**	**SC**								
Stenacron interpunctatum	**6.87**	**SC**								
Stenonema sp.	***4**	**SC**								
Stenonema femoratum	**7.18**	**SC**								
Stenonema mediopunctatum	**3.77**	**SC**								
Isonychiidae										
Isonychia sp.	**3.45**	**FC**								
Leptophlebiidae										
Choroterpes sp.	***2**	**CG**								
Tricorythidae										
Tricorythodes sp.	**5.06**	**CG**								
Odonata										

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cumberland River Mile 245.0 3OLD20006 LEFT OVERBANK Count	LEFT OVERBANK Density No./m²	RIGHT OVERBANK Count	RIGHT OVERBANK Density No./m²	MAIN CHANNEL Count	MAIN CHANNEL Density No./m²	TOTAL Count	TOTAL Density No./m²
Coenagrionidae										
Argia sp.	**8.17**	**P**								
Plecoptera										
Perlidae										
Acroneuria sp.	***1**	**P**								
Acroneuria evoluta	***1**	**P**								
Hemiptera										
Veliidae										
Rhagovelia obesa		**P**								
Megaloptera										
Corydalidae										
Corydalus cornutus	**5.16**	**P**								
Nigronia serricornis										
Sialidae										
Sialis sp.	**7.17**	**P**			14	100			100	238
Trichoptera										
Helicopsychidae	***3**	**SC**								
Helicopsyche borealis	**0**	**SC**								
Hydropsychidae	***4**	**FC**								
Ceratopsyche morosa	**2.63**	**FC**								
Cheumatopsyche sp.	**6.22**	**FC**								
Hydropsyche sp.	***5**	**FC**								
Hydropsyche betteni	**7.78**	**FC**								
Hydroptilidae	***4**	**PI**								
Hydroptila sp.	**6.22**	**PI**								
Leptoceridae	***4**	**CG**								

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cumberland River Mile 245.0 3OLD20006 LEFT OVERBANK Count	LEFT OVERBANK Density No./m²	RIGHT OVERBANK Count	RIGHT OVERBANK Density No./m²	MAIN CHANNEL Count	MAIN CHANNEL Density No./m²	TOTAL Count	TOTAL Density No./m²
Oecetis sp.	**4.7**	**P**	1	7					7	17
Philopotamidae	***3**	**FC**								
Chimarra obscura	**2.76**	**FC**								
Polycentropodidae	***6**	**FC**								
Polycentropus sp.	**3.53**	**FC**			1	7			7	17
Lepidoptera										
Pyralidae										
Petrophila sp.	**2.09**	**SC**								
Coleoptera										
Elmidae	***5**	**CG**								
Dubiraphia sp.	**5.93**	**SC**								
Macronychus glabratus	**4.58**	**SH**								
Microcylloepus pusillus	**2.11**	**SC**								
Optioservus sp.	**2.36**	**SC**								
Stenelmis sp.	**5.1**	**SC**								
Hydrophilidae		**P**								
Berosus sp.	**8.43**	**CG**								
Limnichidae										
Lutrochus sp.										
Psephenidae	***4**	**SC**								
Ectopria sp.	***4**	**SC**								
Psephenus herricki	**2.35**	**SC**								
Diptera										
Ceratopogonidae										
Bezzia/Palpomyia	**6.86**	**P**	1	7	2	14	1	7	29	68
Chaboridae										

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cumberland River Mile 245.0 3OLD20006 LEFT OVERBANK Count	LEFT OVERBANK Density No./m²	RIGHT OVERBANK Count	RIGHT OVERBANK Density No./m²	MAIN CHANNEL Count	MAIN CHANNEL Density No./m²	TOTAL Count	TOTAL Density No./m²
Chaoborus punctipennis	**8.5**	**P**								
Chironomidae							6	43	43	102
Ablabesmyia annulata	2.04	P	13	93	16	114	17	121	328	782
Ablabesmyia mallochi	**7.19**	**P**								
Ablabesmyia rhamphe gp.	**7.37**	**P**								
Chironomus sp.	**9.63**	**CG**	9	64	7	50	30	214	328	782
Cladopelma sp.	**3.49**	**CG**								
Coelotanypus sp.	**8**	**P**	3	21	11	79	4	29	129	306
Corynoneura sp.	**6.01**	**CG**								
Cricotopus sp.	***7**	**CG**								
Cricotopus trifascia	**2.84**	**SH**								
Cryptochironomus fulvus	**6.38**	**P**	5	36	5	36	10	71	143	340
Dicrotendipes sp.	**8.1**	**CG**								
Microtendipes sp.	**5.53**	**CG**								
Nilotanypus sp.	**3.9**	**P**								
Paratendipes sp.	**5.11**	**CG**								
Polypedilum flavum (convictum)	**4.93**	**SH**								
Polypedilum fallax	**6.39**	**SH**								
Polypedilum halterale	**7.31**	**SH**					2	14	14	34
Polypedilum illinoense	**9**	**SH**								
Procladius sp.	**9.1**	**P**	3	21	3	21	8	57	100	238
Pseudochironomus sp.	**5.36**	**CG**								
Rheotanytarsus sp.	**5.89**	**FC**								
Stenochironomus sp.	**6.45**	**CG**								
Tanypus sp.	**9.19**	**P**			1	7			7	17
Tanytarsus sp.	**6.76**	**FC**			1	7			7	17

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cumberland River Mile 245.0 3OLD20006 LEFT OVERBANK Count	LEFT OVERBANK Density No./m²	RIGHT OVERBANK Count	RIGHT OVERBANK Density No./m²	MAIN CHANNEL Count	MAIN CHANNEL Density No./m²	TOTAL Count	TOTAL Density No./m²
Thienemanniella xena	5.86	CG								
Thienemannimyia sp. gp.	5.86	CG								
Zavrelia sp.	5.3	CG								
Empididae	7.57	P								
Hemerodromia sp.	*6	P								
Simuliidae	*6	FC								
Simulium sp.	4	FC								
Tipulidae	*3	SH								
Hexatoma sp.	4.31	P								
Tipula sp.	7.33	SH								
CHORDATA**										
Osteichthyes										
Percidae										
Etheostoma sp.										
TOTAL NO. OF ORGANISMS			**169**	**1207**	**177**	**1264**	**323**	**2306**	**4777**	**11368**
TOTAL NO. OF TAXA			**12**		**17**		**15**		**21**	

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Drakes Creek Mile 4.9 3OLD10050 TOTAL	Drakes Creek Mile 4.9 3OLD10050 Density No./m²	Bledsoe Creek Mile 10.3 3OLD10054 TOTAL	Bledsoe Creek Mile 10.3 3OLD10054 Density No./m²	Bartons Creek Mile 7.1 3OLD10056 TOTAL	Bartons Creek Mile 7.1 3OLD10056 Density No./m²	Cedar Creek Mile 7.0 3OLD10055 TOTAL	Cedar Creek Mile 7.0 3OLD10055 Density No./m²
PLATYHELMINTHES										
Turbellaria										
Tricladida										
Planariidae										
Dugesia tigrina	**7.23**						3	8	7	19
NEMATODA	**6.02**									
MOLLUSCA										
Bivalvia										
Veneroida										
Corbiculidae										
Corbicula fluminea	**6.12**	**FC**	41	114	20	56	102	284	50	139
Sphaeriidae							13	36		
Musculium transversum	***8**	**FC**							1	3
Pisidium sp.	***5**	**FC**							15	42
Gastropoda										
Mesogastropoda										
Pleuroceridae										
Elimia sp.	**2.46**	**SC**	197	548						
Elimia laqueata	**2.46**	**SC**	12	33	58	161	1027	2855	3688	10253
Basommatophora										
Lymnaeidae										
Fossaria sp.	***7**	**SC**							4	11
Physidae										
Physella sp.	***9**	**CG**							4	11
Planorbidae	***6**									

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Drakes Creek Mile 4.9 3OLD10050 TOTAL	Drakes Creek Mile 4.9 3OLD10050 Density No./m²	Bledsoe Creek Mile 10.3 3OLD10054 TOTAL	Bledsoe Creek Mile 10.3 3OLD10054 Density No./m²	Bartons Creek Mile 7.1 3OLD10056 TOTAL	Bartons Creek Mile 7.1 3OLD10056 Density No./m²	Cedar Creek Mile 7.0 3OLD10055 TOTAL	Cedar Creek Mile 7.0 3OLD10055 Density No./m²
Menetus dilatatus	**8.23**	**SC**							1	3
ANNELIDA										
Oligochaeta										
Haplotaxida										
Lumbricidae			11	31	1	3	13	36	4	11
Naididae	***8**	**CG**	1	3						
Pristina sp.	**9.56**	**CG**			1	3			6	17
Tubificidae w.h.c.	**7.11**	**CG**								
Branchiura sowerbyi	**8.28**	**CG**					3	8		
Tubificidae w.o.h.c.	**7.11**	**CG**	9	25	5	14	5	14	15	42
Limnodrilus cervix	**9.9**	**CG**								
Limnodrilus hoffmeisteri	**9.47**	**CG**			1	3			6	17
Hirudinea										
Glossiphoniidae										
Helobdella stagnalis	**8.63**	**P**								
ARTHROPODA										
Arachnoidea										
Acariformes					16	44				
Crustacea										
Ostracoda										
Copepoda										
Cyclopoida										
Isopoda										
Asellidae										
Caecidotea sp.	**9.11**	CG			2	6				

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Drakes Creek Mile 4.9 3OLD10050 TOTAL	Drakes Creek Mile 4.9 3OLD10050 Density No./m²	Bledsoe Creek Mile 10.3 3OLD10054 TOTAL	Bledsoe Creek Mile 10.3 3OLD10054 Density No./m²	Bartons Creek Mile 7.1 3OLD10056 TOTAL	Bartons Creek Mile 7.1 3OLD10056 Density No./m²	Cedar Creek Mile 7.0 3OLD10055 TOTAL	Cedar Creek Mile 7.0 3OLD10055 Density No./m²
Lirceus sp.	**7.85**	**CG**	14	39			3	8	67	186
Amphipoda										
Crangonyctidae										
Crangonyx sp.	**7.87**	**CG**	25	70	1	3				
Decapoda										
Cambaridae					1	3				
Orconectes sp.	**2.6**	**SH**	1	3	5	14	9	25		
Insecta										
Ephemeroptera					7	19				
Baetidae										
Baetis intercalaris	**4.99**	**CG**	137	381	3	8	59	164	47	131
Caenidae										
Caenis sp.	**7.41**	**CG**	217	603	86	239	1	3	5	14
Ephemeridae										
Hexagenia sp.	**4.9**	**CG**								
Heptageniidae					56	156				
Leucrocuta sp.	**2.4**	**SC**	1	3	55	153				
Stenacron interpunctatum	**6.87**	**SC**	3	8	41	114	24	67	5	14
Stenonema sp.	***4**	**SC**	37	103	27	75	2	6		
Stenonema femoratum	**7.18**	**SC**			32	89				
Stenonema mediopunctatum	**3.77**	**SC**	68	189	1	3				
Isonychiidae										
Isonychia sp.	**3.45**	**FC**	2	6	1	3	6	17		
Leptophlebiidae			1	3						
Choroterpes sp.	***2**	**CG**	16	44	77	214				

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Drakes Creek Mile 4.9 3OLD10050		Bledsoe Creek Mile 10.3 3OLD10054		Bartons Creek Mile 7.1 3OLD10056		Cedar Creek Mile 7.0 3OLD10055	
			TOTAL	Density No./m²	TOTAL	Density No./m²	TOTAL	Density No./m²	TOTAL	Density No./m²
Tricorythidae										
Tricorythodes sp.	**5.06**	**CG**	32	89	865	2405	2	6		
Odonata										
Coenagrionidae										
Argia sp.	**8.17**	**P**	26	72	48	133	50	139	1	3
Plecoptera										
Perlidae										
Acroneuria sp.	***1**	**P**			1	3				
Acroneuria evoluta	***1**	**P**	1	3						
Hemiptera										
Veliidae										
Rhagovelia obesa		**P**					3	8		
Megaloptera										
Corydalidae										
Corydalus cornutus	**5.16**	**P**	3	8	1	3	8	22		
Nigronia serricornis			2	6	3	8				
Sialidae										
Sialis sp.	**7.17**	**P**	1	3	14	39	4	11		
Trichoptera										
Helicopsychidae	***3**	**SC**								
Helicopsyche borealis	**0**	**SC**	1	3	1	3	4	11		
Hydropsychidae	***4**	**FC**	5	14					9	25
Ceratopsyche morosa	**2.63**	**FC**	1	3	2	6	1	3		
Cheumatopsyche sp.	**6.22**	**FC**	41	114	3	8	25	70	13	36
Hydropsyche sp.	***5**	**FC**							8	22

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Drakes Creek Mile 4.9 3OLD10050		Bledsoe Creek Mile 10.3 3OLD10054		Bartons Creek Mile 7.1 3OLD10056		Cedar Creek Mile 7.0 3OLD10055	
			TOTAL	Density No./m²	TOTAL	Density No./m²	TOTAL	Density No./m²	TOTAL	Density No./m²
Hydropsyche betteni	**7.78**	**FC**					1	3		
Hydroptilidae	***4**	**PI**							1	3
Hydroptila sp.	**6.22**	**PI**							22	61
Leptoceridae	***4**	**CG**								
Oecetis sp.	**4.7**	**P**								
Philopotamidae	***3**	**FC**								
Chimarra obscura	**2.76**	**FC**	4	11			28	78		
Polycentropodidae	***6**	**FC**								
Polycentropus sp.	**3.53**	**FC**								
Lepidoptera										
Pyralidae										
Petrophila sp.	**2.09**	**SC**			1	3				
Coleoptera										
Elmidae	***5**	**CG**								
Dubiraphia sp.	**5.93**	**SC**					3	8	4	11
Macronychus glabratus	**4.58**	**SH**					3	8		
Microcylloepus pusillus	**2.11**	**SC**	1	3					1	3
Optioservus sp.	**2.36**	**SC**	1	3						
Stenelmis sp.	**5.1**	**SC**	479	1332	216	600	1411	3923	531	1476
Hydrophilidae		**P**							10	28
Berosus sp.	**8.43**	**CG**					5	14		
Limnichidae										
Lutrochus sp.									23	64
Psephenidae	***4**	**SC**								
Ectopria sp.	***4**	**SC**					9	25	9	25

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Drakes Creek Mile 4.9 3OLD10050 TOTAL	Drakes Creek Mile 4.9 3OLD10050 Density No./m²	Bledsoe Creek Mile 10.3 3OLD10054 TOTAL	Bledsoe Creek Mile 10.3 3OLD10054 Density No./m²	Bartons Creek Mile 7.1 3OLD10056 TOTAL	Bartons Creek Mile 7.1 3OLD10056 Density No./m²	Cedar Creek Mile 7.0 3OLD10055 TOTAL	Cedar Creek Mile 7.0 3OLD10055 Density No./m²
Psephenus herricki	**2.35**	**SC**	261	726	33	92	333	926	228	634
Diptera										
Ceratopogonidae									2	6
Bezzia/Palpomyia	**6.86**	**P**	1	3			3	8		
Chaboridae										
Chaoborus punctipennis	**8.5**	**P**								
Chironomidae			33	92	28	78	31	86	9	25
Ablabesmyia annulata	2.04	P								
Ablabesmyia mallochi	**7.19**	**P**			1	3				
Ablabesmyia rhamphe gp.	**7.37**	**P**			1	3				
Chironomus sp.	**9.63**	**CG**								
Cladopelma sp.	**3.49**	**CG**								
Coelotanypus sp.	**8**	**P**								
Corynoneura sp.	**6.01**	**CG**	2	6			4	11	1	3
Cricotopus sp.	***7**	**CG**	1	3			9	25		
Cricotopus trifascia	**2.84**	**SH**					2	6		
Cryptochironomus fulvus	**6.38**	**P**	1	3						
Dicrotendipes sp.	**8.1**	**CG**			1	3			10	28
Microtendipes sp.	**5.53**	**CG**			1	3	3	8	14	39
Nilotanypus sp.	**3.9**	**P**	2	6					1	3
Paratendipes sp.	**5.11**	**CG**							1	3
Polypedilum flavum (convictum)	**4.93**	**SH**	127	353	1	3	47	131	48	133
Polypedilum fallax	**6.39**	**SH**							5	14
Polypedilum halterale	**7.31**	**SH**	3	8	11	31	48	133	36	100
Polypedilum illinoense	**9**	**SH**	4	11			6	17	1	3

TABLE 1. SUMMARY OF BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY RESERVOIR, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Drakes Creek Mile 4.9 3OLD10050 TOTAL	Drakes Creek Mile 4.9 3OLD10050 Density No./m²	Bledsoe Creek Mile 10.3 3OLD10054 TOTAL	Bledsoe Creek Mile 10.3 3OLD10054 Density No./m²	Bartons Creek Mile 7.1 3OLD10056 TOTAL	Bartons Creek Mile 7.1 3OLD10056 Density No./m²	Cedar Creek Mile 7.0 3OLD10055 TOTAL	Cedar Creek Mile 7.0 3OLD10055 Density No./m²
Procladius sp.	**9.1**	**P**								
Pseudochironomus sp.	**5.36**	**CG**			1	3				
Rheotanytarsus sp.	**5.89**	**FC**	20	56	1	3	6	17	14	39
Stenochironomus sp.	**6.45**	**CG**					3	8		
Tanypus sp.	**9.19**	**P**								
Tanytarsus sp.	**6.76**	**FC**	47	131	28	78	1	3	39	108
Thienemanniella xena	**5.86**	**CG**	20	56	2	6			4	11
Thienemannimyia sp. gp.	**5.86**	**CG**	25	70	26	72	47	131	8	22
Zavrelia sp.	**5.3**	**CG**	36	100	57	158	136	378	9	25
Empididae	**7.57**	**P**								
Hemerodromia sp.	***6**	**P**	2	6			2	6	3	8
Simuliidae	***6**	**FC**								
Simulium sp.	**4**	**FC**					2	6		
Tipulidae	***3**	**SH**								
Hexatoma sp.	**4.31**	**P**	1	3					4	11
Tipula sp.	**7.33**	**SH**							4	11
CHORDATA**										
Osteichthyes										
Percidae										
Etheostoma sp.			1	3			1	3		
TOTAL NO. OF ORGANISMS			**1977**	**5496**	**1844**	**5126**	**3510**	**9758**	**4998**	**13894**
TOTAL NO. OF TAXA			**49**		**47**		**46**		**48**	

TABLE 2. SUMMARY OF RBPIII METRICS FOR OLD HICKORY PROJECT, FALL 2000.												
METRICS	Cumberland River Mile 216.9 3OLD20002				Drakes Creek Embayment Mile 1.9 3OLD20013				Cumberland River Mile 245.0 3OLD20006			
	LOB	ROB	MC	TOTAL	LOB	ROB	MC	TOTAL	LOB	ROB	MC	TOTAL
Taxa Richness	7	10	15	20	12	10	7	16	12	17	15	21
Biotic Index	8.33	7.96	8.13	8.13	7.64	8.01	7.86	7.82	6.79	6.85	7.59	7.19
Ratio of Scrapers/Filtering Collectors	0.00	0.00	0.00	0.00	0.00	0.00	0.77	0.32	0.00	0.00	0.00	0.00
Ratio of EPT/Chironomidae abundance	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.52	0.48	0.14	0.32
Percent Contribution of Dominant Taxon	47.51%	34.67%	37.50%	27.05%	53.13%	40.30%	45.57%	46.81%	47.34%	23.73%	30.96%	33.18%
EPT Index	0	1	0	1	0	0	0	0	2	2	1	3
Shannon Diversity	1.919	2.462	2.556	2.734	2.018	2.176	2.018	2.124	2.582	3.278	3.103	3.300
Pielou Evenness	0.684	0.741	0.654	0.632	0.563	0.655	0.719	0.531	0.720	0.802	0.794	0.751

TABLE 2. SUMMARY OF RBPIII METRICS FOR OLD HICKORY PROJECT, FALL 2000.				
METRICS	Drakes Creek Mile 4.9 3OLD10050	Bledsoe Creek Mile 10.3 3OLD10054	Bartons Creek Mile 7.1 3OLD10056	Cedar Creek Mile 7.0 3OLD10055
Taxa Richness	49	47	46	48
Biotic Index	4.81	5.07	4.19	3.13
Ratio of Scrapers/Filtering Collectors	6.59	8.45	16.35	30.01
Ratio of EPT/Chironomidae abundance	1.77	7.91	0.45	0.55
Percent Contribution of Dominant Taxon	24.23%	46.91%	40.20%	73.79%
EPT Index	16	16	11	8
Shannon Diversity	3.852	3.200	2.729	1.733
Pielou Evenness	0.686	0.576	0.494	0.310

TABLE 3. STATISTICAL ANALYSES OF SAMPLING EFFICIENCY AND COMPARISON OF THE STATIONS USING MEAN NUMBER OF ORGANISMS, OLD HICKORY RESERVOIR DRAINAGE, FALL 2000.					
STATION	**NO. OF SAMPLES**	**MEAN NO. OF ORGANISMS**	**STANDARD DEVIATION**	**STANDARD ERROR OF THE MEAN**	**PRECISION OF SAMPLING MEAN**
Bartons Creek Mile 7.1 (30OL10056)	4	877.5	418.94	209.47	23.9%
Drakes Creek Mile 4.9 (3OLD10050)	4	494.25	247.77	123.88	25.1%
Bledsoe Creek Mile 10.3 (3OLD10054)	4	461.0	164.65	82.32	17.9%
Cedar Creek Mile 7.0 (3OLD10055)	4	126.3	1434.77	717.38	56.8%

Calculated F=0.98

Cedar Creek	Bartons Creek	Drakes Creek	Bledsoe Creek
Mile 7.0	Mile 7.1	Mile 4.9	Mile 10.3
1263	877.5	494.25	461.0

*Stations underlined are statistically comparable at a 0.05 confidence level

TABLE 4. STATISTICAL ANALYSES OF SAMPLING EFFICIENCY AND COMPARISON OF THE STATIONS USING MEAN NUMBER OF SPECIES, OLD HICKORY RESERVOIR DRAINAGE, FALL 2000					
STATION	**NO. OF SAMPLES**	**MEAN NO. OF SPECIES**	**STANDARD DEVIATION**	**STANDARD ERROR OF THE MEAN**	**PRECISION OF SAMPLING MEAN**
Bartons Creek Mile 7.1 (30OL10056)	4	24.25	5.06	2.53	10.4%
Drakes Creek Mile 4.9 (3OLD10050)	4	26.25	9.14	4.57	17.4%
Bledsoe Creek Mile 10.3 (3OLD10054)	4	27.5	5.07	2.53	9.2%
Cedar Creek Mile .0 (3OLD10055)	4	23.75	13.82	6.91	29.1%

Calculated F=0.15

Bledsoe Creek Mile 10.3	Drakes Creek Mile 4.9	Bartons Creek Mile 7.1	Cedar Creek Mile 7.0
27.5	26.25	24.25	23.75

*Stations underlined are statistically comparable at a 0.05 confidence level

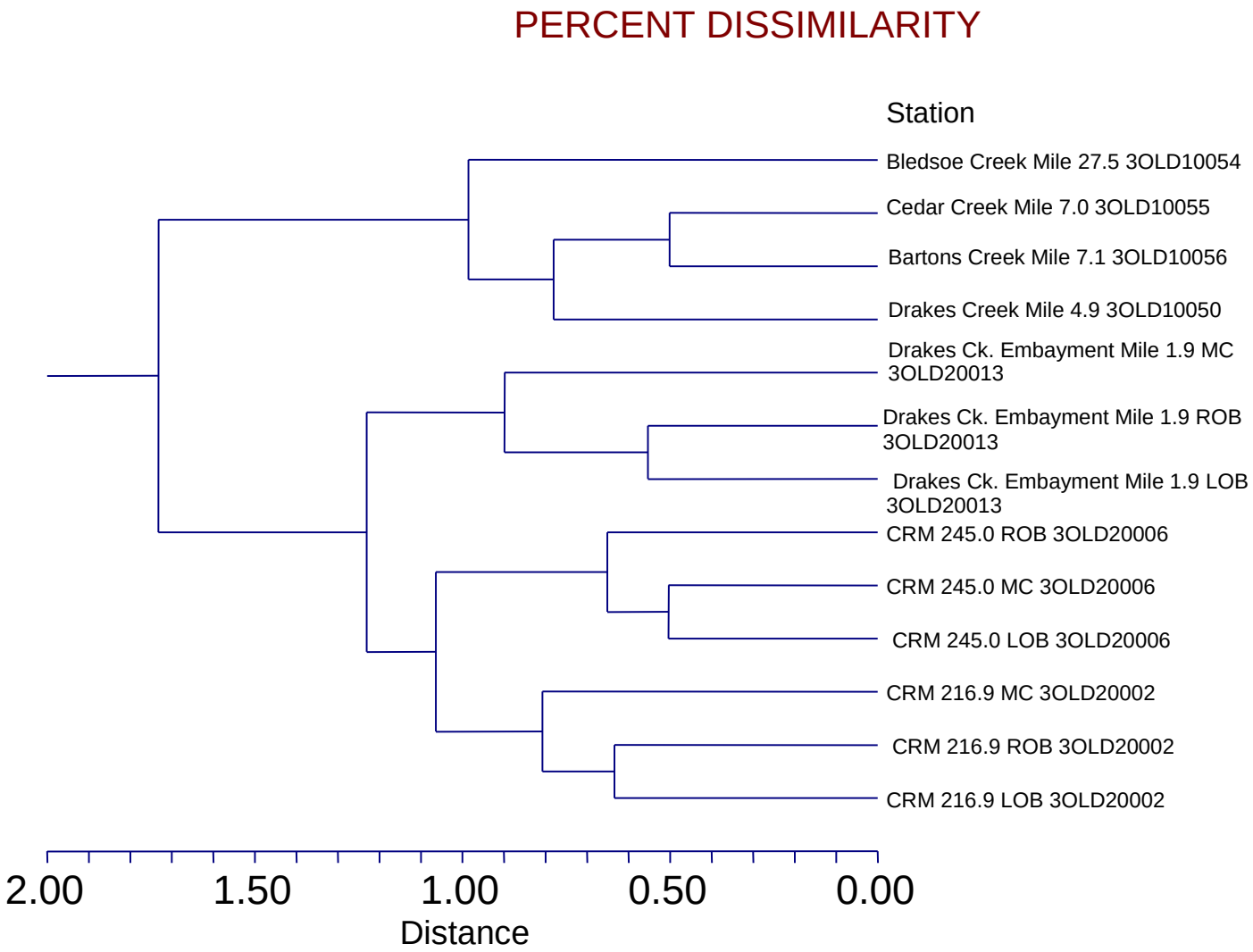


Figure 3. Percent Dissimilarity (Bray-Curtis) Cluster Analysis, Old Hickory Project fall 2000 (CRM=Cumberland River Mile, LOB=Left overbank, ROB=right overbank, MC=main channel.

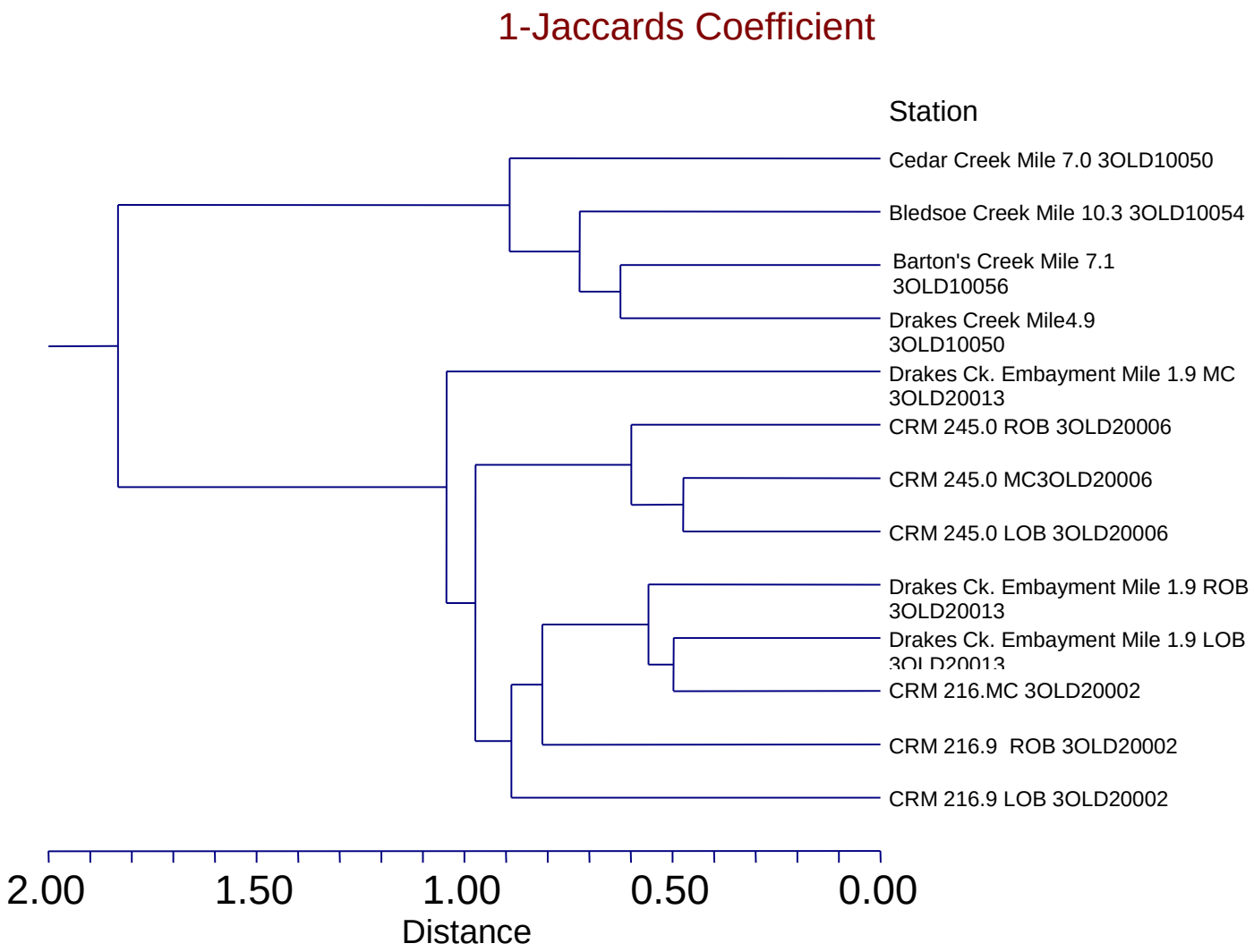


Figure 4. 1-Jaccard's Coefficient Cluster Analysis, Old Hickory Reservoir Drainage, Fall 2000 (CRM=Cumberland River Mile, LOB=left overbank, ROB=right overbank, MC=main channel.

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APPENDIX

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cumberland River Mile 216.9 3OLD20002 LEFT OVERBANK	RIGHT OVERBANK	MAIN CHANNEL	TOTAL
PLATYHELMINTHES						
Turbellaria						
Tricladida						
Planariidae						
Dugesia tigrina	**7.23**					
NEMATODA	**6.02**		1			7.1
MOLLUSCA						
Bivalvia						
Veneroida						
Corbiculidae						
Corbicula fluminea	**6.12**	**FC**			7	50.0
Sphaeriidae						
Musculium transversum	***8**	**FC**	10	22	15	335.6
Pisidium sp.	***5**	**FC**			2	14.3
Gastropoda						
Mesogastropoda						
Pleuroceridae						
Elimia sp.	**2.46**	**SC**				
Elimia laqueata	**2.46**	**SC**				
Basommatophora						
Lymnaeidae						
Fossaria sp.	***7**	**SC**				
Physidae						
Physella sp.	***9**	**CG**				
Planorbidae	***6**					
Menetus dilatatus	**8.23**	**SC**				
ANNELIDA						
Oligochaeta						
Haplotaxida						
Lumbricidae						
Naididae	***8**	**CG**				
Pristina sp.	**9.56**	**CG**				
Tubificidae w.h.c.	**7.11**	**CG**	27	7	29	449.8
Branchiura sowerbyi	**8.28**	**CG**		15		107.1
Tubificidae w.o.h.c.	**7.11**	**CG**		51	186	1692.2
Limnodrilus cervix	**9.9**	**CG**			72	514.1
Limnodrilus hoffmeisteri	**9.47**	**CG**	2			14.3
Hirudinea						
Glossiphoniidae						
Helobdella stagnalis	**8.63**	**P**				

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cumberland River Mile 216.9 3OLD20002 LEFT OVERBANK	RIGHT OVERBANK	MAIN CHANNEL	TOTAL
ARTHROPODA						
Arachnoidea						
Acariformes						
Crustacea						
Ostracoda						
Copepoda						
Cyclopoida				1	2	21.4
Isopoda						
Asellidae						
Caecidotea sp.	**9.11**	CG				
Lirceus sp.	**7.85**	**CG**				
Amphipoda						
Crangonyctidae						
Crangonyx sp.	**7.87**	**CG**				
Decapoda						
Cambaridae						
Orconectes sp.	**2.6**	**SH**				
Insecta						
Ephemeroptera						
Baetidae						
Baetis intercalaris	**4.99**	**CG**				
Caenidae						
Caenis sp.	**7.41**	**CG**				
Ephemeridae						
Hexagenia sp.	**4.9**	**CG**		1		7.1
Heptageniidae						
Leucrocuta sp.	**2.4**	**SC**				
Stenacron interpunctatum	**6.87**	**SC**				
Stenonema sp.	***4**	**SC**				
Stenonema femoratum	**7.18**	**SC**				
Stenonema mediopunctatum	**3.77**	**SC**				
Isonychiidae						
Isonychia sp.	**3.45**	**FC**				
Leptophlebiidae						
Choroterpes sp.	***2**	**CG**				
Tricorythidae						
Tricorythodes sp.	**5.06**	**CG**				
Odonata						
Coenagrionidae						
Argia sp.	**8.17**	**P**				

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.**	Cumberland River Mile 216.9 3OLD20002 LEFT OVERBANK	RIGHT OVERBANK	MAIN CHANNEL	TOTAL
Plecoptera						
Perlidae						
Acroneuria sp.	***1**	**P**				
Acroneuria evoluta	***1**	**P**				
Hemiptera						
Veliidae						
Rhagovelia obesa		**P**				
Megaloptera						
Corydalidae						
Corydalus cornutus	**5.16**	**P**				
Nigronia serricornis	**4.95**	**P**				
Sialidae						
Sialis sp.	**7.17**	**P**		4		28.6
Trichoptera						
Helicopsychidae	***3**	**SC**				
Helicopsyche borealis	**0**	**SC**				
Hydropsychidae	***4**	**FC**				
Ceratopsyche morosa	**2.63**	**FC**				
Cheumatopsyche sp.	**6.22**	**FC**				
Hydropsyche sp.	***5**	**FC**				
Hydropsyche betteni	**7.78**	**FC**				
Hydroptilidae	***4**	**PI**				
Hydroptila sp.	**6.22**	**PI**				
Leptoceridae	***4**	**CG**				
Oecetis sp.	**4.7**	**P**				
Philopotamidae	***3**	**FC**				
Chimarra obscura	**2.76**	**FC**				
Polycentropodidae	***6**	**FC**				
Polycentropus sp.	**3.53**	**FC**				
Lepidoptera						
Pyralidae						
Petrophila sp.	**2.09**	**SC**				
Coleoptera						
Elmidae	***5**	**CG**				
Dubiraphia sp.	**5.93**	**SC**				
Macronychus glabratus	**4.58**	**SH**				
Microcylloepus pusillus	**2.11**	**SC**				
Optioservus sp.	**2.36**	**SC**				
Stenelmis sp.	**5.1**	**SC**				
Hydrophilidae		**P**				

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cumberland River Mile 216.9 3OLD20002 LEFT OVERBANK	RIGHT OVERBANK	MAIN CHANNEL	TOTAL
Berosus sp.	**8.43**	**CG**				
Limnichidae						
Lutrochus sp.						
Psephenidae	***4**	**SC**				
Ectopria sp.	***4**	**SC**				
Psephenus herricki	**2.35**	**SC**				
Diptera						
Ceratopogonidae						
Bezzia/Palpomyia	**6.86**	**P**				
Chaboridae						
Chaoborus punctipennis	**8.5**	**P**			1	7.1
Chironomidae			5	1	1	50.0
Ablabesmyia annulata	2.04	P			2	14.3
Ablabesmyia mallochi	**7.19**	**P**				
Ablabesmyia rhamphe gp.	**7.37**	**P**				
Chironomus sp.	**9.63**	**CG**	50	28	95	1235.2
Cladopelma sp.	**3.49**	**CG**				
Coelotanypus sp.	**8**	**P**	86	69	74	1635.1
Corynoneura sp.	**6.01**	**CG**				
Cricotopus sp.	***7**	**CG**				
Cricotopus trifascia	**2.84**	**SH**				
Cryptochironomus fulvus	**6.38**	**P**			4	28.6
Dicrotendipes sp.	**8.1**	**CG**				
Microtendipes sp.	**5.53**	**CG**				
Nilotanypus sp.	**3.9**	**P**				
Paratendipes sp.	**5.11**	**CG**				
Polypedilum flavum (convictum)	**4.93**	**SH**				
Polypedilum fallax	**6.39**	**SH**				
Polypedilum halterale	**7.31**	**SH**				
Polypedilum illinoense	**9**	**SH**				
Procladius sp.	**9.1**	**P**			4	28.6
Pseudochironomus sp.	**5.36**	**CG**				
Rheotanytarsus sp.	**5.89**	**FC**				
Stenochironomus sp.	**6.45**	**CG**				
Tanypus sp.	**9.19**	**P**				
Tanytarsus sp.	**6.76**	**FC**			2	14.3
Thienemanniella xena	**5.86**	**CG**				
Thienemannimyia sp. gp.	**5.86**	**CG**				
Zavrelia sp.	**5.3**	**CG**				
Empididae	**7.57**	**P**				

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cumberland River Mile 216.9 3OLD20002 LEFT OVERBANK	RIGHT OVERBANK	MAIN CHANNEL	TOTAL
Hemerodromia sp.	*6	P				
Simuliidae	*6	FC				
Simulium sp.	4	FC				
Tipulidae	*3	SH				
Hexatoma sp.	4.31	P				
Tipula sp.	7.33	SH				
CHORDATA**						
Osteichthyes						
Percidae						
Etheostoma sp.						
TOTAL NO. OF ORGANISMS			**181**	**199**	**496**	**6254.64**
TOTAL NO. OF TAXA			**7**	**10**	**15**	**20**

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Drakes Creek Embayment Mile 1.9 3OLD20013 LEFT OVERBANK Count	RIGHT OVERBANK Count	MAIN CHANNEL Count	TOTAL Count
PLATYHELMINTHES						
Turbellaria						
Tricladida						
Planariidae						
Dugesia tigrina	**7.23**					
NEMATODA	**6.02**		2			14.3
MOLLUSCA						
Bivalvia						
Veneroida						
Corbiculidae						
Corbicula fluminea	**6.12**	**FC**				
Sphaeriidae						
Musculium transversum	***8**	**FC**	9	9	13	221.3
Pisidium sp.	***5**	**FC**				
Gastropoda						
Mesogastropoda						
Pleuroceridae						
Elimia sp.	**2.46**	**SC**				
Elimia laqueata	**2.46**	**SC**				
Basommatophora						
Lymnaeidae						
Fossaria sp.	***7**	**SC**				
Physidae						
Physella sp.	***9**	**CG**				
Planorbidae	***6**					
Menetus dilatatus	**8.23**	**SC**				
ANNELIDA						
Oligochaeta						
Haplotaxida						
Lumbricidae						
Naididae	***8**	**CG**				
Pristina sp.	**9.56**	**CG**				
Tubificidae w.h.c.	**7.11**	**CG**	424	162	890	10538.6
Branchiura sowerbyi	**8.28**	**CG**				
Tubificidae w.o.h.c.	**7.11**	**CG**	141	54	230	3034.5
Limnodrilus cervix	**9.9**	**CG**				
Limnodrilus hoffmeisteri	**9.47**	**CG**			60	428.4
Hirudinea						
Glossiphoniidae						
Helobdella stagnalis	**8.63**	**P**				
ARTHROPODA						

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Drakes Creek Embayment Mile 1.9 3OLD20013 LEFT OVERBANK Count	RIGHT OVERBANK Count	MAIN CHANNEL Count	TOTAL Count
Arachnoidea						
Acariformes						
Crustacea						
Ostracoda			8			57.1
Copepoda						
Cyclopoida			8			57.1
Isopoda						
Asellidae						
Caecidotea sp.	**9.11**	CG				
Lirceus sp.	**7.85**	**CG**				
Amphipoda						
Crangonyctidae						
Crangonyx sp.	**7.87**	**CG**				
Decapoda						
Cambaridae						
Orconectes sp.	**2.6**	**SH**				
Insecta						
Ephemeroptera						
Baetidae						
Baetis intercalaris	**4.99**	**CG**				
Caenidae						
Caenis sp.	**7.41**	**CG**				
Ephemeridae						
Hexagenia sp.	**4.9**	**CG**				
Heptageniidae						
Leucrocuta sp.	**2.4**	**SC**				
Stenacron interpunctatum	**6.87**	**SC**				
Stenonema sp.	***4**	**SC**				
Stenonema femoratum	**7.18**	**SC**				
Stenonema mediopunctatum	**3.77**	**SC**				
Isonychiidae						
Isonychia sp.	**3.45**	**FC**				
Leptophlebiidae						
Choroterpes sp.	***2**	**CG**				
Tricorythidae						
Tricorythodes sp.	**5.06**	**CG**				
Odonata						
Coenagrionidae						
Argia sp.	**8.17**	**P**				
Plecoptera						
Perlidae						

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Drakes Creek Embayment Mile 1.9 3OLD20013 LEFT OVERBANK Count	RIGHT OVERBANK Count	MAIN CHANNEL Count	TOTAL Count
Acroneuria sp.	*1	P				
Acroneuria evoluta	*1	P				
Hemiptera						
Veliidae						
Rhagovelia obesa		P				
Megaloptera						
Corydalidae						
Corydalus cornutus	5.16	P				
Nigronia serricornis	4.95	P				
Sialidae						
Sialis sp.	7.17	P				
Trichoptera						
Helicopsychidae	*3	SC				
Helicopsyche borealis	0	SC				
Hydropsychidae	*4	FC				
Ceratopsyche morosa	2.63	FC				
Cheumatopsyche sp.	6.22	FC				
Hydropsyche sp.	*5	FC				
Hydropsyche betteni	7.78	FC				
Hydroptilidae	*4	PI				
Hydroptila sp.	6.22	PI				
Leptoceridae	*4	CG				
Oecetis sp.	4.7	P				
Philopotamidae	*3	FC				
Chimarra obscura	2.76	FC				
Polycentropodidae	*6	FC				
Polycentropus sp.	3.53	FC				
Lepidoptera						
Pyralidae						
Petrophila sp.	2.09	SC				
Coleoptera						
Elmidae	*5	CG				
Dubiraphia sp.	5.93	SC				
Macronychus glabratus	4.58	SH				
Microcylloepus pusillus	2.11	SC				
Optioservus sp.	2.36	SC			10	71.4
Stenelmis sp.	5.1	SC				
Hydrophilidae		P				
Berosus sp.	8.43	CG				
Limnichidae						
Lutrochus sp.						

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Drakes Creek Embayment Mile 1.9 3OLD20013 LEFT OVERBANK Count	RIGHT OVERBANK Count	MAIN CHANNEL Count	TOTAL Count
Psephenidae	*4	SC				
Ectopria sp.	*4	SC				
Psephenus herricki	2.35	SC				
Diptera						
Ceratopogonidae						
Bezzia/Palpomyia	6.86	P				
Chaboridae						
Chaoborus punctipennis	8.5	P	64	43	470	4119.8
Chironomidae			3	1		28.6
Ablabesmyia annulata	2.04	P	3			21.4
Ablabesmyia mallochi	7.19	P				
Ablabesmyia rhamphe gp.	7.37	P				
Chironomus sp.	9.63	CG	126	118	280	3741.4
Cladopelma sp.	3.49	CG		3		21.4
Coelotanypus sp.	8	P	7	3		71.4
Corynoneura sp.	6.01	CG				
Cricotopus sp.	*7	CG				
Cricotopus trifascia	2.84	SH				
Cryptochironomus fulvus	6.38	P		5		35.7
Dicrotendipes sp.	8.1	CG				
Microtendipes sp.	5.53	CG				
Nilotanypus sp.	3.9	P				
Paratendipes sp.	5.11	CG				
Polypedilum flavum (convictum)	4.93	SH				
Polypedilum fallax	6.39	SH				
Polypedilum halterale	7.31	SH				
Polypedilum illinoense	9	SH				
Procladius sp.	9.1	P	3	4		50.0
Pseudochironomus sp.	5.36	CG				
Rheotanytarsus sp.	5.89	FC				
Stenochironomus sp.	6.45	CG				
Tanypus sp.	9.19	P				
Tanytarsus sp.	6.76	FC				
Thienemanniella xena	5.86	CG				
Thienemannimyia sp. gp.	5.86	CG				
Zavrelia sp.	5.3	CG				
Empididae	7.57	P				
Hemerodromia sp.	*6	P				
Simuliidae	*6	FC				
Simulium sp.	4	FC				
Tipulidae	*3	SH				

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Drakes Creek Embayment Mile 1.9 3OLD20013 LEFT OVERBANK Count	RIGHT OVERBANK Count	MAIN CHANNEL Count	TOTAL Count
Hexatoma sp.	**4.31**	**P**				
Tipula sp.	**7.33**	**SH**				
CHORDATA****						
Osteichthyes						
Percidae						
Etheostoma sp.						
TOTAL NO. OF ORGANISMS			**798**	**402**	**1953**	**22512.42**
TOTAL NO. OF TAXA			**12**	**10**	**7**	**16**

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cumberland River Mile 245.0 3OLD20006 LEFT OVERBANK Count	RIGHT OVERBANK Count	MAIN CHANNEL Count	TOTAL Count
PLATYHELMINTHES						
Turbellaria						
Tricladida						
Planariidae						
Dugesia tigrina	**7.23**					
NEMATODA	**6.02**					
MOLLUSCA						
Bivalvia						
Veneroida						
Corbiculidae						
Corbicula fluminea	**6.12**	**FC**		1	4	35.7
Sphaeriidae						
Musculium transversum	***8**	**FC**	12	38	14	457.0
Pisidium sp.	***5**	**FC**				
Gastropoda						
Mesogastropoda						
Pleuroceridae						
Elimia sp.	**2.46**	**SC**				
Elimia laqueata	**2.46**	**SC**				
Basommatophora						
Lymnaeidae						
Fossaria sp.	***7**	**SC**				
Physidae						
Physella sp.	***9**	**CG**				
Planorbidae	***6**					
Menetus dilatatus	**8.23**	**SC**				
ANNELIDA						
Oligochaeta						
Haplotaxida						
Lumbricidae						
Naididae	***8**	**CG**				
Pristina sp.	**9.56**	**CG**				
Tubificidae w.h.c.	**7.11**	**CG**	21	6	23	357.0
Branchiura sowerbyi	**8.28**	**CG**		3		21.4
Tubificidae w.o.h.c.	**7.11**	**CG**	80	42	100	1585.1
Limnodrilus cervix	**9.9**	**CG**				
Limnodrilus hoffmeisteri	**9.47**	**CG**	5	6	31	299.9
Hirudinea						
Glossiphoniidae						
Helobdella stagnalis	**8.63**	**P**			62	442.7

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cumberland River Mile 245.0 3OLD20006 LEFT OVERBANK Count	RIGHT OVERBANK Count	MAIN CHANNEL Count	TOTAL Count
ARTHROPODA						
Arachnoidea						
Acariformes						
Crustacea						
Ostracoda						
Copepoda						
Cyclopoida						
Isopoda						
Asellidae						
Caecidotea sp.	**9.11**	CG				
Lirceus sp.	**7.85**	**CG**				
Amphipoda						
Crangonyctidae						
Crangonyx sp.	**7.87**	**CG**				
Decapoda						
Cambaridae						
Orconectes sp.	**2.6**	**SH**				
Insecta						
Ephemeroptera						
Baetidae						
Baetis intercalaris	**4.99**	**CG**				
Caenidae						
Caenis sp.	**7.41**	**CG**				
Ephemeridae						
Hexagenia sp.	**4.9**	**CG**	16	20	11	335.6
Heptageniidae						
Leucrocuta sp.	**2.4**	**SC**				
Stenacron interpunctatum	**6.87**	**SC**				
Stenonema sp.	***4**	**SC**				
Stenonema femoratum	**7.18**	**SC**				
Stenonema mediopunctatum	**3.77**	**SC**				
Isonychiidae						
Isonychia sp.	**3.45**	**FC**				
Leptophlebiidae						
Choroterpes sp.	***2**	**CG**				
Tricorythidae						
Tricorythodes sp.	**5.06**	**CG**				
Odonata						
Coenagrionidae						
Argia sp.	**8.17**	**P**				

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cumberland River Mile 245.0 3OLD20006 LEFT OVERBANK Count	RIGHT OVERBANK Count	MAIN CHANNEL Count	TOTAL Count
Plecoptera						
Perlidae						
Acroneuria sp.	***1**	**P**				
Acroneuria evoluta	***1**	**P**				
Hemiptera						
Veliidae						
Rhagovelia obesa		**P**				
Megaloptera						
Corydalidae						
Corydalus cornutus	**5.16**	**P**				
Nigronia serricornis	**4.95**	**P**				
Sialidae						
Sialis sp.	**7.17**	**P**		14		100.0
Trichoptera						
Helicopsychidae	***3**	**SC**				
Helicopsyche borealis	**0**	**SC**				
Hydropsychidae	***4**	**FC**				
Ceratopsyche morosa	**2.63**	**FC**				
Cheumatopsyche sp.	**6.22**	**FC**				
Hydropsyche sp.	***5**	**FC**				
Hydropsyche betteni	**7.78**	**FC**				
Hydroptilidae	***4**	**PI**				
Hydroptila sp.	**6.22**	**PI**				
Leptoceridae	***4**	**CG**				
Oecetis sp.	**4.7**	**P**	1			7.1
Philopotamidae	***3**	**FC**				
Chimarra obscura	**2.76**	**FC**				
Polycentropodidae	***6**	**FC**				
Polycentropus sp.	**3.53**	**FC**		1		7.1
Lepidoptera						
Pyralidae						
Petrophila sp.	**2.09**	**SC**				
Coleoptera						
Elmidae	***5**	**CG**				
Dubiraphia sp.	**5.93**	**SC**				
Macronychus glabratus	**4.58**	**SH**				
Microcylloepus pusillus	**2.11**	**SC**				
Optioservus sp.	**2.36**	**SC**				
Stenelmis sp.	**5.1**	**SC**				
Hydrophilidae		**P**				

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cumberland River Mile 245.0 3OLD20006 LEFT OVERBANK Count	RIGHT OVERBANK Count	MAIN CHANNEL Count	TOTAL Count
Berosus sp.	**8.43**	**CG**				
Limnichidae						
Lutrochus sp.						
Psephenidae	***4**	**SC**				
Ectopria sp.	***4**	**SC**				
Psephenus herricki	**2.35**	**SC**				
Diptera						
Ceratopogonidae						
Bezzia/Palpomyia	**6.86**	**P**	1	2	1	28.6
Chaboridae						
Chaoborus punctipennis	**8.5**	**P**				
Chironomidae					6	42.8
Ablabesmyia annulata	2.04	P	13	16	17	328.4
Ablabesmyia mallochi	**7.19**	**P**				
Ablabesmyia rhamphe gp.	**7.37**	**P**				
Chironomus sp.	**9.63**	**CG**	9	7	30	328.4
Cladopelma sp.	**3.49**	**CG**				
Coelotanypus sp.	**8**	**P**	3	11	4	128.5
Corynoneura sp.	**6.01**	**CG**				
Cricotopus sp.	***7**	**CG**				
Cricotopus trifascia	**2.84**	**SH**				
Cryptochironomus fulvus	**6.38**	**P**	5	5	10	142.8
Dicrotendipes sp.	**8.1**	**CG**				
Microtendipes sp.	**5.53**	**CG**				
Nilotanypus sp.	**3.9**	**P**				
Paratendipes sp.	**5.11**	**CG**				
Polypedilum flavum (convictum)	**4.93**	**SH**				
Polypedilum fallax	**6.39**	**SH**				
Polypedilum halterale	**7.31**	**SH**			2	14.3
Polypedilum illinoense	**9**	**SH**				
Procladius sp.	**9.1**	**P**	3	3	8	100.0
Pseudochironomus sp.	**5.36**	**CG**				
Rheotanytarsus sp.	**5.89**	**FC**				
Stenochironomus sp.	**6.45**	**CG**				
Tanypus sp.	**9.19**	**P**		1		7.1
Tanytarsus sp.	**6.76**	**FC**		1		7.1
Thienemanniella xena	**5.86**	**CG**				
Thienemannimyia sp. gp.	**5.86**	**CG**				
Zavrelia sp.	**5.3**	**CG**				
Empididae	**7.57**	**P**				

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cumberland River Mile 245.0 3OLD20006 LEFT OVERBANK Count	RIGHT OVERBANK Count	MAIN CHANNEL Count	TOTAL Count
Hemerodromia sp.	*6	P				
Simuliidae	*6	FC				
Simulium sp.	4	FC				
Tipulidae	*3	SH				
Hexatoma sp.	4.31	P				
Tipula sp.	7.33	SH				
CHORDATA**						
Osteichthyes						
Percidae						
Etheostoma sp.						
TOTAL NO. OF ORGANISMS			**169**	**177**	**323**	**4776.66**
TOTAL NO. OF TAXA			**12**	**17**	**15**	**21**

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Drakes Creek 3OLD10050 Hess 1	Hess 2	Hess 3	Hess 4	TOTAL
PLATYHELMINTHES							
Turbellaria							
Tricladida							
Planariidae							
Dugesia tigrina	**7.23**						
NEMATODA							
MOLLUSCA							
Bivalvia							
Veneroida							
Corbiculidae							
Corbicula fluminea	**6.12**	**FC**	7	13	5	16	41
Sphaeriidae							
Musculium transversum	***8**	**FC**					
Pisidium sp.	***5**	**FC**					
Gastropoda							
Mesogastropoda							
Pleuroceridae							
Elimia sp.	**2.46**	**SC**	26	57	14	100	197
Elimia laqueata	**2.46**	**SC**			12		12
Basommatophora							
Lymnaeidae							
Fossaria sp.	***7**	**SC**					
Physidae							
Physella sp.	***9**	**CG**					
Planorbidae	***6**						
Menetus dilatatus	**8.23**	**SC**					
ANNELIDA							
Oligochaeta							
Haplotaxida							
Lumbricidae			4	4	1	2	11
Naididae	***8**	**CG**	1				1
Pristina sp.	**9.56**	**CG**					
Tubificidae w.h.c.	**7.11**	**CG**					
Branchiura sowerbyi	**8.28**	**CG**					
Tubificidae w.o.h.c.	**7.11**	**CG**	5	2		2	9
Limnodrilus cervix	**9.9**	**CG**					
Limnodrilus hoffmeisteri	**9.47**	**CG**					
Hirudinea							
Glossiphoniidae							
Helobdella stagnalis	**8.63**	**P**					

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Drakes Creek 3OLD10050 Hess 1	Hess 2	Hess 3	Hess 4	TOTAL
ARTHROPODA							
Arachnoidea							
Acariformes							
Crustacea							
Ostracoda							
Copepoda							
Cyclopoida							
Isopoda							
Asellidae							
Caecidotea sp.	**9.11**	CG					
Lirceus sp.	**7.85**	**CG**	5	6		3	14
Amphipoda							
Crangonyctidae							
Crangonyx sp.	**7.87**	**CG**	4			21	25
Decapoda							
Cambaridae							
Orconectes sp.	**2.6**	**SH**				1	1
Insecta							
Ephemeroptera							
Baetidae							
Baetis intercalaris	**4.99**	**CG**	91	21	22	3	137
Caenidae							
Caenis sp.	**7.41**	**CG**	78	44	23	72	217
Ephemeridae							
Hexagenia sp.	**4.9**	**CG**					
Heptageniidae							
Leucrocuta sp.	**2.4**	**SC**	1				1
Stenacron interpunctatum	**6.87**	**SC**	2			1	3
Stenonema sp.	***4**	**SC**			7	30	37
Stenonema femoratum	**7.18**	**SC**					
Stenonema mediopunctatum	**3.77**	**SC**	22	38	3	5	68
Isonychiidae							
Isonychia sp.	**3.45**	**FC**	2				2
Leptophlebiidae				1			1
Choroterpes sp.	***2**	**CG**	4		6	6	16
Tricorythidae							
Tricorythodes sp.	**5.06**	**CG**	20	7	2	3	32
Odonata							
Coenagrionidae							
Argia sp.	**8.17**	**P**	1	11		14	26

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Drakes Creek 3OLD10050 Hess 1	Hess 2	Hess 3	Hess 4	TOTAL
Plecoptera							
Perlidae							
Acroneuria sp.	***1**	**P**					
Acroneuria evoluta	***1**	**P**				1	1
Hemiptera							
Veliidae							
Rhagovelia obesa		**P**					
Megaloptera							
Corydalidae							
Corydalus cornutus	**5.16**	**P**	1			2	3
Nigronia serricornis				1		1	2
Sialidae							
Sialis sp.	**7.17**	**P**	1				1
Trichoptera							
Helicopsychidae	***3**	**SC**					
Helicopsyche borealis	**0**	**SC**		1			1
Hydropsychidae	***4**	**FC**	5				5
Ceratopsyche morosa	**2.63**	**FC**			1		1
Cheumatopsyche sp.	**6.22**	**FC**	28	7	2	4	41
Hydropsyche sp.	***5**	**FC**					
Hydropsyche betteni	**7.78**	**FC**					
Hydroptilidae	***4**	**PI**					
Hydroptila sp.	**6.22**	**PI**					
Leptoceridae	***4**	**CG**					
Oecetis sp.	**4.7**	**P**					
Philopotamidae	***3**	**FC**					
Chimarra obscura	**2.76**	**FC**	4				4
Polycentropodidae	***6**	**FC**					
Polycentropus sp.	**3.53**	**FC**					
Lepidoptera							
Pyralidae							
Petrophila sp.	**2.09**	**SC**					
Coleoptera							
Elmidae	***5**	**CG**					
Dubiraphia sp.	**5.93**	**SC**					
Macronychus glabratus	**4.58**	**SH**					
Microcylloepus pusillus	**2.11**	**SC**	1				1
Optioservus sp.	**2.36**	**SC**	1				1
Stenelmis sp.	**5.1**	**SC**	173	196	52	58	479
Hydrophilidae		**P**					

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Drakes Creek 3OLD10050 Hess 1	Hess 2	Hess 3	Hess 4	TOTAL
Berosus sp.	**8.43**	**CG**					
Limnichidae							
Lutrochus sp.							
Psephenidae	***4**	**SC**					
Ectopria sp.	***4**	**SC**					
Psephenus herricki	**2.35**	**SC**	69	125	47	20	261
Diptera							
Ceratopogonidae							
Bezzia/Palpomyia	**6.86**	**P**	1				1
Chaboridae							
Chaoborus punctipennis	**8.5**	**P**					
Chironomidae			21			12	33
Ablabesmyia annulata	2.04	P					
Ablabesmyia mallochi	**7.19**	**P**					
Ablabesmyia rhamphe gp.	**7.37**	**P**					
Chironomus sp.	**9.63**	**CG**					
Cladopelma sp.	**3.49**	**CG**					
Coelotanypus sp.	**8**	**P**					
Corynoneura sp.	**6.01**	**CG**	2				2
Cricotopus sp.	***7**	**CG**				1	1
Cricotopus trifascia	**2.84**	**SH**					
Cryptochironomus fulvus	**6.38**	**P**			1		1
Dicrotendipes sp.	**8.1**	**CG**					
Microtendipes sp.	**5.53**	**CG**					
Nilotanypus sp.	**3.9**	**P**	2				2
Paratendipes sp.	**5.11**	**CG**					
Polypedilum flavum (convictum)	**4.93**	**SH**	110	9	7	1	127
Polypedilum fallax	**6.39**	**SH**					
Polypedilum halterale	**7.31**	**SH**	2			1	3
Polypedilum illinoense	**9**	**SH**	4				4
Procladius sp.	**9.1**	**P**					
Pseudochironomus sp.	**5.36**	**CG**					
Rheotanytarsus sp.	**5.89**	**FC**	16		2	2	20
Stenochironomus sp.	**6.45**	**CG**					
Tanypus sp.	**9.19**	**P**					
Tanytarsus sp.	**6.76**	**FC**	45			2	47
Thienemanniella xena	**5.86**	**CG**	20				20
Thienemannimyia sp. gp.	**5.86**	**CG**	16		3	6	25
Zavrelia sp.	**5.3**	**CG**	7	2	3	24	36
Empididae	**7.57**	**P**					

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Drakes Creek 3OLD10050 Hess 1	Hess 2	Hess 3	Hess 4	TOTAL
Hemerodromia sp.	***6**	**P**	2				2
Simuliidae	***6**	**FC**					
Simulium sp.	**4**	**FC**					
Tipulidae	***3**	**SH**					
Hexatoma sp.	**4.31**	**P**		1			1
Tipula sp.	**7.33**	**SH**					
CHORDATA****							
Osteichthyes							
Percidae							
Etheostoma sp.					1		1
TOTAL NO. OF ORGANISMS			**804**	**546**	**213**	**414**	**1977**
TOTAL NO. OF TAXA			**38**	**19**	**19**	**29**	**49**

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Bledsoe Creek 3OLD10054 Hess 1	Hess 2	Hess 3	Hess 4	TOTAL
PLATYHELMINTHES							
Turbellaria							
Tricladida							
Planariidae							
Dugesia tigrina	**7.23**						
NEMATODA							
MOLLUSCA							
Bivalvia							
Veneroida							
Corbiculidae							
Corbicula fluminea	**6.12**	**FC**	4	2	12	2	20
Sphaeriidae							
Musculium transversum	***8**	**FC**					
Pisidium sp.	***5**	**FC**					
Gastropoda							
Mesogastropoda							
Pleuroceridae							
Elimia sp.	**2.46**	**SC**					
Elimia laqueata	**2.46**	**SC**	7	17	4	30	58
Basommatophora							
Lymnaeidae							
Fossaria sp.	***7**	**SC**					
Physidae							
Physella sp.	***9**	**CG**					
Planorbidae	***6**						
Menetus dilatatus	**8.23**	**SC**					
ANNELIDA							
Oligochaeta							
Haplotaxida							
Lumbricidae				1			1
Naididae	***8**	**CG**					
Pristina sp.	**9.56**	**CG**			1		1
Tubificidae w.h.c.	**7.11**	**CG**					
Branchiura sowerbyi	**8.28**	**CG**					
Tubificidae w.o.h.c.	**7.11**	**CG**	4	1			5
Limnodrilus cervix	**9.9**	**CG**					
Limnodrilus hoffmeisteri	**9.47**	**CG**	1				1
Hirudinea							
Glossiphoniidae							
Helobdella stagnalis	**8.63**	**P**					

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Bledsoe Creek 3OLD10054 Hess 1	Hess 2	Hess 3	Hess 4	TOTAL
ARTHROPODA							
Arachnoidea							
Acariformes				16			16
Crustacea							
Ostracoda							
Copepoda							
Cyclopoida							
Isopoda							
Asellidae							
Caecidotea sp.	**9.11**	CG		1	1		2
Lirceus sp.	**7.85**	**CG**					
Amphipoda							
Crangonyctidae							
Crangonyx sp.	**7.87**	**CG**		1			1
Decapoda							
Cambaridae					1		1
Orconectes sp.	**2.6**	**SH**	1		2	2	5
Insecta							
Ephemeroptera				7			7
Baetidae							
Baetis intercalaris	**4.99**	**CG**		1	2		3
Caenidae							
Caenis sp.	**7.41**	**CG**	26	25	25	10	86
Ephemeridae							
Hexagenia sp.	**4.9**	**CG**					
Heptageniidae			10	5	25	16	56
Leucrocuta sp.	**2.4**	**SC**	1	20	25	9	55
Stenacron interpunctatum	**6.87**	**SC**	5	8	18	10	41
Stenonema sp.	***4**	**SC**		9	8	10	27
Stenonema femoratum	**7.18**	**SC**	20	4		8	32
Stenonema mediopunctatum	**3.77**	**SC**			1		1
Isonychiidae							
Isonychia sp.	**3.45**	**FC**			1		1
Leptophlebiidae							
Choroterpes sp.	***2**	**CG**	16	12	35	14	77
Tricorythidae							
Tricorythodes sp.	**5.06**	**CG**	125	223	347	170	865
Odonata							
Coenagrionidae							
Argia sp.	**8.17**	**P**	7	4	20	17	48

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Bledsoe Creek 3OLD10054 Hess 1	Hess 2	Hess 3	Hess 4	TOTAL
Plecoptera							
Perlidae							
Acroneuria sp.	***1**	**P**			1		1
Acroneuria evoluta	***1**	**P**					
Hemiptera							
Veliidae							
Rhagovelia obesa		**P**					
Megaloptera							
Corydalidae							
Corydalus cornutus	**5.16**	**P**		1			1
Nigronia serricornis					2	1	3
Sialidae							
Sialis sp.	**7.17**	**P**	2	1	6	5	14
Trichoptera							
Helicopsychidae	***3**	**SC**					
Helicopsyche borealis	**0**	**SC**				1	1
Hydropsychidae	***4**	**FC**					
Ceratopsyche morosa	**2.63**	**FC**	1	1			2
Cheumatopsyche sp.	**6.22**	**FC**			1	2	3
Hydropsyche sp.	***5**	**FC**					
Hydropsyche betteni	**7.78**	**FC**					
Hydroptilidae	***4**	**PI**					
Hydroptila sp.	**6.22**	**PI**					
Leptoceridae	***4**	**CG**					
Oecetis sp.	**4.7**	**P**					
Philopotamidae	***3**	**FC**					
Chimarra obscura	**2.76**	**FC**					
Polycentropodidae	***6**	**FC**					
Polycentropus sp.	**3.53**	**FC**					
Lepidoptera							
Pyralidae							
Petrophila sp.	**2.09**	**SC**		1			1
Coleoptera							
Elmidae	***5**	**CG**					
Dubiraphia sp.	**5.93**	**SC**					
Macronychus glabratus	**4.58**	**SH**					
Microcylloepus pusillus	**2.11**	**SC**					
Optioservus sp.	**2.36**	**SC**					
Stenelmis sp.	**5.1**	**SC**	35	41	80	60	216
Hydrophilidae		**P**					

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Bledsoe Creek 3OLD10054 Hess 1	Hess 2	Hess 3	Hess 4	TOTAL
Berosus sp.	**8.43**	**CG**					
Limnichidae							
Lutrochus sp.							
Psephenidae	***4**	**SC**					
Ectopria sp.	***4**	**SC**					
Psephenus herricki	**2.35**	**SC**	6	8	11	8	33
Diptera							
Ceratopogonidae							
Bezzia/Palpomyia	**6.86**	**P**					
Chaboridae							
Chaoborus punctipennis	**8.5**	**P**					
Chironomidae			3	11	12	2	28
Ablabesmyia annulata	2.04	P					
Ablabesmyia mallochi	**7.19**	**P**		1			1
Ablabesmyia rhamphe gp.	**7.37**	**P**			1		1
Chironomus sp.	**9.63**	**CG**					
Cladopelma sp.	**3.49**	**CG**					
Coelotanypus sp.	**8**	**P**					
Corynoneura sp.	**6.01**	**CG**					
Cricotopus sp.	***7**	**CG**					
Cricotopus trifascia	**2.84**	**SH**					
Cryptochironomus fulvus	**6.38**	**P**					
Dicrotendipes sp.	**8.1**	**CG**	1				1
Microtendipes sp.	**5.53**	**CG**	1				1
Nilotanypus sp.	**3.9**	**P**					
Paratendipes sp.	**5.11**	**CG**					
Polypedilum flavum (convictum)	**4.93**	**SH**		1			1
Polypedilum fallax	**6.39**	**SH**					
Polypedilum halterale	**7.31**	**SH**	2	4	3	2	11
Polypedilum illinoense	**9**	**SH**					
Procladius sp.	**9.1**	**P**					
Pseudochironomus sp.	**5.36**	**CG**		1			1
Rheotanytarsus sp.	**5.89**	**FC**		1			1
Stenochironomus sp.	**6.45**	**CG**					
Tanypus sp.	**9.19**	**P**					
Tanytarsus sp.	**6.76**	**FC**	3	11	7	7	28
Thienemanniella xena	**5.86**	**CG**		2			2
Thienemannimyia sp. gp.	**5.86**	**CG**	2	4	9	11	26
Zavrelia sp.	**5.3**	**CG**	3	12	21	21	57
Empididae	**7.57**	**P**					

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Bledsoe Creek 3OLD10054 Hess 1	Hess 2	Hess 3	Hess 4	TOTAL
Hemerodromia sp.	*6	P					
Simuliidae	*6	FC					
Simulium sp.	4	FC					
Tipulidae	*3	SH					
Hexatoma sp.	4.31	P					
Tipula sp.	7.33	SH					
CHORDATA**							
Osteichthyes							
Percidae							
Etheostoma sp.							
TOTAL NO. OF ORGANISMS			**286**	**458**	**682**	**418**	**1844**
TOTAL NO. OF TAXA			**24**	**34**	**29**	**23**	**47**

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Bartons Creek 3OLD10056 Hess 1	Hess 2	Hess 3	Hess 4	TOTAL
PLATYHELMINTHES							
Turbellaria							
Tricladida							
Planariidae							
Dugesia tigrina	**7.23**					3	3
NEMATODA							
MOLLUSCA							
Bivalvia							
Veneroida							
Corbiculidae							
Corbicula fluminea	**6.12**	**FC**	11	20	23	48	102
Sphaeriidae						13	13
Musculium transversum	***8**	**FC**					
Pisidium sp.	***5**	**FC**					
Gastropoda							
Mesogastropoda							
Pleuroceridae							
Elimia sp.	**2.46**	**SC**					
Elimia laqueata	**2.46**	**SC**	57	144	684	142	1027
Basommatophora							
Lymnaeidae							
Fossaria sp.	***7**	**SC**					
Physidae							
Physella sp.	***9**	**CG**					
Planorbidae	***6**						
Menetus dilatatus	**8.23**	**SC**					
ANNELIDA							
Oligochaeta							
Haplotaxida							
Lumbricidae			1		12		13
Naididae	***8**	**CG**					
Pristina sp.	**9.56**	**CG**					
Tubificidae w.h.c.	**7.11**	**CG**					
Branchiura sowerbyi	**8.28**	**CG**				3	3
Tubificidae w.o.h.c.	**7.11**	**CG**		2		3	5
Limnodrilus cervix	**9.9**	**CG**					
Limnodrilus hoffmeisteri	**9.47**	**CG**					
Hirudinea							
Glossiphoniidae							
Helobdella stagnalis	**8.63**	**P**					

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Bartons Creek 3OLD10056 Hess 1	Hess 2	Hess 3	Hess 4	TOTAL
ARTHROPODA							
Arachnoidea							
Acariformes							
Crustacea							
Ostracoda							
Copepoda							
Cyclopoida							
Isopoda							
Asellidae							
Caecidotea sp.	**9.11**	CG					
Lirceus sp.	**7.85**	**CG**	2		1		3
Amphipoda							
Crangonyctidae							
Crangonyx sp.	**7.87**	**CG**					
Decapoda							
Cambaridae							
Orconectes sp.	**2.6**	**SH**	2	2		5	9
Insecta							
Ephemeroptera							
Baetidae							
Baetis intercalaris	**4.99**	**CG**	2	17	23	17	59
Caenidae							
Caenis sp.	**7.41**	**CG**			1		1
Ephemeridae							
Hexagenia sp.	**4.9**	**CG**					
Heptageniidae							
Leucrocuta sp.	**2.4**	**SC**					
Stenacron interpunctatum	**6.87**	**SC**		7		17	24
Stenonema sp.	***4**	**SC**	1	1			2
Stenonema femoratum	**7.18**	**SC**					
Stenonema mediopunctatum	**3.77**	**SC**					
Isonychiidae							
Isonychia sp.	**3.45**	**FC**	4		2		6
Leptophlebiidae							
Choroterpes sp.	***2**	**CG**					
Tricorythidae							
Tricorythodes sp.	**5.06**	**CG**	1		1		2
Odonata							
Coenagrionidae							
Argia sp.	**8.17**	**P**	2	17		31	50

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Bartons Creek 3OLD10056 Hess 1	Hess 2	Hess 3	Hess 4	TOTAL
Plecoptera							
Perlidae							
Acroneuria sp.	***1**	**P**					
Acroneuria evoluta	***1**	**P**					
Hemiptera							
Veliidae							
Rhagovelia obesa		**P**	3				3
Megaloptera							
Corydalidae							
Corydalus cornutus	**5.16**	**P**	4		4		8
Nigronia serricornis							
Sialidae							
Sialis sp.	**7.17**	**P**		1		3	4
Trichoptera							
Helicopsychidae	***3**	**SC**					
Helicopsyche borealis	**0**	**SC**	1		3		4
Hydropsychidae	***4**	**FC**					
Ceratopsyche morosa	**2.63**	**FC**		1			1
Cheumatopsyche sp.	**6.22**	**FC**	20		5		25
Hydropsyche sp.	***5**	**FC**					
Hydropsyche betteni	**7.78**	**FC**			1		1
Hydroptilidae	***4**	**PI**					
Hydroptila sp.	**6.22**	**PI**					
Leptoceridae	***4**	**CG**					
Oecetis sp.	**4.7**	**P**					
Philopotamidae	***3**	**FC**					
Chimarra obscura	**2.76**	**FC**	14		14		28
Polycentropodidae	***6**	**FC**					
Polycentropus sp.	**3.53**	**FC**					
Lepidoptera							
Pyralidae							
Petrophila sp.	**2.09**	**SC**					
Coleoptera							
Elmidae	***5**	**CG**					
Dubiraphia sp.	**5.93**	**SC**				3	3
Macronychus glabratus	**4.58**	**SH**				3	3
Microcylloepus pusillus	**2.11**	**SC**					
Optioservus sp.	**2.36**	**SC**					
Stenelmis sp.	**5.1**	**SC**	263	194	598	356	1411
Hydrophilidae		**P**					

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Bartons Creek 3OLD10056 Hess 1	Hess 2	Hess 3	Hess 4	TOTAL
Berosus sp.	**8.43**	**CG**			2	3	5
Limnichidae							
Lutrochus sp.							
Psephenidae	***4**	**SC**					
Ectopria sp.	***4**	**SC**	1	4	4		9
Psephenus herricki	**2.35**	**SC**	169	115	21	28	333
Diptera							
Ceratopogonidae							
Bezzia/Palpomyia	**6.86**	**P**				3	3
Chaboridae							
Chaoborus punctipennis	**8.5**	**P**					
Chironomidae				9	4	18	31
Ablabesmyia annulata	2.04	P					
Ablabesmyia mallochi	**7.19**	**P**					
Ablabesmyia rhamphe gp.	**7.37**	**P**					
Chironomus sp.	**9.63**	**CG**					
Cladopelma sp.	**3.49**	**CG**					
Coelotanypus sp.	**8**	**P**					
Corynoneura sp.	**6.01**	**CG**			1	3	4
Cricotopus sp.	***7**	**CG**			9		9
Cricotopus trifascia	**2.84**	**SH**			2		2
Cryptochironomus fulvus	**6.38**	**P**					
Dicrotendipes sp.	**8.1**	**CG**					
Microtendipes sp.	**5.53**	**CG**				3	3
Nilotanypus sp.	**3.9**	**P**					
Paratendipes sp.	**5.11**	**CG**					
Polypedilum flavum (convictum)	**4.93**	**SH**	5		35	7	47
Polypedilum fallax	**6.39**	**SH**					
Polypedilum halterale	**7.31**	**SH**		4	4	40	48
Polypedilum illinoense	**9**	**SH**			6		6
Procladius sp.	**9.1**	**P**					
Pseudochironomus sp.	**5.36**	**CG**					
Rheotanytarsus sp.	**5.89**	**FC**	1		2	3	6
Stenochironomus sp.	**6.45**	**CG**				3	3
Tanypus sp.	**9.19**	**P**					
Tanytarsus sp.	**6.76**	**FC**			1		1
Thienemanniella xena	**5.86**	**CG**					
Thienemannimyia sp. gp.	**5.86**	**CG**	4	6	10	27	47
Zavrelia sp.	**5.3**	**CG**	11	53	2	70	136
Empididae	**7.57**	**P**					

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Bartons Creek 3OLD10056 Hess 1	Hess 2	Hess 3	Hess 4	TOTAL
Hemerodromia sp.	***6**	**P**	1		1		2
Simuliidae	***6**	**FC**					
Simulium sp.	**4**	**FC**		1	1		2
Tipulidae	***3**	**SH**					
Hexatoma sp.	**4.31**	**P**					
Tipula sp.	**7.33**	**SH**					
CHORDATA****							
Osteichthyes							
Percidae							
Etheostoma sp.					1		1
TOTAL NO. OF ORGANISMS			**580**	**598**	**1477**	**855**	**3510**
TOTAL NO. OF TAXA			**23**	**18**	**30**	**26**	**46**

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cedar Creek 3OLD10055 Hess 1	Hess 2	Hess 3	Hess 4	TOTAL
PLATYHELMINTHES							
Turbellaria							
Tricladida							
Planariidae							
Dugesia tigrina	**7.23**				5	2	7
NEMATODA							
MOLLUSCA							
Bivalvia							
Veneroida							
Corbiculidae							
Corbicula fluminea	**6.12**	**FC**	1		39	10	50
Sphaeriidae							
Musculium transversum	***8**	**FC**				1	1
Pisidium sp.	***5**	**FC**				15	15
Gastropoda							
Mesogastropoda							
Pleuroceridae							
Elimia sp.	**2.46**	**SC**					
Elimia laqueata	**2.46**	**SC**	161	75	307	3145	3688
Basommatophora							
Lymnaeidae							
Fossaria sp.	***7**	**SC**				4	4
Physidae							
Physella sp.	***9**	**CG**			1	3	4
Planorbidae	***6**						
Menetus dilatatus	**8.23**	**SC**				1	1
ANNELIDA							
Oligochaeta							
Haplotaxida							
Lumbricidae			2		2		4
Naididae	***8**	**CG**					
Pristina sp.	**9.56**	**CG**			6		6
Tubificidae w.h.c.	**7.11**	**CG**					
Branchiura sowerbyi	**8.28**	**CG**					
Tubificidae w.o.h.c.	**7.11**	**CG**			15		15
Limnodrilus cervix	**9.9**	**CG**					
Limnodrilus hoffmeisteri	**9.47**	**CG**			6		6
Hirudinea							
Glossiphoniidae							
Helobdella stagnalis	**8.63**	**P**					

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cedar Creek 3OLD10055 Hess 1	Hess 2	Hess 3	Hess 4	TOTAL
ARTHROPODA							
Arachnoidea							
Acariformes							
Crustacea							
Ostracoda							
Copepoda							
Cyclopoida							
Isopoda							
Asellidae							
Caecidotea sp.	**9.11**	CG					
Lirceus sp.	**7.85**	**CG**	3		64		67
Amphipoda							
Crangonyctidae							
Crangonyx sp.	**7.87**	**CG**					
Decapoda							
Cambaridae							
Orconectes sp.	**2.6**	**SH**					
Insecta							
Ephemeroptera							
Baetidae							
Baetis intercalaris	**4.99**	**CG**	25		7	15	47
Caenidae							
Caenis sp.	**7.41**	**CG**				5	5
Ephemeridae							
Hexagenia sp.	**4.9**	**CG**					
Heptageniidae							
Leucrocuta sp.	**2.4**	**SC**					
Stenacron interpunctatum	**6.87**	**SC**			5		5
Stenonema sp.	***4**	**SC**					
Stenonema femoratum	**7.18**	**SC**					
Stenonema mediopunctatum	**3.77**	**SC**					
Isonychiidae							
Isonychia sp.	**3.45**	**FC**					
Leptophlebiidae							
Choroterpes sp.	***2**	**CG**					
Tricorythidae							
Tricorythodes sp.	**5.06**	**CG**					
Odonata							
Coenagrionidae							
Argia sp.	**8.17**	**P**			1		1

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cedar Creek 3OLD10055 Hess 1	Hess 2	Hess 3	Hess 4	TOTAL
Plecoptera							
Perlidae							
Acroneuria sp.	***1**	**P**					
Acroneuria evoluta	***1**	**P**					
Hemiptera							
Veliidae							
Rhagovelia obesa		**P**					
Megaloptera							
Corydalidae							
Corydalus cornutus	**5.16**	**P**					
Nigronia serricornis							
Sialidae							
Sialis sp.	**7.17**	**P**					
Trichoptera							
Helicopsychidae	***3**	**SC**					
Helicopsyche borealis	**0**	**SC**					
Hydropsychidae	***4**	**FC**	3		6		9
Ceratopsyche morosa	**2.63**	**FC**					
Cheumatopsyche sp.	**6.22**	**FC**	7		4	2	13
Hydropsyche sp.	***5**	**FC**	5		3		8
Hydropsyche betteni	**7.78**	**FC**					
Hydroptilidae	***4**	**PI**			1		1
Hydroptila sp.	**6.22**	**PI**	15		6	1	22
Leptoceridae	***4**	**CG**					
Oecetis sp.	**4.7**	**P**					
Philopotamidae	***3**	**FC**					
Chimarra obscura	**2.76**	**FC**					
Polycentropodidae	***6**	**FC**					
Polycentropus sp.	**3.53**	**FC**					
Lepidoptera							
Pyralidae							
Petrophila sp.	**2.09**	**SC**					
Coleoptera							
Elmidae	***5**	**CG**					
Dubiraphia sp.	**5.93**	**SC**	2		2		4
Macronychus glabratus	**4.58**	**SH**					
Microcylloepus pusillus	**2.11**	**SC**			1		1
Optioservus sp.	**2.36**	**SC**					
Stenelmis sp.	**5.1**	**SC**	102	2	393	34	531
Hydrophilidae		**P**	7		3		10

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cedar Creek 3OLD10055 Hess 1	Hess 2	Hess 3	Hess 4	TOTAL
Berosus sp.	**8.43**	**CG**					
Limnichidae							
Lutrochus sp.			14		4	5	23
Psephenidae	***4**	**SC**					
Ectopria sp.	***4**	**SC**	2		6	1	9
Psephenus herricki	**2.35**	**SC**	143	3	71	11	228
Diptera							
Ceratopogonidae			2				2
Bezzia/Palpomyia	**6.86**	**P**					
Chaboridae							
Chaoborus punctipennis	**8.5**	**P**					
Chironomidae			2		6	1	9
Ablabesmyia annulata	2.04	P					
Ablabesmyia mallochi	**7.19**	**P**					
Ablabesmyia rhamphe gp.	**7.37**	**P**					
Chironomus sp.	**9.63**	**CG**					
Cladopelma sp.	**3.49**	**CG**					
Coelotanypus sp.	**8**	**P**					
Corynoneura sp.	**6.01**	**CG**	1				1
Cricotopus sp.	***7**	**CG**					
Cricotopus trifascia	**2.84**	**SH**					
Cryptochironomus fulvus	**6.38**	**P**					
Dicrotendipes sp.	**8.1**	**CG**				10	10
Microtendipes sp.	**5.53**	**CG**			4	10	14
Nilotanypus sp.	**3.9**	**P**			1		1
Paratendipes sp.	**5.11**	**CG**				1	1
Polypedilum flavum (convictum)	**4.93**	**SH**	35		9	4	48
Polypedilum fallax	**6.39**	**SH**			2	3	5
Polypedilum halterale	**7.31**	**SH**	2		6	28	36
Polypedilum illinoense	**9**	**SH**		1			1
Procladius sp.	**9.1**	**P**					
Pseudochironomus sp.	**5.36**	**CG**					
Rheotanytarsus sp.	**5.89**	**FC**	4		8	2	14
Stenochironomus sp.	**6.45**	**CG**					
Tanypus sp.	**9.19**	**P**					
Tanytarsus sp.	**6.76**	**FC**	22		12	5	39
Thienemanniella xena	**5.86**	**CG**	1		2	1	4
Thienemannimyia sp. gp.	**5.86**	**CG**	3		2	3	8
Zavrelia sp.	**5.3**	**CG**			5	4	9
Empididae	**7.57**	**P**					

TABLE 1A. BENTHIC MACROINVERTEBRATES COLLECTED FROM OLD HICKORY PROJECT, FALL 2000.

SPECIES	T.V.**	F.F.G.***	Cedar Creek 3OLD10055 Hess 1	Hess 2	Hess 3	Hess 4	TOTAL
Hemerodromia sp.	***6**	**P**			2	1	3
Simuliidae	***6**	**FC**					
Simulium sp.	**4**	**FC**					
Tipulidae	***3**	**SH**					
Hexatoma sp.	**4.31**	**P**	4				4
Tipula sp.	**7.33**	**SH**	4				4
CHORDATA****							
Osteichthyes							
Percidae							
Etheostoma sp.							
TOTAL NO. OF ORGANISMS			**572**	**81**	**1017**	**3328**	**4998**
TOTAL NO. OF TAXA			**26**	**4**	**36**	**29**	**48**