

UPPER WEST FORK WHITE RIVER
2007 Fish Management Report

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EXECUTIVE SUMMARY

- A survey of the upper West Fork White River (WFWR), Mounds State Park in Madison County down to Lake Indy in Indianapolis, in fall 2007 was conducted at two reference stations and 14 stations from the 1999 fish kill segment of the river. A total of 6,858 fish representing 50 species was collected at the 16 stations.
- The average number of species per station in the fish kill segment of the WFWR was 21.3, which is fairly consistent with species number per station beginning with 2001 sampling. In the three 2000 surveys however, only 11.7 species per station were collected.
- The attempted reintroduction of four species, sauger, bigmouth buffalo, freshwater drum, and shorthead redhorse, seems to have failed for all but sauger. Although young-of-year sauger were not collected in 2006 or 2007 sampling, anglers are currently catching sauger younger than those stocked.
- Both the smallmouth and largemouth bass populations are improving in terms of size distribution and stock densities in 2006 and 2007 compared to earlier sampling. Growth of smallmouth bass appears to be improved for 2007, as well.
- Recruitment of both smallmouth and largemouth bass appears to be taking place in most, if not all, years.
- A final post fish kill sampling effort is planned for 2010, and it is recommended that this include collections of otoliths for black bass for the most accurate growth analysis.

INTRODUCTION

The year 2007 marks the 8th year of recovery from the 1999 upper West Fork White River (WFWR) fish kill. The fish kill, which started in December 1999 and extended into January 2000, devastated the WFWR from Anderson downstream approximately 55 mi. The upper 43 mi were considered a complete kill, and the next 12 mi a partial kill (Keller 2000, Ball 2002a). Recovery of the fish populations through this section of the WFWR has been monitored since January 6, 2000 when initial stream surveys were conducted to assess the extent of the fish kill (Keller 2000). Since the fish kill, the Indiana Department of Natural Resources (IDNR) has completed six annual fall fisheries surveys (2001 to 2004, 2006 and 2007) and two recreational use surveys (2002 and 2004). In terms of species richness, the fish community rebounded to near pre-kill levels by the fall 2002 fisheries survey. An average of 5.3 species per station were collected in the upper river zone (complete kill section) in January 2000 compared to 20.0 species per station in the fall 2002 to 2004 surveys (Hoffman 2004, Ball and Hoffman 2006). In regards to relative abundance, most species have also rebounded to pre-kill levels. Some of the increase in relative abundance of species may be due to intensive stocking by the IDNR. Since 2000, 13 species totaling nearly 1.15 million fish were stocked throughout the area of the WFWR affected by the fish kill (Table 1). The IDNR stocked fish that were present in the river before the fish kill, such as channel catfish, largemouth and smallmouth bass, and bluegill. The IDNR also stocked two species (bigmouth buffalo and shorthead redhorse) that had been collected prior to the fish kill, but had not been collected after the fish kill. Sauger and freshwater drum had not been collected in fisheries surveys before the fish kill, but were assumed to inhabit the river before dams were built. These four species were collected from the East Fork White River and stocked into to the WFWR from 2002 to 2005. Restocking the WFWR after the fish kill was deemed necessary because of the extensive loss of fish and also because of the numerous dams located on the WFWR that would have perceivably impacted recolonization. Other losses to the public incurred by the fish kill included loss of recreational activities.

The purpose of this report is to convey the results of the fall 2007 fisheries survey and to summarize fisheries findings and management activities since the fish kill in 1999.

METHODS

Initial sampling after the fish kill was conducted in January 2000 (Keller 2000). Additional sampling was conducted in March and July 2000 (Ball 2000, Ball 2002b). Monitoring was continued each fall from 2001 to 2004, then switched to every three years for 2007 through 2010. A supplemental survey to collect age and growth data on black bass was conducted in 2006 (Hoffman 2007). For the fall fisheries surveys, the river was divided into an Upper Reference Zone (above the kill zone), an Upper River Zone (URZ; total kill zone), and a Lower River Zone (LRZ; partial kill zone) (Figure 1, Table 2). Seventeen stations were sampled in the fall surveys through 2002. In the 2003 fall survey, all stations except the seven riffle stations were sampled. In 2004 and 2007, the riffle stations were again included with the exception that Station 11 was dropped due to loss of access to that site. Boat-mounted electrofishing gear was used to sample run stations for up to 1 h per station. Impoundments were sampled with boat-mounted electrofishing gear, gill nets, and trap nets. Three gill nets and three trap nets were used in each impoundment, except for Landings Pit where two gill nets were used. Electrofishing sampling time in impoundments was at least 1 h, except in Landings Pit, where sampling was one complete circuit of the shoreline. Riffle stations included both riffle and run habitats and were sampled with a barge electrofisher. With the exception of Station 11, the same stations were used throughout the sampling of 2001 to 2004, and 2007. Total electrofishing effort in 2007 was 12.46 h. Gill net effort was 13 sets and trap net effort was 14 sets. Nets were used only on impounded stations.

All fish were identified, measured, and samples of each species were weighed. Weights were estimated using length-weight regressions for fish that were not weighed in the field. Any fish that could not be identified in the field were preserved in 10% formalin at least 48 h, then transferred to 70% isopropyl alcohol, and later identified.

Body condition and size-structure were evaluated using relative weights and stock indices for selected species. Selected species were separated into size groups according to length categories presented in Anderson and Neumann (1996). Relative weights were only calculated from fish that were weighed in the field. Percent composition by weight was simply the ratio of the total weight for an individual species divided by the total weight of all fish and was calculated for each station and for each habitat type. Scale

samples were collected from selected species and lengths-at-age were back-calculated until 2006, when the age analysis method was changed. Beginning with the 2006 survey, after aging fish, the length of the fish at capture was used instead of an estimated length based on proportion of scale growth occurring at annulus formation. For fall caught fish, this assigns most of an additional year's growth to each fish, but removes the requirement to estimate the length of fish at the time the annulus was laid down.

RESULTS

The number of species caught per station averaged for each of the three river zones (Table 3) shows that species number was depressed throughout 2000 in the two zones affected by the fish kill, Upper and Lower. The Upper River Zone, where a complete kill was apparent, shows the greatest depression in species number in 2000. Beginning in Fall 2001, species numbers have been fairly consistent for the Upper and Lower Zones. The lower numbers in 2003 are due largely to reduced sampling effort in that year. The Lower River Zone in 2007 sampling had the highest average number of species of any year (24.2), but this did not hold true for the other two zones.

A total of 50 species representing 11 families were collected at the 16 stations sampled in 2007 (Table 4). This compares to 52 species of 11 families for 2004 (Ball and Hoffman 2006). Collected in 2004 but not in 2007 were the silverjaw minnow, shorthead redhorse, yellow perch and blackside darter. In contrast, the spotfin shiner, orangespotted sunfish, and slenderhead darter were collected in 2007 but not in 2004.

Length distributions of smallmouth and largemouth bass show recruitment of young-of-year in 2007 (Figure 2). Also, abundances of the larger sizes are continuing to look favorable (Figure 3). Largemouth bass were more common at lengths of 16.5 to 19.0 in than smallmouth bass. However, sizable numbers of smallmouth bass in 2007 up to 16 in, plus three larger ones including a 19.4-in individual, are good signs for anglers interested in this species.

The relative stock density values for channel catfish have shown a progressive improvement from 2001, when the Relative Stock Density-Quality (RSD-Q) was 28, to the present RSD-Q of 91 and Relative Stock Density-Preferred (RSD-P) of 31 (Table 5). RSD-Q is reduced when recruitment of large year classes into the stock size occurs,

which was the case in 2001 and 2002 for channel catfish due to stockings of that species. Subsequent to 2002, no stockings took place and recruitment has slowed with the resulting increases in RSD-Q and RSD-P.

Bluegill relative stock density values, in contrast, started low at 36 for quality size fish in 2001 and have dropped into the 20 to 27 range since then. Anderson (1985, citing from Anderson and Neumann (1996)) gave a bluegill balanced population RSD-Q range of 20 to 60 with and RSD-P of 5 to 20. Since no preferred-size bluegill were found until 2007, and only 1% then, this indicates a relatively low quality population for angling. In spite of this, bluegill were the primary fish harvested in 2002 and 2004 from the upper WFWR (Ball 2005 and Hoffman 2005).

Growth of bluegill in 2007 appears satisfactory, but cannot be compared readily to that of 2004 because of the change in aging technique from back-calculating lengths to using lengths at time of capture (Table 8). The presence of bluegill longer than 8.0 in is an improvement over prior years.

Rock bass have shown a distinct upward trend in improvement in relative stock density values since 2001, rising to an RSD-Q of 62 and an RSD-P of 6 in 2007. However, in spite of the abundance and size distribution of this fish, few anglers seem to target rock bass (Ball 2005 and Hoffman 2005).

Growth of rock bass in 2007 cannot be compared directly to that of 2004 (Table 9). The presence of 8 individual rock bass in the 9.0 to 9.4 in range in 2007 is a good sign of satisfactory growth, however.

Largemouth bass relative stock density values have shown consistent quality since 2002, when RSD-Q was 52, RSD-P was 24, and RSD-M was 2. The acceptable ranges of Gablehouse (1984), cited from Anderson and Neumann (1996) are an RSD-Q of 40 to 70, an RSD-P of 10 to 40, and an RSD-M of 0 to 10 for a balanced population. The 2006 values were similarly in the balanced population ranges, but in 2007 not enough stock-size largemouth bass were collected to calculate the relative stock densities.

Largemouth bass grew slower at ages 2 to 6, but better at age 8, compared to 2006 (Table 7). Samples sizes were low and confidence intervals wide for 2007, however. Relative weights for this species showed improvement for the 8.0 to 11.9 in (W_r of 98) and 12.0 to 14.9 in (W_r of 107) groups, and only down slightly for the 15.0 to 19.9 in

group (W_r of 103), compared to 2004 (Figure 5). Relative weight values were also in or above the range of 95 to 100 recommended for this species by Wege and Anderson (1978).

Smallmouth bass values for relative stock density have shown steady improvements from 2001, with the highest RSD-M (17.0 in and larger fish) reaching a value of 4 in 2007. Much of this improvement in the smallmouth bass population is reflected in increased numbers of older individuals as the time since the fish kill has increased. The maximum life span of smallmouth bass in the WFWR appears to be at least 11 years. Considering the severity of the fish kill, it is understandable that the size distribution should improve through at least the 11 year post-kill period. A stock density range for a balanced population for smallmouth bass is not given by Anderson and Neumann (1996), but the 2007 levels look to be excellent for anglers.

Smallmouth bass growth in 2007 showed improvement for ages 1 to 6 and 8 in comparison to 2006, and individuals up to age 10 were observed (Table 6). Improved growth is definitely a good sign, as growth was barely above average in 2004. However, growth was determined from scales in 2007, compared to otoliths in 2004. Otoliths are a more accurate indicator of growth, so this apparent improvement should be verified in the future by repeating growth analysis with use of otoliths. Relative weights (W_r) for smallmouth bass showed improvements for those in the quality and preferred length groups, but not in smallest or largest lengths (Figure 4). Even with some improvements of relative weights in 2007, at no point did average relative weights reach 95, which is generally considered the low end of satisfactory range for largemouth bass (Wege and Anderson 1978).

DISCUSSION

The absence of shorthead redhorse, bigmouth buffalo, and freshwater drum in survey collections in 2006 and 2007 is indicative that the stockings of these species failed. No indications of young-of-year of these species were found subsequent to the stockings. All but the sauger were stocked using adults in 2002 to 2004 (Table 1). The sauger were stocked as fingerlings and fry from 2002 to 2005. Sauger have been present each fall of the years sampled, but no young-of-year sauger were found in surveys after

2005. However, anglers have continued to harvest sauger, including smaller ones, so it is possible that it reproduces in the upper WFWR now.

The absence of the silverjaw minnow, yellow perch, and blackside darter from 2007 collections probably indicates low population levels of these species at the sampling stations. Species found in 2007 but not in 2004 were the spotfin shiner, orangespotted sunfish, and slenderhead darter. These three species were found in post-kill sampling of the WFWR in 2000 (Ball 2002a), and subsequent sampling.

Growth and relative stock density values for the smallmouth bass population showed improvement in 2007, compared to 2006. However, since otoliths were not collected or aged in 2007, as they were in 2006, improvements in growth for 2007 are felt to need verification in the next survey. Otoliths provide a more reliable means for aging bass, although collecting these structures requires sacrificing the fish. Population modeling conducted in 2006 suggested that an advanced size limit is not warranted at this time (Hoffman, 2007). Harvest of both largemouth and smallmouth bass was minimal in the angler surveys of 2002 and 2004 (Ball 2005 and Hoffman 2005), so it appears that harvest is not a limiting factor in the size distribution of these species. Considering the maximum life spans of these species (up to about 12 years in the wild in Indiana) and that 2007 was the 8th year following the fish kill, continued improvements in the length distributions should be apparent at least through 2010.

The largemouth bass is more of a lake species than the smallmouth bass, and is common in the impoundments on the WFWR. However, it also is found occasionally at the run stations in lengths above the 12-in minimum size limit. Although the 2007 sample size for the largemouth bass was less than ideal, this species appeared to be satisfactory in terms of growth and relative weights.

In the final survey of the WFWR to follow up on the fish kill, set for 2010, an emphasis should be placed on collecting smallmouth and largemouth bass to get adequate sample sizes for growth and mortality calculations. Collection of otoliths is necessary to make sure that ages are accurately assigned. The black bass provide a significant, widely recognized angling resource in the WFWR. Angling for black bass constituted 66% of the fishing effort in 2002 (Ball 2005). The previous population modeling was from 2006

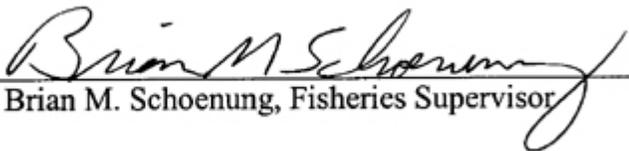
collections (Hoffman 2007), so a repeat of this process should be included with the 2010 report.

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Table 1. Species of fish and numbers of each stocked in the West Fork White River since the fish kill of 1999. Stockings ended in 2005.

| Common Name | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---------------------------|---------|--------|---------|---------|--------|-----------|
| Bigmouth buffalo | | | 34 | 29 | 28 | |
| Bluegill | 204,743 | | | | | |
| Black crappie | | 10 | | | | |
| Channel catfish | 202,304 | 57,748 | 68,377 | | | |
| Crappie (white and black) | 108 | 18 | | | | |
| Flathead catfish | 111 | 961 | 1,280 | | | |
| Freshwater drum | | | 139 | 67 | 68 | |
| Largemouth bass | 79,887 | 31,051 | 13,050 | | | |
| Rock bass | 22,176 | 9,280 | 9,697 | | | |
| Redear sunfish | 23 | | | | | |
| Sauger: fingerlings | | | 49,395 | 12,549 | 32,304 | 4,455 |
| Fry | | | 149,650 | 139,400 | | |
| Smallmouth bass | 32,626 | 22,074 | 3,771 | | | |
| Shorthead redhorse | | | 86 | 102 | 83 | |
| White crappie | 3,820 | | | | | |
| Total no. of fish 2000-05 | | | | | | 1,152,024 |

Table 2. Sampling stations in the upper West Fork White River study.

| Zone | Site No. | Station Location | Station Type | River Mile | 2007 Sampling Dates | |
|----------------------|------------------|---------------------------------------|--------------------------------|-------------|---------------------|--------------|
| Upper Reference Zone | 1 | Mounds State Park Canoe Launch | Riffle | 296.9 | 9/17 | |
| | 2 | Raible Ave. Bridge, Anderson | Run | 290.1 | 9/19 | |
| Upper River Zone | 3 | Madison County Rd 600W Bridge | Run | 284.4 | 9/20 | |
| | 4 | St. Rd. 13 bridge, Perkinsville | Riffle | 279.0 | 9/17 | |
| | 5 | Coffey Grounds, near Strawtown | Run | 275.9 | 9/19 | |
| | 6 | Clare Impoundment | Impoundment | 269.4 | 9/24-25 | |
| | 7 | Noblesville Public Access Site | Run | 263.6 | 9/18 | |
| | 8 | St. Rd. 32 Bridge, Noblesville | Riffle | 263.5 | 9/19 | |
| | 9 | Above 116 th St. Bridge | Riffle | 253.5 | 9/19 | |
| | 10 | Below 116 th St. Bridge | Run | 253.3 | 9/18 | |
| | 11 | Allisonville Rd. Bridge | Riffle | 247.9 | - | |
| | Lower River Zone | 12 | Upper Broad Ripple Impoundment | Impoundment | 246.6 | 9/26 – 10/24 |
| | | 13 | Landings Pit | Impoundment | 247.3 | 9/27 – 10/24 |
| 14 | | Lower Broad Ripple Impoundment | Impoundment | 244.2 | 9/25 – 10/24 | |
| 15 | | Meridian Street Bridge | Riffle | 241.3 | 9/20 | |
| 16 | | 53 rd Street, Indianapolis | Riffle | 238.5 | 9/18 | |
| 17 | | Lake Indy | Impoundment | 235.1 | 10/02 – 10/10 | |

Table 3. Average number of species per station for the reference, upper river, and lower river zones, West Fork White River, 2000 to 2004, and 2007.

| Sample | Reference zone | Upper river zone | Lower river zone |
|--------------|----------------|------------------|------------------|
| January 2000 | 18.0 | 5.3 | 10.3 |
| March 2000 | 21.5 | 6.0 | 17.8 |
| July 2000 | 18.5 | 14.2 | 16.5 |
| Fall 2001 | 21.0 | 18.0 | 22.8 |
| Fall 2002 | 22.0 | 20.9 | 23.2 |
| Fall 2003 | --- | 20.2 | 17.8 |
| Fall 2004 | 18.5 | 18.9 | 18.8 |
| Fall 2007 | 19.5 | 18.4 | 24.2 |

Table 4. Families and species collected from WFWR, fall 2007.

| FAMILY | Number | % No. | Weight (lbs.) | % Wt. |
|--------------------------------|--------|-------|---------------|-------|
| Clupeidae – Herrings and Shad | | | | |
| Gizzard shad | 623 | 9.1 | 140.18 | 8.3 |
| Esocidae – Pikes | | | | |
| Grass pickerel | 1 | 0.0 | 0.21 | 0.0 |
| Cyprinidae – Carps and Minnows | | | | |
| Common carp | 992 | 14.5 | 521.97 | 31.1 |
| Rosyface shiner | | | | |
| Golden shiner | | | | |
| Spotfin shiner | | | | |
| Creek chub | | | | |
| Sand shiner | | | | |
| Suckermouth minnow | | | | |
| Bluntnose minnow | | | | |
| Striped shiner | | | | |
| Fathead minnow | | | | |
| Silver shiner | | | | |
| Common stoneroller | | | | |
| Catostomidae – Suckers | | | | |
| River carpsucker | 1,257 | 18.3 | 409.76 | 24.4 |
| Golden redhorse | | | | |
| Quillback | | | | |
| Northern hog sucker | | | | |
| Silver redhorse | | | | |
| White sucker | | | | |
| Black redhorse | | | | |
| Spotted sucker | | | | |
| Ictaluridae – Catfishes | | | | |
| Yellow bullhead | 107 | 1.6 | 281.43 | 16.7 |
| Flathead catfish | | | | |
| Channel catfish | | | | |
| Stonecat | | | | |
| Fundulidae – Killifishes | | | | |
| Blackstripe topminnow | 8 | 0.1 | 0.13 | 0.0 |
| Atherinidae – Silversides | | | | |
| Brook silverside | 14 | 0.2 | 0.05 | 0.0 |
| Cottidae – Sculpins | | | | |
| Mottled sculpin | 33 | 0.5 | 0.30 | 0.0 |
| Moronidae – Temperate basses | | | | |
| White bass | 7 | 0.1 | 2.68 | 0.2 |
| Yellow bass | | | | |
| Centrarchidae – Sunfishes | | | | |
| Smallmouth bass | 3,178 | 46.3 | 306.14 | 18.2 |
| Longear sunfish | | | | |
| Spotted bass | | | | |
| Redear sunfish | | | | |
| Largemouth bass | | | | |
| Rock bass | | | | |
| Green sunfish | | | | |
| White crappie | | | | |
| Warmouth | | | | |
| Black crappie | | | | |
| Orangespotted sunfish | | | | |
| <i>Lepomis</i> hybrid | | | | |
| Bluegill | | | | |
| Percidae – Perches and Darters | | | | |
| Sauger | 638 | 9.3 | 17.95 | 1.1 |
| Logperch | | | | |
| Slenderhead darter | | | | |
| Greenside darter | | | | |
| Totals | 6,858 | 100.0 | 1,680.80 | 100.0 |

Table 5. Proportional stock density values of selected species from fall sampling of the West Fork White River, 2001 to 2007. Stock number is the number of fish of stock size in the sample (electrofishing only for largemouth, smallmouth and rock bass, bluegill, but all samples for channel catfish). Only smallmouth and largemouth bass were collected in 2006.

| Species | Index and length range | 2001 | 2002 | 2003 | 2004 | 2006 | 2007 |
|-----------------|------------------------|------|------|------|------|------|------|
| Channel catfish | RSD-Q (11.0-15.9") | 28 | 39 | 80 | 88 | | 91 |
| | RSD-P (16.0-23.9") | - | 4 | 6 | 4 | | 31 |
| | RSD-M (24.0-27.9") | - | 1 | 0 | 0 | | 0 |
| | Stock No. | | | | | | 65 |
| Bluegill | RSD-Q (3.0-5.9") | 36 | 20 | 27 | 27 | | 21 |
| | RSD-P (6.0-7.9") | - | 0 | 0 | 0 | | 1 |
| | RSD-M (8.0-9.9") | - | 0 | 0 | 0 | | 0 |
| | Stock No. | | | | | | 112 |
| Rock bass | RSD-Q (4.0-6.9") | 14 | 22 | 52 | 35 | | 62 |
| | RSD-P (7.0-8.9") | - | 0 | 2 | 1 | | 6 |
| | RSD-M (9.0-10.9") | - | 0 | 0 | 0 | | 0 |
| | Stock No. | | | | | | 126 |
| Largemouth bass | RSD-Q (8.0-11.9") | 37 | 52 | 54 | 40 | 49 | ---* |
| | RSD-P (12.0-14.9") | 16 | 24 | 20 | 8 | 25 | ---* |
| | RSD-M (15.0-19.9") | 5 | 2 | 2 | 0 | 1 | ---* |
| | Stock No. | | | | | 68 | 23 |
| Smallmouth bass | RSD-Q (7.0-10.9") | 13 | 20 | 37 | 35 | 51 | 52 |
| | RSD-P (11.0-13.9") | 5 | 5 | 5 | 9 | 9 | 17 |
| | RSD-M (14.0-16.9") | 0 | 0 | 0 | 1 | 1 | 4 |
| | Stock No. | | | | | 147 | 104 |

*Sample size too small for determining stock densities.

Table 6. Growth of smallmouth bass in the West Fork White River, fall 2007 compared to fall 2004 and fall 2006, with District 5 averages. The 2004 data is from back-calculated length-at-age data, but the latter years are from age-length keys, which allow most of an additional year's growth for fall-captured fish.

| Yr. of Survey | | No. of Annuli and Lengths in Inches | | | | | | | | | |
|---|----------------------------|-------------------------------------|---------|----------|-----------|-----------|-----------|-----------|-----------|------|------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 2004 | Avg. L. | 3.8 | 6.1 | 8.9 | 10.9 | 12.3 | 12.6 | 14.5 | 15.7 | | |
| | Sample Size | 120 | 103 | 77 | 51 | 20 | 5 | 3 | 1 | | |
| 2006 | Avg. L. | 5.8 | 7.9 | 8.7 | 11.0 | 12.2 | 14.1 | 15.5 | 15.5 | | |
| | Sample Size | 33 | 47 | 8 | 63 | 35 | 22 | 2 | 1 | | |
| 2007 | Avg. L. | 6.2 | 8.6 | 10.2 | 11.7 | 13.0 | 14.4 | 15.3 | 18.0 | 17.8 | 19.3 |
| | Sample Size | 27 | 27 | 24 | 12 | 23 | 11 | 2 | 2 | 1 | 1 |
| | Variance | 0.47 | 1.06 | 0.96 | 1.43 | 1.18 | 1.11 | 0.50 | 0.13 | --- | --- |
| | Confidence Intervals (95%) | 6.0-6.5 | 8.2-9.0 | 9.8-10.6 | 11.0-12.4 | 12.6-13.5 | 13.8-15.1 | 14.3-16.3 | 17.5-18.5 | | |
| District 5 Averages for back-calculated lengths | | 3.6 | 6.4 | 8.9 | 10.9 | 12.7 | | | | | |

Table 7. Growth of largemouth bass in the West Fork White River, fall 2007 compared to fall 2004 and 2006, with District 5 averages. The 2004 data is from back-calculated length-at-age data, but the latter years are from age-length keys, which allow most of an additional year's growth for fall-captured fish.

| Yr. of Survey | | No. of Annuli and Lengths in Inches | | | | | | | | | | |
|---|----------------------------|-------------------------------------|---------|-----------|-----------|-----------|------|------|-----------|-----------|------|------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 12* |
| 2004 | Avg. L. | 3.1 | 6.0 | 9.3 | 11.9 | 12.7 | 13.3 | | | | | |
| | Sample Size | 83 | 49 | 34 | 18 | 4 | 1 | | | | | |
| 2006 | Avg. L. | 6.9 | 9.7 | 11.9 | 12.7 | 14.0 | 15.5 | 16.4 | 15.8 | - | 17.5 | 20.5 |
| | Sample Size | 26 | 20 | 9 | 7 | 6 | 4 | 10 | 3 | | 1 | 1 |
| 2007 | Avg. L. | 8.3 | 8.7 | 10.9 | 12.2 | 13.3 | 15.3 | 16.3 | 17.8 | 18.1 | | |
| | Sample Size | 1 | 6 | 5 | 7 | 2 | 1 | 1 | 2 | 3 | | |
| | Variance | --- | 0.24 | 0.80 | 0.29 | 0.50 | --- | --- | 0.50 | 0.33 | | |
| | Confidence Intervals (95%) | | 8.3-9.1 | 10.1-11.7 | 11.8-12.6 | 12.3-14.3 | | | 16.8-18.8 | 17.4-18.8 | | |
| District 5 Averages for back-calculated lengths (lakes) | | 4.4 | 8.2 | 10.9 | 13.0 | 14.6 | | | | | | |

*No age 11 bass for these samples.

Table 8. Growth of bluegill in the West Fork White River, fall 2007 compared to fall 2004, with District 5 averages for streams. The 2004 data is from back-calculated length-at-age data, but the 2007 data is from an age-length key, which allows most of an additional year's growth for fall-captured fish.

| Yr. of Survey | | No. of Annuli and Lengths in Inches | | | | |
|---|----------------------------|-------------------------------------|---------|---------|---------|-----|
| | | 1 | 2 | 3 | 4 | 5 |
| 2004 | Avg. L. | 1.8 | 3.4 | 5.2 | 6.3 | 7.5 |
| | Sample Size | 4 | 34 | 35 | 31 | 1 |
| 2007 | Avg. L. | 4.1 | 5.8 | 6.3 | 7.2 | 8.3 |
| | Sample Size | 93 | 90 | 42 | 10 | 1 |
| | Variance | 0.25 | 0.27 | 0.64 | 0.25 | --- |
| | Confidence Intervals (95%) | 4.0-4.2 | 5.7-5.9 | 6.1-6.6 | 6.9-7.5 | --- |
| District 5 Stream Avg. for back-calculated lengths-at-age | | 1.7 | 3.6 | 5.3 | 6.4 | |

Table 9. Growth of rock bass in the West Fork White River, fall 2007 compared to fall 2004, with District 5 averages for streams. The 2004 data is from back-calculated length-at-age data, but the 2007 data is from an age-length key, which allows most of an additional year's growth for fall-captured fish.

| Yr. of Survey | | No. of Annuli and Lengths in Inches | | | | | |
|--|----------------------------|-------------------------------------|---------|---------|---------|---------|---------|
| | | 1 | 2 | 3 | 4 | 5 | 6 |
| 2004 | Avg. L. | 2.2 | 4.0 | 5.9 | 7.1 | 7.8 | 8.1 |
| | Sample Size | 106 | 71 | 44 | 21 | 6 | 4 |
| 2007 | Avg. L. | 4.0 | 5.6 | 7.0 | 7.9 | 8.3 | 8.6 |
| | Sample Size | 24 | 56 | 100 | 30 | 39 | 6 |
| | Variance | .06 | 0.48 | 0.32 | 0.09 | 0.49 | 0.17 |
| | Confidence Intervals (95%) | 3.9-4.1 | 5.5-5.8 | 6.9-7.1 | 7.8-8.0 | 8.1-8.5 | 8.3-9.0 |
| District 5 Averages for back-calculated lengths. | | 2.0 | 3.5 | 5.2 | 6.4 | 7.1 | 7.6 |

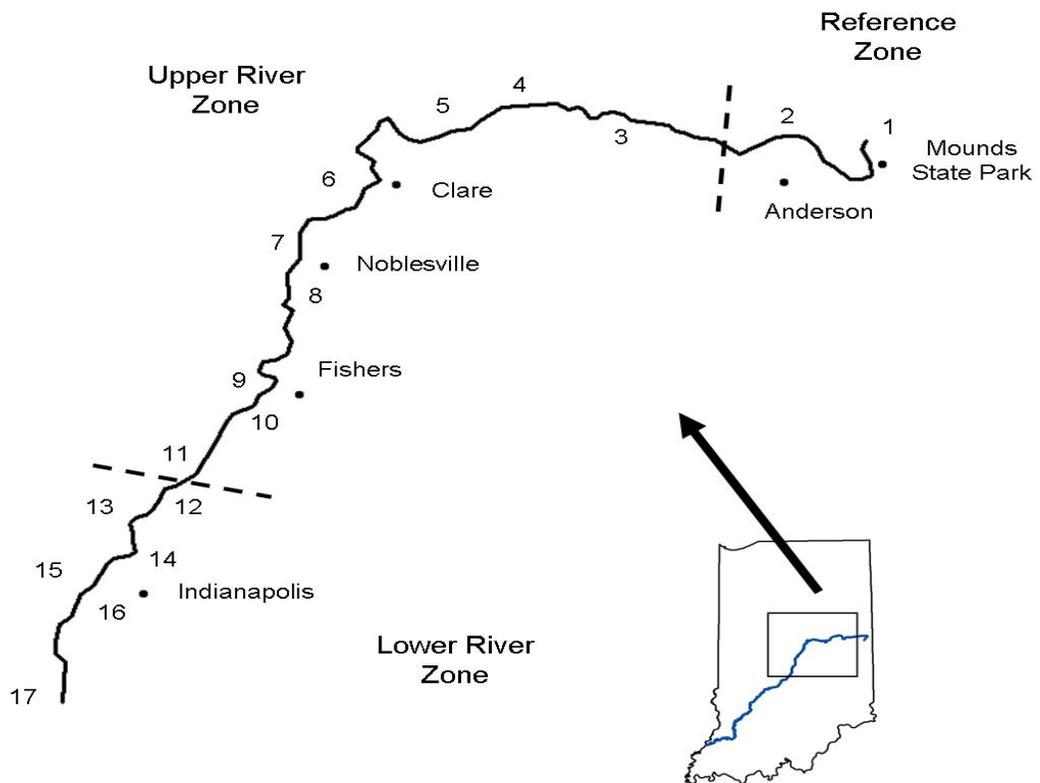


Figure 1. Fall fishery sampling stations for the West Fork White River, 2001 to 2007.

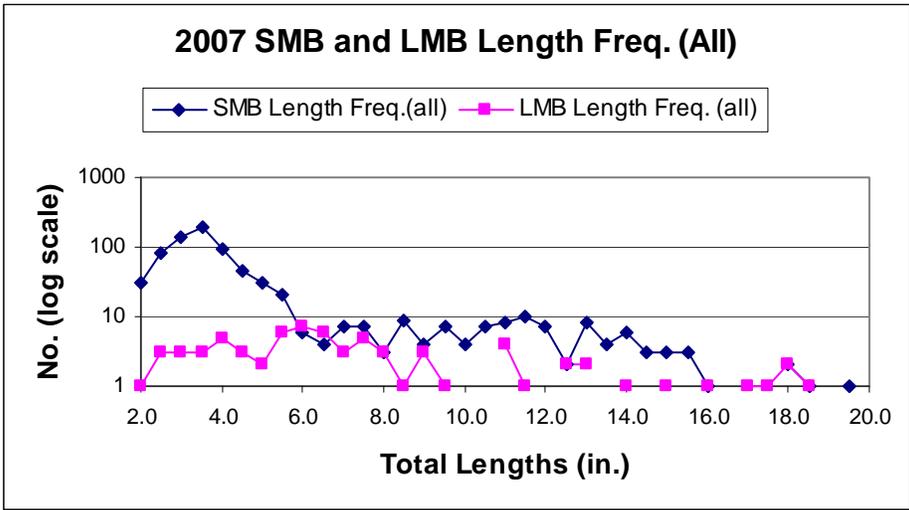


Figure 2. Smallmouth and largemouth bass length frequencies for all lengths.

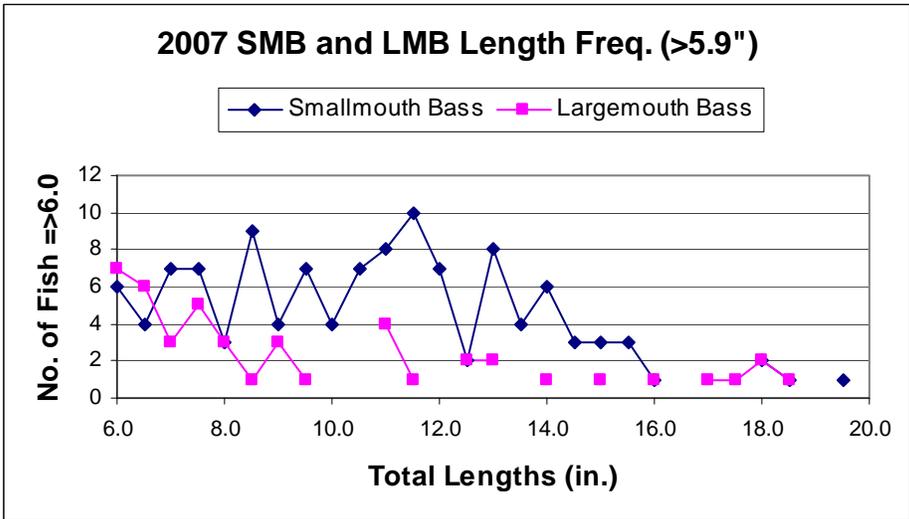


Figure 3. Smallmouth and largemouth bass length frequencies for lengths greater than 5.9 in.

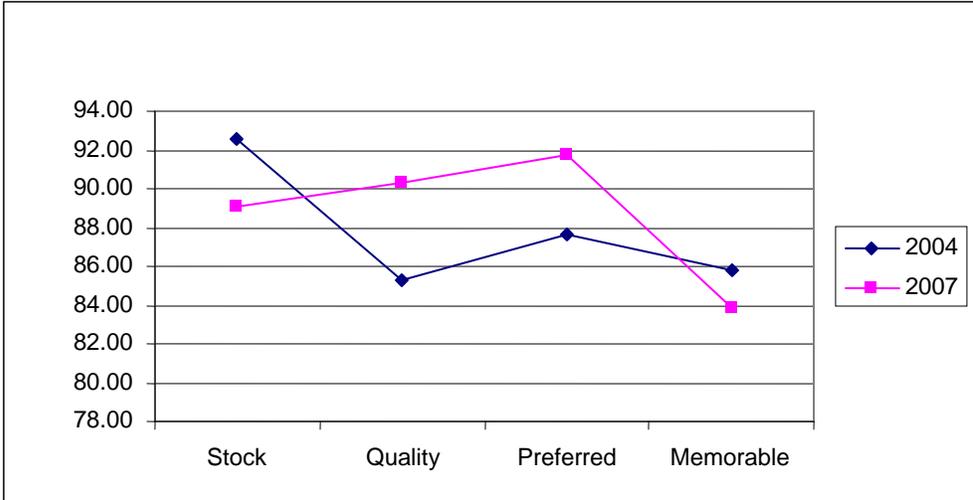


Figure 4. Relative weights of smallmouth bass in 2004 and 2007.

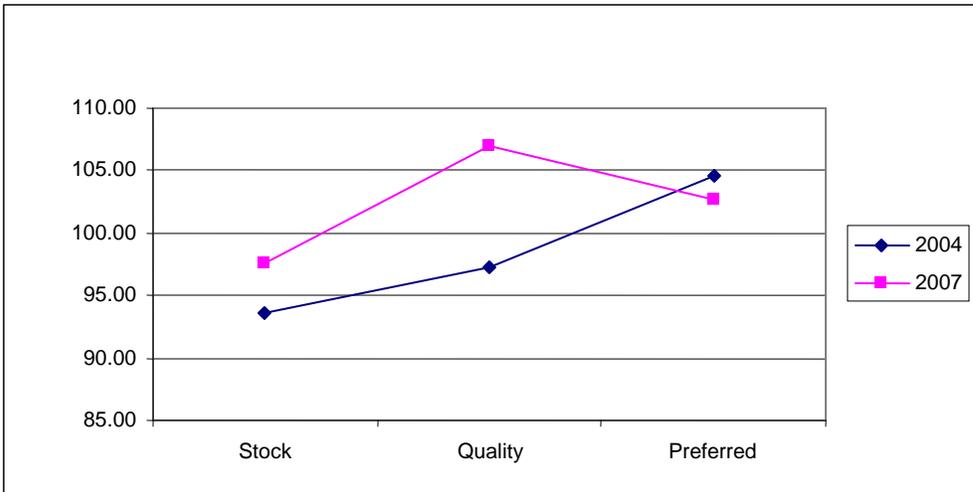


Figure 5. Relative weights of largemouth bass in 2004 and 2007.

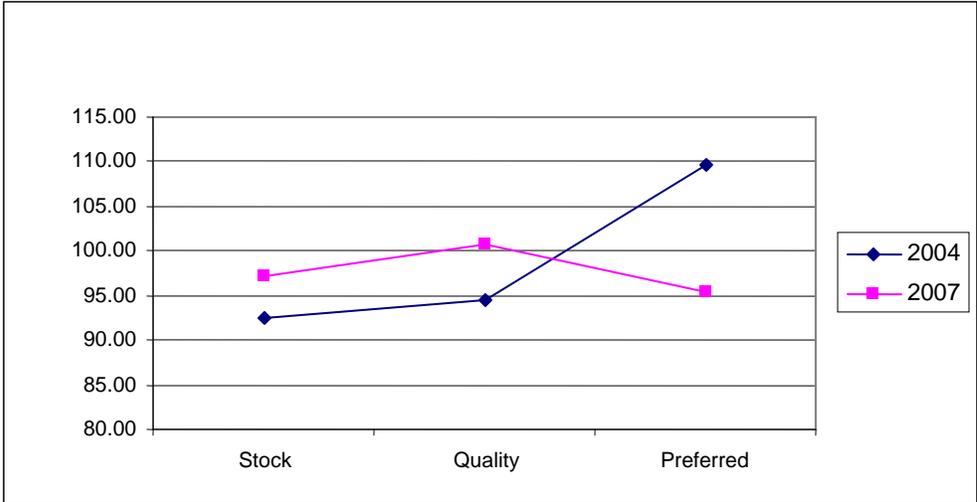


Figure 6. Relative weights of bluegill in 2004 and 2007.

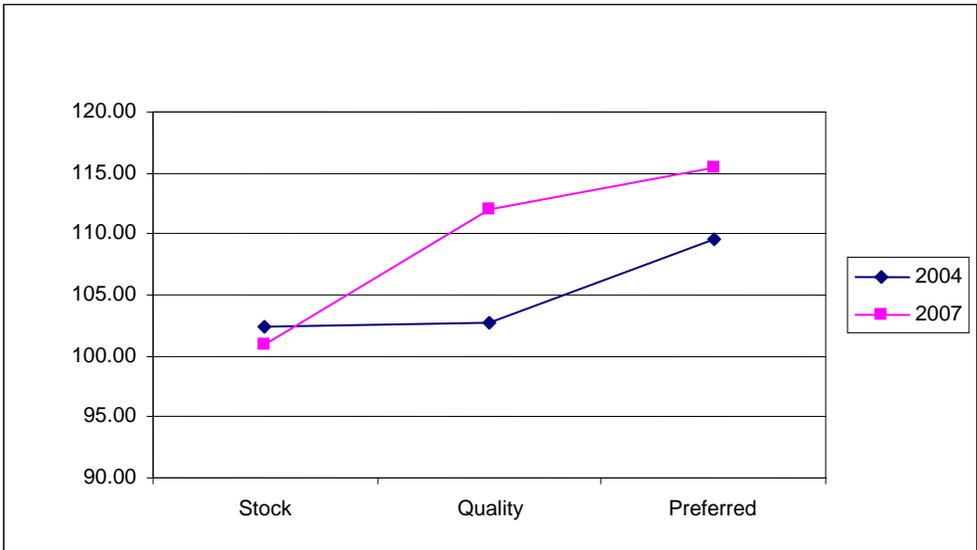


Figure 7. Relative weights of rock bass in 2004 and 2007.

Appendix A. Species collected by station, zone, and all stations combined.

Date: 9/17/2007

Station 1, Mounds St. Park Canoe Launch

River mile 296.9

Stream West Fork White River

Name, number, percentage, size, and weight of fish collected

| Common Name | Number | % | Size range (in) | Total weight (lbs) | % |
|---------------------|--------|------|--------------------|-----------------------|------|
| Creek chub | 34 | 5.7 | 2.4 - 4.7 | 0.39 | 0.9 |
| Suckermouth minnow | 3 | 0.5 | 3.6 - 4.0 | 0.06 | 0.1 |
| Striped shiner | 24 | 4.0 | 2.2 - 3.3 | 0.13 | 0.3 |
| Silver shiner | 18 | 3.0 | 2.3 - 4.8 | 0.29 | 0.7 |
| Rosyface shiner | 6 | 1.0 | 2.2 - 3.1 | 0.03 | 0.1 |
| Spotfin shiner | 5 | 0.8 | 2.8 - 3.8 | 0.07 | 0.2 |
| Sand shiner | 8 | 1.3 | 2.2 - 2.6 | 0.03 | 0.1 |
| Bluntnose minnow | 4 | 0.7 | 1.6 - 2.6 | 0.02 | 0.0 |
| Common stoneroller | 139 | 23.3 | 1.9 - 3.1 | 0.81 | 1.8 |
| Quillback | 1 | 0.2 | 16.7 - 16.7 | 1.96 | 4.4 |
| Black redhorse | 10 | 1.7 | 2.5 - 18.2 | 4.40 | 9.9 |
| Golden redhorse | 11 | 1.8 | 2.5 - 8.5 | 0.31 | 0.7 |
| Northern hog sucker | 127 | 21.3 | 2.2 - 13.7 | 22.12 | 49.7 |
| White sucker | 7 | 1.2 | 2.3 - 11.4 | 1.24 | 2.8 |
| Stonecat | 3 | 0.5 | 3.2 - 4.8 | 0.09 | 0.2 |
| Mottled sculpin | 23 | 3.9 | 2 - 3.5 | 0.30 | 0.7 |
| Smallmouth bass | 84 | 14.1 | 1.8 - 12.0 | 6.21 | 14.0 |
| Green sunfish | 5 | 0.8 | 2.7 - 4.9 | 0.26 | 0.6 |
| Warmouth | 1 | 0.2 | 6 - 6.0 | 0.17 | 0.4 |
| Bluegill | 5 | 0.8 | 3.9 - 6.0 | 0.45 | 1.0 |
| Longear sunfish | 3 | 0.5 | 2.7 - 4.6 | 0.13 | 0.3 |
| Rock bass | 16 | 2.7 | 1.9 - 9.0 | 4.75 | 10.7 |
| Lepomis hybrid | 1 | 0.2 | 3.3 - 3.3 | 0.02 | 0.0 |
| Rainbow darter | 27 | 4.5 | 1.6 - 1.9 | 0.08 | 0.2 |
| Greenside darter | 32 | 5.4 | 1.9 - 2.7 | 0.16 | 0.4 |
| Total - 24 Species | 597 | | | 44.48 | |

Date: 9/19/2007

Station 2 Raible Ave. Bridge, Anderson

River mile 290.1

Stream West Fork White River

Name, number, percentage, size, and weight of fish collected

| Common Name | Number | % | Size range (in) | Total weight (lbs) | % |
|---------------------|--------|------|--------------------|-----------------------|------|
| Silver shiner | 3 | 2.3 | 2.5 - 2.8 | 0.01 | 0.0 |
| Spotfin shiner | 2 | 1.6 | 2.8 - 2.9 | 0.02 | 0.0 |
| Black redhorse | 5 | 3.9 | 11 - 11.9 | 2.33 | 4.1 |
| Golden redhorse | 1 | 0.8 | 9.5 - 9.5 | 0.33 | 0.6 |
| Northern hog sucker | 60 | 46.5 | 3.3 - 13.2 | 21.75 | 37.9 |
| White sucker | 1 | 0.8 | 13.3 - 13.3 | 0.92 | 1.6 |
| Yellow bullhead | 2 | 1.6 | 7.8 - 9.1 | 0.62 | 1.1 |
| Channel catfish | 1 | 0.8 | 23.3 - 23.3 | 5.75 | 10.0 |
| Smallmouth bass | 21 | 16.3 | 2.7 - 18.4 | 19.3 | 33.7 |
| Green sunfish | 3 | 2.3 | 3.5 - 5.1 | 0.15 | 0.3 |
| Warmouth | 1 | 0.8 | 4.4 - 4.4 | 0.06 | 0.1 |
| Bluegill | 7 | 5.4 | 4.1 - 7.9 | 0.86 | 1.5 |
| Longear sunfish | 3 | 2.3 | 2.2 - 4.7 | 0.17 | 0.3 |
| Rock bass | 15 | 11.6 | 6.3 - 9.1 | 4.75 | 8.3 |
| Logperch | 4 | 3.1 | 5.8 - 6.4 | 0.3 | 0.5 |
| Total = 15 species | 129 | | | 57.32 | |

Date: 9/20/2007

Station 3, 600W Bridge, Madison County
 River mile 284.4
 Stream West Fork White River

Name, number, percentage, size, and weight of fish collected

| Common Name | Number | % | Size range (in) | Total weight (lbs) | % |
|--------------------|--------|------|--------------------|-----------------------|------|
| Common carp | 20 | 16.3 | 21.2 - 29.3 | 157 | 76.5 |
| Silver shiner | 11 | 8.9 | 3.1 - 5.1 | 0.27 | 0.1 |
| Spotfin shiner | 9 | 7.3 | 3.1 - 4.2 | 0.18 | 0.1 |
| Bluntnose minnow | 17 | 13.8 | 1.8 - 3.4 | 0.09 | 0.0 |
| Golden redhorse | 1 | 0.8 | 2.7 - 2.7 | 0.01 | 0.0 |
| White sucker | 4 | 3.3 | 12.7 - 15.4 | 2.75 | 1.3 |
| Channel catfish | 6 | 4.9 | 20.7 - 25.8 | 30.25 | 14.7 |
| Smallmouth bass | 19 | 15.4 | 2.5 - 14.8 | 9.73 | 4.7 |
| Bluegill | 12 | 9.8 | 1.2 - 6.3 | 1.32 | 0.6 |
| Longear sunfish | 5 | 4.1 | 1.7 - 5.3 | 0.52 | 0.3 |
| Rock bass | 10 | 8.1 | 4 - 9 | 2.9 | 1.4 |
| Logperch | 7 | 5.7 | 3.7 - 6.2 | 0.29 | 0.1 |
| Greenside darter | 2 | 1.6 | 2.5 - 2.7 | 0.04 | 0.0 |
| Total = 13 species | 123 | | | 205.35 | |

Date: 9/17/2007

Station 4, Perkinsville
 River mile 279
 Stream West Fork White River

Name, number, percentage, size, and weight of fish collected

| Common Name | Number | % | Size range (in) | Total weight (lbs) | % |
|---------------------|--------|------|--------------------|-----------------------|------|
| Striped shiner | 1 | 0.5 | 2.5 - 2.5 | 0.01 | 0.1 |
| Spotfin shiner | 2 | 1.0 | 4.4 - 4.4 | 0.05 | 0.3 |
| Bluntnose minnow | 8 | 3.8 | 2 - 3.2 | 0.03 | 0.2 |
| Common stoneroller | 1 | 0.5 | 2.3 - 2.3 | 0.04 | 0.2 |
| Black redhorse | 4 | 1.9 | 2.7 - 3.5 | 0.06 | 0.4 |
| Golden redhorse | 8 | 3.8 | 2.7 - 3.2 | 0.09 | 0.5 |
| Northern hog sucker | 19 | 9.1 | 2.5 - 12.1 | 4.4 | 26.1 |
| White sucker | 2 | 1.0 | 4.3 - 4.3 | 0.06 | 0.4 |
| Spotted sucker | 1 | 0.5 | 3.3 - 3.3 | 0.01 | 0.1 |
| Channel catfish | 1 | 0.5 | 20.5 - 20.5 | 3.88 | 23.0 |
| Stonecat | 1 | 0.5 | 3 - 3 | 0.01 | 0.1 |
| Smallmouth bass | 38 | 18.3 | 2.2 - 14.1 | 2.41 | 14.3 |
| Green sunfish | 4 | 1.9 | 3.6 - 4.6 | 0.24 | 1.4 |
| Warmouth | 1 | 0.5 | 5.5 - 5.5 | 0.13 | 0.8 |
| Bluegill | 2 | 1.0 | 1.7 - 4.7 | 0.06 | 0.4 |
| Longear sunfish | 38 | 18.3 | 1.7 - 5.7 | 1.01 | 6.0 |
| Rock bass | 37 | 17.8 | 1.8 - 8.2 | 4.19 | 24.8 |
| Logperch | 1 | 0.5 | 3.5 - 3.5 | 0.02 | 0.1 |
| Greenside darter | 24 | 11.5 | 2.1 - 3.4 | 0.14 | 0.8 |
| Rainbow darter | 15 | 7.2 | 1.6 - 2.1 | 0.04 | 0.2 |
| Total = 20 species | 208 | | | 16.88 | |

Date: 9/19/2007

Station 5, Coffee Grounds
 River mile 275.9
 Stream West Fork White River

Name, number, percentage, size, and weight of fish collected

| Common Name | Number | % | Size range (in) | Total weight (lbs) | % |
|---------------------|--------|------|--------------------|-----------------------|------|
| Common carp | 12 | 9.4 | 20.2 - 24.3 | 66.25 | 46.5 |
| Silver shiner | 4 | 3.1 | 3.7 - 5.2 | 0.13 | 0.1 |
| Spotfin shiner | 1 | 0.8 | 3.3 - 3.3 | 0.01 | 0.0 |
| Quillback | 3 | 2.3 | 4.4 - 4.6 | 0.16 | 0.1 |
| Black redhorse | 9 | 7.0 | 4.4 - 16.9 | 10.5 | 7.4 |
| Golden redhorse | 10 | 7.8 | 14.1 - 18.1 | 16 | 11.2 |
| Northern hog sucker | 47 | 36.7 | 3.7 - 15 | 30.25 | 21.2 |
| White sucker | 3 | 2.3 | 10 - 16 | 2.19 | 1.5 |
| Channel catfish | 2 | 1.6 | 20.5 - 23.5 | 8.85 | 6.2 |
| Stonecat | 1 | 0.8 | 5.3 - 5.3 | 0.11 | 0.1 |
| Smallmouth bass | 4 | 3.1 | 10.8 - 11.6 | 3.01 | 2.1 |
| Warmouth | 1 | 0.8 | 6.3 - 6.3 | 0.27 | 0.2 |
| Longear sunfish | 7 | 5.5 | 3.6 - 5.6 | 0.27 | 0.2 |
| Redear sunfish | 1 | 0.8 | 6.6 - 6.6 | 0.27 | 0.2 |
| Rock bass | 10 | 7.8 | 6 - 9 | 3.86 | 2.7 |
| Logperch | 13 | 10.2 | 3.3 - 5.4 | 0.35 | 0.2 |
| Total = 16 species | 128 | | | 142.48 | |

Date: 9/24-25/2007

Station 6, Clare Impoundment
 River mile 269.4
 Stream West Fork White River

Name, number, percentage, size, and weight of fish collected

| Common Name | Number | % | Size range (in) | Total weight (lbs) | % |
|---------------------|--------|------|--------------------|-----------------------|------|
| Gizzard shad | 5 | 1.8 | 8 - 15.8 | 4.33 | 2.5 |
| Grass pickerel | 1 | 0.4 | 9.5 - 9.5 | 0.21 | 0.1 |
| Common carp | 15 | 5.4 | 12 - 26.1 | 77.23 | 44.5 |
| Quillback | 4 | 1.4 | 12.6 - 16.2 | 5.66 | 3.3 |
| Black redhorse | 1 | 0.4 | 10.6 - 10.6 | 0.44 | 0.3 |
| Golden redhorse | 20 | 7.1 | 2.5 - 16.9 | 21.65 | 12.5 |
| Northern hog sucker | 4 | 1.4 | 3.8 - 13.3 | 2.7 | 1.6 |
| White sucker | 26 | 9.3 | 11.1 - 16.6 | 25.83 | 14.9 |
| Spotted sucker | 10 | 3.6 | 4.2 - 16.6 | 7.56 | 4.4 |
| Yellow bullhead | 5 | 1.8 | 7.9 - 10.2 | 1.95 | 1.1 |
| Channel catfish | 9 | 3.2 | 8.6 - 13.7 | 2.76 | 1.6 |
| Smallmouth bass | 7 | 2.5 | 2.3 - 12.7 | 1.64 | 0.9 |
| Spotted bass | 1 | 0.4 | 4.4 - 4.4 | 0.04 | 0.0 |
| Green sunfish | 15 | 5.4 | 3 - 5.7 | 1.17 | 0.7 |
| Warmouth | 3 | 1.1 | 5.1 - 5.9 | 0.38 | 0.2 |
| Bluegill | 28 | 10.0 | 1.2 - 6.9 | 1.32 | 0.8 |
| Longear sunfish | 63 | 22.5 | 1.8 - 5.2 | 2.62 | 1.5 |
| Redear sunfish | 1 | 0.4 | 5.6 - 5.6 | 0.1 | 0.1 |
| Rock bass | 51 | 18.2 | 1.9 - 8.8 | 14.23 | 8.2 |
| White crappie | 6 | 2.1 | 3.4 - 9.6 | 1.81 | 1.0 |
| Logperch | 5 | 1.8 | 3.4 - 4.1 | 0.11 | 0.1 |
| Total = 21 species | 280 | | | 173.74 | |

Date: 9/18/2007

Station 7, Noblesville Public Access Site

River mile 263.6

Stream West Fork White River

Name, number, percentage, size, and weight of fish collected

| Common Name | Number | % | Size range (in) | Total weight (lbs) | % |
|---------------------|--------|------|--------------------|-----------------------|------|
| Gizzard shad | 37 | 24.0 | 9.8 - 12 | 14.5 | 7.6 |
| Common carp | 17 | 11.0 | 18 - 25.7 | 82.25 | 43.4 |
| Golden redhorse | 10 | 6.5 | 7.6 - 17 | 12 | 6.3 |
| Northern hog sucker | 29 | 18.8 | 4.2 - 13 | 14.75 | 7.8 |
| Spotted sucker | 3 | 1.9 | 3.7 - 15.4 | 1.55 | 0.8 |
| Channel catfish | 14 | 9.1 | 16.7 - 23 | 49.37 | 26.0 |
| Smallmouth bass | 10 | 6.5 | 3.6 - 15.5 | 5.09 | 2.7 |
| Green sunfish | 2 | 1.3 | 3.4 - 4 | 0.06 | 0.0 |
| Bluegill | 5 | 3.2 | 4.4 - 6.5 | 0.54 | 0.3 |
| Longear | 7 | 4.5 | 4.4 - 6.2 | 0.87 | 0.5 |
| Rock bass | 10 | 6.5 | 5.7 - 9.2 | 4.76 | 2.5 |
| White crappie | 1 | 0.6 | 8.8 - 8.8 | 0.26 | 0.1 |
| Black crappie | 7 | 4.5 | 8.3 - 10.5 | 2.49 | 1.3 |
| Sauger | 1 | 0.6 | 15.2 - 15.2 | 1.05 | 0.6 |
| Logperch | 1 | 0.6 | 6.3 - 6.3 | 0.11 | 0.1 |
| Total = 15 species | 154 | | | 189.65 | |

Date: 9/19/2007

Station 8, Hwy. 32 Bridge, Noblesville

River mile 263.5

Stream West Fork White River

Name, number, percentage, size, and weight of fish collected

| Common Name | Number | % | Size range (in) | Total weight (lbs) | % |
|---------------------|--------|------|--------------------|-----------------------|------|
| Silver Shiner | 1 | 0.2 | 3.7 - 3.7 | 0.01 | 0.1 |
| Spotfin shiner | 6 | 1.0 | 2.9 - 4.2 | 0.09 | 0.6 |
| Common stoneroller | 68 | 11.0 | 3.2 - 5.5 | 2.15 | 14.6 |
| Bluntnose minnow | 38 | 6.2 | 2.3 - 2.6 | 0.42 | 2.9 |
| Black redhorse | 7 | 1.1 | 4.3 - 4.7 | 0.19 | 1.3 |
| Golden redhorse | 24 | 3.9 | 2.6 - 3.3 | 0.24 | 1.6 |
| Northern hog sucker | 62 | 10.1 | 3.1 - 5.4 | 1.63 | 11.1 |
| White sucker | 6 | 1.0 | 4 - 5.1 | 0.18 | 1.2 |
| Spotted sucker | 12 | 1.9 | 3.5 - 4.2 | 0.21 | 1.4 |
| Stonecat | 3 | 0.5 | 1.5 - 5.6 | 0.15 | 1.0 |
| Brook silverside | 6 | 1.0 | 2.4 - 3 | 0.02 | 0.1 |
| Smallmouth bass | 121 | 19.6 | 2.4 - 5.5 | 1.95 | 13.3 |
| Green sunfish | 66 | 10.7 | 2.1 - 5.4 | 2.37 | 16.1 |
| Bluegill | 18 | 2.9 | 1.4 - 2.8 | 0.19 | 1.3 |
| Longear sunfish | 48 | 7.8 | 1.5 - 6.4 | 2.11 | 14.3 |
| Rock bass | 25 | 4.1 | 2 - 8.6 | 1.19 | 8.1 |
| Black crappie | 2 | 0.3 | 9.9 - 10.5 | 1.2 | 8.2 |
| Logperch | 4 | 0.6 | 4 - 5.5 | 0.15 | 1.0 |
| Greenside darter | 94 | 15.3 | 2.2 - 3.7 | 0.24 | 1.6 |
| Rainbow darter | 5 | 0.8 | 1.5 - 2 | 0.02 | 0.1 |
| Total = 20 species | 616 | | | 14.71 | |

Date: 9/19/2007

Station 9, Above 116th St. Bridge

River mile 253.5

Stream West Fork White River

Name, number, percentage, size, and weight of fish collected

| Common Name | Number | % | Size range (in) | Total weight (lbs) | % |
|-----------------------|--------|------|--------------------|-----------------------|------|
| Silver shiner | 7 | 1.1 | 5 - 5.4 | 0.3 | 0.5 |
| Spotfin shiner | 7 | 1.1 | 1.8 - 2.2 | 0.01 | 0.0 |
| Sand shiner | 3 | 0.5 | 2.6 - 2.9 | 0.02 | 0.0 |
| Common stoneroller | 148 | 22.5 | 2.3 - 4.8 | 2.9 | 5.2 |
| Silver redhorse | 2 | 0.3 | 4.4 - 4.5 | 0.08 | 0.1 |
| Black redhorse | 7 | 1.1 | 3.5 - 4.5 | 0.16 | 0.3 |
| Golden redhorse | 3 | 0.5 | 3 - 6 | 0.04 | 0.1 |
| Northern hog sucker | 148 | 22.5 | 2.5 - 14.6 | 15.47 | 27.5 |
| White sucker | 3 | 0.5 | 4.6 - 5.7 | 0.17 | 0.3 |
| Spotted sucker | 6 | 0.9 | 3.9 - 4.7 | 0.16 | 0.3 |
| Channel catfish | 3 | 0.5 | 24.5 - 25 | 15.43 | 27.4 |
| Stonecat | 1 | 0.2 | 3.4 - 3.4 | 0.02 | 0.0 |
| Blackstripe topminnow | 1 | 0.2 | 1.9 - 1.9 | 0.01 | 0.0 |
| Smallmouth bass | 158 | 24.0 | 2.4 - 15.1 | 15.27 | 27.1 |
| Largemouth bass | 5 | 0.8 | 2.2 - 4 | 0.06 | 0.1 |
| Green sunfish | 20 | 3.0 | 2 - 5.5 | 0.54 | 1.0 |
| Bluegill | 18 | 2.7 | 1.5 - 5.3 | 0.76 | 1.3 |
| Longear sunfish | 12 | 1.8 | 2 - 6.1 | 0.62 | 1.1 |
| Redear sunfish | 1 | 0.2 | 6.4 - 6.4 | 0.2 | 0.4 |
| Rock bass | 35 | 5.3 | 2.2 - 8.9 | 3.29 | 5.8 |
| Lepomis hybrid | 1 | 0.2 | 5.8 - 5.8 | 0.17 | 0.3 |
| Logperch | 9 | 1.4 | 3.7 - 5.2 | 0.17 | 0.3 |
| Greenside darter | 51 | 7.7 | 2.5 - 3.5 | 0.43 | 0.8 |
| Rainbow darter | 4 | 0.6 | 1.8 - 2.2 | 0.01 | 0.0 |
| Johnny darter | 4 | 0.6 | 2.1 - 2.2 | 0.01 | 0.0 |
| Orangethroat darter | 2 | 0.3 | 2.1 - 2.2 | 0.01 | 0.0 |
| Total = 25 species | 659 | | | 56.31 | |

Date: 9/18/2007

Station 10, 116th St. Bridge (below bridge)

River mile 253.3

Stream West Fork White River

Name, number, percentage, size, and weight of fish collected

| Common Name | Number | % | Size range (in) | Total weight (lbs) | % |
|---------------------|--------|------|--------------------|-----------------------|------|
| Gizzard shad | 40 | 12.4 | 8.7 - 13 | 16 | 11.2 |
| Common carp | 7 | 2.9 | 18.6 - 25.7 | 32.25 | 22.6 |
| Spotfin shiner | 3 | 1.2 | 2.3 - 3.8 | 0.04 | 0.0 |
| Black redhorse | 9 | 3.7 | 3.8 - 16.7 | 6.75 | 4.7 |
| Golden redhorse | 12 | 5.0 | 4.6 - 17.7 | 7.75 | 5.4 |
| Northern hog sucker | 92 | 38.2 | 3.3 - 14 | 48.75 | 34.2 |
| Spotted sucker | 4 | 1.7 | 4.2 - 4.9 | 0.13 | 0.1 |
| Channel catfish | 2 | 0.8 | 23.2 - 24.4 | 12 | 8.4 |
| Flathead catfish | 1 | 0.4 | 15.6 - 15.6 | 1.4 | 1.0 |
| Smallmouth bass | 17 | 7.1 | 3.3 - 15.9 | 8.19 | 5.7 |
| Green sunfish | 2 | 0.8 | 3.7 - 4.2 | 0.09 | 0.1 |
| Bluegill | 31 | 12.9 | 3.8 - 7.5 | 5.09 | 3.6 |
| Longear sunfish | 2 | 0.8 | 3.7 - 4.4 | 0.12 | 0.1 |
| Rock bass | 5 | 2.1 | 3.8 - 7.8 | 1.3 | 0.9 |
| Sauger | 1 | 0.4 | 18.9 - 18.9 | 2.17 | 1.5 |
| Logperch | 22 | 9.1 | 3.4 - 6.2 | 0.63 | 0.4 |
| Greenside darter | 1 | 0.4 | 3.3 - 3.3 | 0.02 | 0.0 |
| Total = 17 species | 241 | | | 142.68 | |

Date: 10/1-2, 10/24/2007

Station 12, Upper Broad Ripple Impoundment

River mile 246.6

Stream West Fork White River

Name, number, percentage, size, and weight of fish collected

| Common Name | Number | % | Size range (in) | Total weight (lbs) | % |
|-----------------------|--------|------|--------------------|-----------------------|------|
| Gizzard shad | 5 | 2.2 | 7.2 - 12.1 | 2.12 | 1.3 |
| Common carp | 5 | 2.2 | 13.1 - 27.5 | 30.15 | 18.7 |
| Creek chub | 1 | 0.4 | 5 - 5 | 0.05 | 0.0 |
| Bluntnose minnow | 2 | 0.9 | 3.2 - 3.5 | 0.04 | 0.0 |
| Fathead minnow | 1 | 0.4 | 5.2 - 5.2 | 0.05 | 0.0 |
| Quillback | 3 | 1.3 | 14.7 - 17.4 | 6.44 | 4.0 |
| Golden redhorse | 22 | 9.5 | 3.4 - 17.3 | 6.73 | 4.2 |
| Northern hog sucker | 2 | 0.9 | 9.7 - 13.5 | 1.4 | 0.9 |
| Spotted sucker | 17 | 7.3 | 3.7 - 15.3 | 2.71 | 1.7 |
| Channel catfish | 15 | 6.5 | 18.7 - 26.6 | 64.27 | 39.8 |
| Flathead catfish | 2 | 0.9 | 11.6 - 16.9 | 2.64 | 1.6 |
| Blackstripe topminnow | 2 | 0.9 | 3.3 - 3.6 | 0.03 | 0.0 |
| Smallmouth bass | 24 | 10.3 | 3.1 - 19.4 | 18.65 | 11.6 |
| Spotted bass | 2 | 0.9 | 3.2 - 4 | 0.05 | 0.0 |
| Largemouth bass | 8 | 3.4 | 4.4 - 18.1 | 11.24 | 7.0 |
| Bluegill | 63 | 27.2 | 2 - 6.6 | 1.86 | 1.2 |
| Longear sunfish | 25 | 10.8 | 1 - 5.6 | 1.57 | 1.0 |
| Redear sunfish | 2 | 0.9 | 9.2 - 9.6 | 1.42 | 0.9 |
| Rock bass | 30 | 12.9 | 4.1 - 8.6 | 8.59 | 5.3 |
| Sauger | 1 | 0.4 | 16.2 - 16.2 | 1.44 | 0.9 |
| Total = 20 species | 232 | | | 161.45 | |

Date: 10/2, 10/24/2007

Station 13, Landings Pit

River mile 247.3

Stream West Fork White River

Name, number, percentage, size, and weight of fish collected

| Common Name | Number | % | Size range (in) | Total weight (lbs) | % |
|--------------------|--------|------|--------------------|-----------------------|------|
| Gizzard shad | 310 | 45.6 | 4.6 - 15.7 | 84.21 | 39.8 |
| Bluntnose minnow | 1 | 0.1 | 3.2 - 3.2 | 0.02 | 0.0 |
| Quillback | 8 | 1.2 | 5.2 - 18.5 | 12.1 | 5.7 |
| Golden redhorse | 18 | 2.6 | 3.3 - 5.2 | 0.64 | 0.3 |
| Spotted sucker | 23 | 3.4 | 4.2 - 16.2 | 11.01 | 5.2 |
| Channel catfish | 13 | 1.9 | 9.4 - 25.8 | 48.38 | 22.9 |
| White bass | 2 | 0.3 | 9.2 - 10 | 1.07 | 0.5 |
| Yellow bass | 5 | 0.7 | 7.1 - 9.2 | 1.61 | 0.8 |
| Smallmouth bass | 4 | 0.6 | 2.9 - 5.1 | 0.14 | 0.1 |
| Spotted bass | 3 | 0.4 | 3.7 - 6.1 | 0.16 | 0.1 |
| Largemouth bass | 18 | 2.6 | 2.3 - 17.8 | 16.43 | 7.8 |
| Green sunfish | 2 | 0.3 | 3.8 - 6 | 0.19 | 0.1 |
| Warmouth | 2 | 0.3 | 6.3 - 6.7 | 0.47 | 0.2 |
| Bluegill | 180 | 26.5 | 2 - 8.4 | 16.52 | 7.8 |
| Longear sunfish | 3 | 0.4 | 4.5 - 5 | 0.3 | 0.1 |
| Redear sunfish | 2 | 0.3 | 3.6 - 9.2 | 0.58 | 0.3 |
| White crappie | 36 | 5.3 | 4.1 - 10.8 | 7.46 | 3.5 |
| Black crappie | 48 | 7.1 | 3.9 - 10.1 | 7.59 | 3.6 |
| Sauger | 2 | 0.3 | 15.8 - 16.2 | 2.63 | 1.2 |
| Total = 19 species | 680 | | | 211.51 | |

Date: 9/25-26, 10/24/2007

Station 14, Lower Broad Ripple Impoundment

River mile 244.2

Stream West Fork White River

Name, number, percentage, size, and weight of fish collected

| Common Name | Number | % | Size range (in) | Total weight (lbs) | % |
|-----------------------|--------|------|--------------------|-----------------------|------|
| Gizzard shad | 8 | 3.3 | 10 - 11.1 | 3.95 | 4.2 |
| Common carp | 5 | 2.1 | 24.5 - 32.4 | 46.53 | 49.5 |
| Creek chub | 1 | 0.4 | 4.8 - 4.8 | 0.05 | 0.1 |
| Bluntnose minnow | 1 | 0.4 | 3.5 - 3.5 | 0.02 | 0.0 |
| Black redhorse | 1 | 0.4 | 17.7 - 17.7 | 2.44 | 2.6 |
| Golden redhorse | 3 | 1.3 | 3.4 - 15.1 | 1.46 | 1.6 |
| Northern hog sucker | 4 | 1.7 | 6.1 - 13.8 | 2.32 | 2.5 |
| Spotted sucker | 22 | 9.2 | 3.3 - 15.9 | 6.36 | 6.8 |
| Yellow bullhead | 1 | 0.4 | 5.7 - 5.7 | 0.09 | 0.1 |
| Flathead catfish | 2 | 0.8 | 7.5 - 26.3 | 7.4 | 7.9 |
| Blackstripe topminnow | 2 | 0.8 | 3.8 - 4.9 | 0.06 | 0.1 |
| Smallmouth bass | 15 | 6.3 | 2.9 - 10.2 | 1.11 | 1.2 |
| Spotted bass | 9 | 3.8 | 3.7 - 7.5 | 0.54 | 0.6 |
| Largemouth bass | 8 | 3.3 | 3 - 17.6 | 3.39 | 3.6 |
| Green sunfish | 10 | 4.2 | 2.6 - 6 | 0.73 | 0.8 |
| Warmouth | 6 | 2.5 | 2 - 5.2 | 0.12 | 0.1 |
| Bluegill | 19 | 7.9 | 1.6 - 5.6 | 0.88 | 0.9 |
| Longear sunfish | 73 | 30.5 | 1.7 - 6 | 4.04 | 4.3 |
| Redear sunfish | 1 | 0.4 | 6.3 - 6.3 | 0.17 | 0.2 |
| Rock bass | 43 | 18.0 | 2.8 - 8.7 | 9.88 | 10.5 |
| White crappie | 1 | 0.4 | 3.4 - 3.4 | 0.01 | 0.0 |
| Sauger | 1 | 0.4 | 19.9 - 19.9 | 2.48 | 2.6 |
| Logperch | 3 | 1.3 | 3 - 3.5 | 0.05 | 0.1 |
| Total = 23 species | 239 | | | 94.08 | |

Date: 9/20/2007

Station 15, Meridian St., below bridge

River mile 241.3

Stream West Fork White River

Name, number, percentage, size, and weight of fish collected

| Common Name | Number | % | Size range (in) | Total weight (lbs) | % |
|---------------------|--------|------|--------------------|-----------------------|------|
| Creek chub | 2 | 0.3 | 4.1 - 4.5 | 0.05 | 0.3 |
| Striped shiner | 3 | 0.5 | 3.1 - 3.6 | 0.04 | 0.2 |
| Roseyface shiner | 1 | 0.2 | 1.9 - 1.9 | 0.01 | 0.1 |
| Spottfin shiner | 11 | 1.9 | 1.9 - 4.2 | 0.12 | 0.6 |
| Bluntnose minnow | 2 | 0.3 | 3.6 - 3.7 | 0.04 | 0.2 |
| Common stoneroller | 33 | 5.6 | 3.1 - 5.4 | 0.83 | 4.2 |
| Quillback | 16 | 2.7 | 4.3 - 5.4 | 0.82 | 4.1 |
| Black redhorse | 1 | 0.2 | 3.7 - 3.7 | 0.02 | 0.1 |
| Golden redhorse | 1 | 0.2 | 3.4 - 3.4 | 0.02 | 0.1 |
| Northern hog sucker | 48 | 8.2 | 2.7 - 11.1 | 2.42 | 12.1 |
| White sucker | 1 | 0.2 | 4.4 - 4.4 | 0.03 | 0.2 |
| Spotted sucker | 3 | 0.5 | 3.2 - 3.9 | 0.04 | 0.2 |
| Flathead catfish | 1 | 0.2 | 21.5 - 21.5 | 4.55 | 22.8 |
| Stonecat | 2 | 0.3 | 3.1 - 3.2 | 0.02 | 0.1 |
| Smallmouth bass | 146 | 24.8 | 2.7 - 10.6 | 5.13 | 25.7 |
| Green sunfish | 11 | 1.9 | 2.4 - 4.9 | 0.43 | 2.2 |
| Warmouth | 1 | 0.2 | 6.7 - 6.7 | 0.26 | 1.3 |
| Bluegill | 27 | 4.6 | 1.1 - 4.5 | 0.32 | 1.6 |
| Longear sunfish | 170 | 28.9 | 1.6 - 5.4 | 2.5 | 12.5 |
| Rock bass | 41 | 7.0 | 2 - 7.9 | 1.51 | 7.6 |
| Lepomis hybrid | 1 | 0.2 | 1.9 - 1.9 | 0.04 | 0.2 |
| Logperch | 6 | 1.0 | 3 - 4.1 | 0.09 | 0.5 |
| Greenside darter | 56 | 9.5 | 2.5 - 4.1 | 0.62 | 3.1 |
| Rainbow darter | 3 | 0.5 | 1.9 - 2 | 0.01 | 0.1 |
| Orangethroat darter | 1 | 0.2 | 1.6 - 1.6 | 0.02 | 0.1 |
| Total = 24 species | 588 | | | 19.94 | |

Date: 9/18/2007

Station 16, 53rd St., Indianapolis

River mile 238.5

Stream West Fork White River

Name, number, percentage, size, and weight of fish collected

| Common Name | Number | % | Size range | | Total weight | % |
|-----------------------|--------|------|------------|--------|--------------|------|
| | | | (in) | | (lbs) | |
| Common carp | 9 | 0.7 | 5.9 | - 7.9 | 1.55 | 5.0 |
| Creek chub | 1 | 0.1 | 3.4 | - 3.4 | 0.01 | 0.0 |
| Suckermouth minnow | 7 | 0.5 | 2.9 | - 3.4 | 0.09 | 0.3 |
| Striped shiner | 11 | 0.9 | 3 | - 4.4 | 0.26 | 0.8 |
| Silver shiner | 13 | 1.0 | 2.3 | - 4.6 | 0.11 | 0.4 |
| Roseyface shiner | 3 | 0.2 | 2.1 | - 2.4 | 0.01 | 0.0 |
| Spotfin shiner | 121 | 9.4 | 1.2 | - 4 | 0.47 | 1.5 |
| Sand shiner | 48 | 3.7 | 1.5 | - 2.9 | 0.19 | 0.6 |
| Bluntnose minnow | 52 | 4.0 | 1.4 | - 3.7 | 0.39 | 1.3 |
| Common stoneroller | 21 | 1.6 | 2.8 | - 5.3 | 0.46 | 1.5 |
| Black redhorse | 67 | 5.2 | 3 | - 11.3 | 1.93 | 6.2 |
| Golden redhorse | 7 | 0.5 | 2.6 | - 3.8 | 0.1 | 0.3 |
| Northern hog sucker | 115 | 8.9 | 2.4 | - 10.4 | 10.82 | 34.7 |
| White sucker | 1 | 0.1 | 3.8 | - 3.8 | 0.02 | 0.1 |
| Spotted sucker | 15 | 1.2 | 2.6 | - 3.6 | 0.19 | 0.6 |
| Channel catfish | 2 | 0.2 | 3.9 | - 4.3 | 0.04 | 0.1 |
| Stonecat | 1 | 0.1 | 3.4 | - 3.4 | 0.02 | 0.1 |
| Blackstripe topminnow | 1 | 0.1 | 1.8 | - 1.8 | 0.01 | 0.0 |
| Brook silverside | 7 | 0.5 | 1.7 | - 2.8 | 0.02 | 0.1 |
| Smallmouth bass | 69 | 5.4 | 2.4 | - 9.6 | 2.92 | 9.4 |
| Largemouth bass | 2 | 0.2 | 3.1 | - 3.5 | 0.03 | 0.1 |
| Green sunfish | 2 | 0.2 | 2.8 | - 3.6 | 0.04 | 0.1 |
| Bluegill | 123 | 9.6 | 1.4 | - 5.8 | 2.24 | 7.2 |
| Longear sunfish | 339 | 26.3 | 1.3 | - 5 | 3.55 | 11.4 |
| Rock bass | 56 | 4.4 | 1.5 | - 7.7 | 3.72 | 11.9 |
| Logperch | 89 | 6.9 | 3 | - 5.5 | 1.26 | 4.0 |
| Slenderhead darter | 4 | 0.3 | 2.1 | - 2.5 | 0.01 | 0.0 |
| Greenside darter | 93 | 7.2 | 2.1 | - 3.3 | 0.7 | 2.2 |
| Rainbow darter | 5 | 0.4 | 1.6 | - 1.8 | 0.01 | 0.0 |
| Johnny darter | 2 | 0.2 | 1.4 | - 1.9 | 0.01 | 0.0 |
| Orangethroat darter | 1 | 0.1 | 1.6 | - 1.6 | 0.01 | 0.0 |
| Total = 31 species | 1287 | | | | 31.19 | |

Date: 10/2-3, 10/10/2007

Station 17, Lake Indy

River mile 235.1

Stream West Fork White River

Name, number, percentage, size, and weight of fish collected

| Common Name | Number | % | Size range (in) | Total weight (lbs) | % |
|-----------------------|--------|------|--------------------|-----------------------|------|
| Gizzard shad | 228 | 33.2 | 4.4 - 13.8 | 15.07 | 12.7 |
| Common carp | 2 | 0.3 | 26 - 27.2 | 17 | 14.3 |
| Golden shiner | 3 | 0.4 | 2.8 - 4.5 | 0.05 | 0.0 |
| Spottfin shinner | 5 | 0.7 | 1.6 - 2.1 | 0.05 | 0.0 |
| Bluntnose minnow | 9 | 1.3 | 2 - 6.3 | 0.16 | 0.1 |
| River carpsucker | 1 | 0.1 | 16 - 16 | 1.84 | 1.5 |
| Quillback | 4 | 0.6 | 4.4 - 16.5 | 4.41 | 3.7 |
| Silver redhorse | 1 | 0.1 | 18.2 - 18.2 | 2.43 | 2.0 |
| Black redhorse | 1 | 0.1 | 16.2 - 16.2 | 1.65 | 1.4 |
| Golden redhorse | 17 | 2.5 | 3.6 - 20.7 | 33.5 | 28.1 |
| Spotted sucker | 1 | 0.1 | 5 - 5 | 0.03 | 0.0 |
| Channel catfish | 10 | 1.5 | 9.1 - 22.4 | 15.16 | 12.7 |
| Flathead catfish | 3 | 0.4 | 8.9 - 23.5 | 6.22 | 5.2 |
| Blackstripe topminnow | 2 | 0.3 | 1.7 - 2 | 0.02 | 0.0 |
| Brook silverside | 1 | 0.1 | 2.8 - 2.8 | 0.01 | 0.0 |
| Smallmouth bass | 11 | 1.6 | 3.5 - 5.9 | 0.7 | 0.6 |
| Spotted bass | 7 | 1.0 | 3.7 - 7 | 0.41 | 0.3 |
| Largemouth bass | 31 | 4.5 | 4 - 11.2 | 6.21 | 5.2 |
| Green sunfish | 27 | 3.9 | 1.8 - 5.5 | 1.55 | 1.3 |
| Orangespotted sunfish | 2 | 0.3 | 1.9 - 2 | 0.02 | 0.0 |
| Bluegill | 131 | 19.1 | 1.4 - 7 | 4.37 | 3.7 |
| Longear sunfish | 164 | 23.9 | 1.3 - 5.1 | 4.23 | 3.6 |
| Rock bass | 13 | 1.9 | 1.9 - 7.3 | 2.01 | 1.7 |
| White crappie | 2 | 0.3 | 3.2 - 3.6 | 0.06 | 0.1 |
| Black crappie | 4 | 0.6 | 4.3 - 5.9 | 0.21 | 0.2 |
| Lepomis hybrid | 3 | 0.4 | 1.6 - 1.6 | 0.03 | 0.0 |
| Sauger | 1 | 0.1 | 15.7 - 15.7 | 1.59 | 1.3 |
| Logperch | 1 | 0.1 | 4.5 - 4.5 | 0.03 | 0.0 |
| Greenside darter | 2 | 0.3 | 2.3 - 2.7 | 0.02 | 0.0 |
| Total = 28 species | 687 | | | 119.04 | |

RIVER ZONES

UPPER REFERENCE ZONE

| Scientific name | Common name | Number | Percent | Size Range (in) | Weight | Percent |
|--------------------------------|--------------------|--------|---------|--------------------|--------|---------|
| <i>Semotilus atromaculatus</i> | Creek chub | 34 | 4.6 | 2.4 - 4.7 | 0.39 | 0.4 |
| <i>Phenacobius mirabilis</i> | Suckermouth minnow | 3 | 0.4 | 3.6 - 4 | 0.06 | 0.1 |
| <i>Luxilus chrysocephalus</i> | Striped shiner | 24 | 3.3 | 2.2 - 3.3 | 0.13 | 0.1 |
| <i>Notropis photogenis</i> | Silver shiner | 21 | 2.9 | 2.3 - 4.8 | 0.30 | 0.3 |
| <i>Notropis rubellus</i> | Rosyface shiner | 6 | 0.8 | 2.2 - 3.1 | 0.02 | 0.0 |
| <i>Cyprinella spiloptera</i> | Spotfin shiner | 7 | 1.0 | 2.8 - 3.8 | 0.09 | 0.1 |
| <i>Notropis stramineus</i> | Sand shiner | 8 | 1.1 | 2.2 - 2.6 | 0.03 | 0.0 |
| <i>Pimephales notatus</i> | Bluntnose minnow | 4 | 0.5 | 1.6 - 2.6 | 0.03 | 0.0 |
| <i>Campostoma anomalum</i> | Common stoneroller | 139 | 18.9 | 1.9 - 3.1 | 0.81 | 0.8 |
| <i>Carpododes cyprinus</i> | Quillback | 1 | 0.1 | 16.7 - 16.7 | 1.96 | 1.9 |
| <i>Moxostoma duquesnei</i> | Black redhorse | 15 | 2.0 | 2.5 - 18.2 | 6.73 | 6.6 |
| <i>Moxostoma erythrurum</i> | Golden redhorse | 12 | 1.6 | 2.5 - 9.5 | 0.64 | 0.6 |
| <i>Hypentelium nigricans</i> | Northern hogsucker | 187 | 25.4 | 2.2 - 13.7 | 43.87 | 43.1 |
| <i>Catostomus commersoni</i> | White sucker | 8 | 1.1 | 2.3 - 13.3 | 2.15 | 2.1 |
| <i>Ameiurus natalis</i> | Yellow bullhead | 2 | 0.3 | 7.8 - 9.1 | 0.62 | 0.6 |
| <i>Ictalurus punctatus</i> | Channel catfish | 1 | 0.1 | 23.3 - 23.3 | 5.75 | 5.6 |
| <i>Noturus flavus</i> | Stonecat | 3 | 0.4 | 3.2 - 4.8 | 0.09 | 0.1 |
| <i>Cotus bairdi</i> | Mottled sculpin | 33 | 4.5 | 2 - 3.5 | 0.30 | 0.3 |
| <i>Micropterus dolomieu</i> | Smallmouth bass | 105 | 14.3 | 1.8 - 18.4 | 25.51 | 25.1 |
| <i>Lepomis cyanellus</i> | Green sunfish | 8 | 1.1 | 2.7 - 5.1 | 0.41 | 0.4 |
| <i>Lepomis gulosus</i> | Warmouth | 2 | 0.3 | 4.4 - 6 | 0.23 | 0.2 |
| <i>Lepomis macrochirus</i> | Bluegill | 12 | 1.6 | 3.9 - 7.9 | 1.31 | 1.3 |
| <i>Lepomis megalotis</i> | Longear sunfish | 6 | 0.8 | 2.2 - 4.7 | 0.30 | 0.3 |
| <i>Ambloplites rupestris</i> | Rock bass | 31 | 4.2 | 1.9 - 9.1 | 9.50 | 9.3 |
| <i>Lepomis hybrid</i> | Lepomis hybrid | 1 | 0.1 | 3.3 - 3.3 | 0.02 | 0.0 |
| <i>Percina caprodes</i> | Logperch | 4 | 0.5 | 5.8 - 6.4 | 0.3 | 0.3 |
| <i>Etheostoma blennoides</i> | Greenside darter | 32 | 4.3 | 1.9 - 2.7 | 0.16 | 0.2 |
| <i>Etheostoma caeruleum</i> | Rainbow darter | 27 | 3.7 | 1.6 - 1.9 | 0.08 | 0.1 |
| Total = 27 species | | 736 | | | 101.79 | |

UPPER RIVER ZONE

| Scientific name | Common name | Number | Percent | Size Range | | Weight | Percent |
|-------------------------------------|-----------------------|--------|---------|------------|--------|--------|---------|
| | | | | (in) | | | |
| <i>Dorosoma cepedianum</i> | Gizzard shad | 72 | 3.0 | 8 | - 15.8 | 34.83 | 3.7 |
| <i>Esox americanus vermiculatus</i> | Grass pickerel | 1 | 0.0 | 9.5 | - 9.5 | 0.21 | 0.0 |
| <i>Cyprinus carpio</i> | Common carp | 71 | 3.0 | 12 | - 29.3 | 414.98 | 44.1 |
| <i>Luxilus chrysocephalus</i> | Striped shiner | 1 | 0.0 | 2.5 | - 2.5 | 0.01 | 0.0 |
| <i>Notropis photogenis</i> | Silver shiner | 23 | 1.0 | 3.1 | - 5.4 | 0.71 | 0.1 |
| <i>Cyprinella spiloptera</i> | Spotfin shiner | 28 | 1.2 | 1.8 | - 4.4 | 0.38 | 0.0 |
| <i>Notropis stramineus</i> | Sand shiner | 3 | 0.1 | 2.6 | - 2.9 | 0.02 | 0.0 |
| <i>Pimephales notatus</i> | Bluntnose minnow | 53 | 2.2 | 1.8 | - 3.4 | 0.54 | 0.1 |
| <i>Campostoma anomalum</i> | Common stoneroller | 217 | 9.0 | 2.3 | - 5.5 | 5.09 | 0.5 |
| <i>Carpododes cyprinus</i> | Quillback | 7 | 0.3 | 4.4 | - 16.2 | 5.82 | 0.6 |
| <i>Moxostoma anisurum</i> | Silver redhorse | 2 | 0.1 | 4.4 | - 4.5 | 0.08 | 0.0 |
| <i>Moxostoma duquesnei</i> | Black redhorse | 37 | 1.5 | 2.7 | - 16.9 | 18.1 | 1.9 |
| <i>Moxostoma erythrurum</i> | Golden redhorse | 88 | 3.7 | 2.5 | - 18.1 | 57.78 | 6.1 |
| <i>Hypentelium nigricans</i> | Northern hogsucker | 401 | 16.7 | 2.5 | - 15 | 117.95 | 12.5 |
| <i>Catostomus commersoni</i> | White sucker | 44 | 1.8 | 4 | - 16.6 | 31.18 | 3.3 |
| <i>Minytrema melanops</i> | Spotted sucker | 36 | 1.5 | 3.3 | - 16.6 | 9.62 | 1.0 |
| <i>Ameiurus natalis</i> | Yellow bullhead | 5 | 0.2 | 7.9 | - 10.2 | 1.95 | 0.2 |
| <i>Ictalurus punctatus</i> | Channel catfish | 37 | 1.5 | 8.6 | - 25.8 | 122.54 | 13.0 |
| <i>Pylodictis olivaris</i> | Flathead catfish | 1 | 0.0 | 15.6 | - 15.6 | 1.4 | 0.1 |
| <i>Noturus flavus</i> | Stonecat | 6 | 0.3 | 1.5 | - 5.6 | 0.29 | 0.0 |
| <i>Fundulus notatus</i> | Blackstripe topminnow | 1 | 0.0 | 1.9 | - 1.9 | 0.01 | 0.0 |
| <i>Labidesthes sicculus</i> | Brook silverside | 6 | 0.3 | 2.4 | - 3 | 0.02 | 0.0 |
| <i>Micropterus dolomieu</i> | Smallmouth bass | 374 | 15.6 | 2.2 | - 15.9 | 47.29 | 5.0 |
| <i>Micropterus punctulatus</i> | Spotted bass | 1 | 0.0 | 4.4 | - 4.4 | 0.04 | 0.0 |
| <i>Micropterus salmoides</i> | Largemouth bass | 5 | 0.2 | 2.2 | - 4 | 0.06 | 0.0 |
| <i>Lepomis cyanellus</i> | Green sunfish | 109 | 4.5 | 2 | - 5.7 | 4.47 | 0.5 |
| <i>Lepomis gulosus</i> | Warmouth | 5 | 0.2 | 5.1 | - 6.3 | 0.78 | 0.1 |
| <i>Lepomis macrochirus</i> | Bluegill | 114 | 4.8 | 1.2 | - 7.5 | 9.28 | 1.0 |
| <i>Lepomis megalotis</i> | Longear sunfish | 182 | 7.6 | 1.7 | - 6.4 | 8.14 | 0.9 |
| <i>Lepomis microlophus</i> | Redear sunfish | 3 | 0.1 | 5.6 | - 6.6 | 0.57 | 0.1 |
| <i>Ambloplites rupestris</i> | Rock bass | 183 | 7.6 | 1.8 | - 9.2 | 35.72 | 3.8 |
| <i>Pomoxis annularis</i> | White crappie | 7 | 0.3 | 3.4 | - 9.6 | 2.07 | 0.2 |
| <i>Pomoxis nigromaculatus</i> | Black crappie | 9 | 0.4 | 8.3 | - 10.5 | 3.69 | 0.4 |
| <i>Lepomis hybrid</i> | Lepomis hybrid | 1 | 0.0 | 5.8 | - 5.8 | 0.17 | 0.0 |
| <i>Stizostedion canadense</i> | Sauger | 2 | 0.1 | 15.2 | - 18.9 | 3.22 | 0.3 |
| <i>Percina caprodes</i> | Logperch | 62 | 2.6 | 3.3 | - 6.3 | 1.83 | 0.2 |
| <i>Etheostoma blennoides</i> | Greenside darter | 172 | 7.2 | 2.1 | - 3.7 | 0.87 | 0.1 |
| <i>Etheostoma caeruleum</i> | Rainbow darter | 24 | 1.0 | 1.5 | - 2.2 | 0.07 | 0.0 |
| <i>Etheostoma nigrum</i> | Johnny darter | 4 | 0.2 | 2.1 | - 2.2 | 0.01 | 0.0 |
| <i>Etheostoma spectabile</i> | Orangethroat darter | 2 | 0.1 | 2.1 | - 2.2 | 0.01 | 0.0 |
| Total = 39 species | | 2399 | | | | 941.8 | |

LOWER RIVER ZONE

| Scientific name | Common name | Number | Percent | Size Range | | Weight | Percent |
|--------------------------------|-----------------------|--------|---------|------------|--------|--------|---------|
| | | | | (in) | | | |
| <i>Dorosoma cepedianum</i> | Gizzard shad | 551 | 14.8 | 4.4 | - 13.8 | 105.35 | 16.5 |
| <i>Cyprinus carpio</i> | Common carp | 21 | 0.6 | 5.9 | - 32.4 | 95.23 | 14.9 |
| <i>Notemigonus crysoleucas</i> | Golden shiner | 3 | 0.1 | 2.8 | - 4.5 | 0.05 | 0.0 |
| <i>Semotilus atromaculatus</i> | Creek chub | 5 | 0.1 | 2 | - 5 | 0.16 | 0.0 |
| <i>Phenacobius mirabilis</i> | Suckermouth minnow | 7 | 0.2 | 2.9 | - 3.4 | 0.09 | 0.0 |
| <i>Luxilus chrysocephalus</i> | Striped shiner | 14 | 0.4 | 3 | - 4.4 | 0.3 | 0.0 |
| <i>Notropis photogenis</i> | Silver shiner | 13 | 0.4 | 2.3 | - 4.6 | 0.11 | 0.0 |
| <i>Notropis rubellus</i> | Roseyface shiner | 4 | 0.1 | 1.9 | - 2.4 | 0.02 | 0.0 |
| <i>Cyprinella spiloptera</i> | Spotfin shiner | 137 | 3.7 | 1.2 | - 4.2 | 0.64 | 0.1 |
| <i>Notropis stramineus</i> | Sand shiner | 48 | 1.3 | 1.5 | - 2.9 | 0.19 | 0.0 |
| <i>Pimephales notatus</i> | Bluntnose minnow | 67 | 1.8 | 1.4 | - 6.3 | 0.67 | 0.1 |
| <i>Pimephales promelas</i> | Fathead minnow | 1 | 0.0 | 5.2 | - 5.2 | 0.05 | 0.0 |
| <i>Campostoma anomalum</i> | Common stoneroller | 58 | 1.6 | 2.8 | - 5.5 | 1.29 | 0.2 |
| <i>Carpiodes carpio</i> | River carpsucker | 1 | 0.0 | 16 | - 16 | 1.84 | 0.3 |
| <i>Carpiodes cyprinus</i> | Quillback | 27 | 0.7 | 4.3 | - 18.5 | 23.77 | 3.7 |
| <i>Moxostoma anisurum</i> | Silver redhorse | 1 | 0.0 | 18.2 | - 18.2 | 2.43 | 0.4 |
| <i>Moxostoma duquesnei</i> | Black redhorse | 70 | 1.9 | 3 | - 17.7 | 6.04 | 0.9 |
| <i>Moxostoma erythrurum</i> | Golden redhorse | 68 | 1.8 | 2.6 | - 20.7 | 42.45 | 6.7 |
| <i>Hypentelium nigricans</i> | Northern hogsucker | 169 | 4.6 | 2.4 | - 13.8 | 16.96 | 2.7 |
| <i>Catostomus commersoni</i> | White sucker | 2 | 0.1 | 3.8 | - 4.4 | 0.05 | 0.0 |
| <i>Minytrema melanops</i> | Spotted sucker | 81 | 2.2 | 2.6 | - 16.2 | 20.34 | 3.2 |
| <i>Ameiurus natalis</i> | Yellow bullhead | 1 | 0.0 | 5.7 | - 5.7 | 0.09 | 0.0 |
| <i>Ictalurus punctatus</i> | Channel catfish | 40 | 1.1 | 3.9 | - 26.6 | 127.85 | 20.1 |
| <i>Pylodictis olivaris</i> | Flathead catfish | 8 | 0.2 | 7.5 | - 26.3 | 20.81 | 3.3 |
| <i>Noturus flavus</i> | Stonecat | 3 | 0.1 | 3.1 | - 3.4 | 0.04 | 0.0 |
| <i>Fundulus notatus</i> | Blackstripe topminnow | 7 | 0.2 | 1.7 | - 4.9 | 0.12 | 0.0 |
| <i>Labidesthes sicculus</i> | Brook silverside | 8 | 0.2 | 1.7 | - 2.8 | 0.03 | 0.0 |
| <i>Morone chrysops</i> | White bass | 2 | 0.1 | 9.2 | - 10 | 1.07 | 0.2 |
| <i>Morone mississippiensis</i> | Yellow bass | 5 | 0.1 | 7.1 | - 9.2 | 1.61 | 0.3 |
| <i>Micropterus dolomieu</i> | Smallmouth bass | 269 | 7.2 | 2.4 | - 19.4 | 28.65 | 4.5 |
| <i>Micropterus punctulatus</i> | Spotted bass | 21 | 0.6 | 3.2 | - 7.5 | 1.16 | 0.2 |
| <i>Micropterus salmoides</i> | Largemouth bass | 67 | 1.8 | 2.3 | - 18.1 | 37.3 | 5.9 |
| <i>Lepomis cyanellus</i> | Green sunfish | 52 | 1.4 | 1.8 | - 6 | 2.94 | 0.5 |
| <i>Lepomis gulosus</i> | Warmouth | 9 | 0.2 | 2 | - 6.7 | 0.85 | 0.1 |
| <i>Lepomis humilis</i> | Orangespotted sunfish | 2 | 0.1 | 1.9 | - 2 | 0.02 | 0.0 |
| <i>Lepomis macrochirus</i> | Bluegill | 543 | 14.6 | 1.1 | - 8.4 | 26.19 | 4.1 |
| <i>Lepomis megalotis</i> | Longear sunfish | 774 | 20.8 | 1 | - 6 | 16.19 | 2.5 |
| <i>Lepomis microlophus</i> | Redear sunfish | 5 | 0.1 | 3.6 | - 9.6 | 2.17 | 0.3 |
| <i>Ambloplites rupestris</i> | Rock bass | 183 | 4.9 | 1.5 | - 8.7 | 25.71 | 4.0 |
| <i>Pomoxis annularis</i> | White crappie | 39 | 1.1 | 3.2 | - 10.8 | 7.53 | 1.2 |
| <i>Pomoxis nigromaculatus</i> | Black crappie | 52 | 1.4 | 3.9 | - 10.1 | 7.8 | 1.2 |
| <i>Lepomis hybrid</i> | Lepomis hybrid | 4 | 0.1 | 1.6 | - 1.9 | 0.07 | 0.0 |
| <i>Stizostedion canadense</i> | Sauger | 5 | 0.1 | 15.7 | - 19.9 | 8.14 | 1.3 |
| <i>Percina caprodes</i> | Logperch | 99 | 2.7 | 3 | - 5.5 | 1.43 | 0.2 |
| <i>Percina phoxocephala</i> | Slenderhead darter | 4 | 0.1 | 2.1 | - 2.5 | 0.01 | 0.0 |
| <i>Etheostoma blennoides</i> | Greenside darter | 151 | 4.1 | 2.1 | - 4.1 | 1.34 | 0.2 |
| <i>Etheostoma caeruleum</i> | Rainbow darter | 8 | 0.2 | 1.6 | - 2 | 0.02 | 0.0 |
| <i>Etheostoma nigrum</i> | Johnny darter | 2 | 0.1 | 1.4 | - 1.9 | 0.01 | 0.0 |
| <i>Etheostoma spectabile</i> | Orangethroat darter | 2 | 0.1 | 1.6 | - 1.6 | 0.03 | 0.0 |
| Total = 48 species | | 3713 | | | | 637.21 | |

ALL RIVER ZONES

| Scientific name | Common name | Number | Percent | Size Range | | Weight | Percent | Occurrence | Zone |
|-------------------------------------|-----------------------|--------|---------|------------|--------|---------|---------|------------|------------|
| | | | | (in) | | | | | Occurrence |
| <i>Dorosoma cepedianum</i> | Gizzard shad | 623 | 9.1 | 4.4 | - 15.8 | 140.18 | 8.3 | 7 | 2,3 |
| <i>Esox americanus vermiculatus</i> | Grass pickerel | 1 | 0.0 | 9.5 | - 9.5 | 0.21 | 0.0 | 1 | 2 |
| <i>Cyprinus carpio</i> | Common carp | 92 | 1.3 | 5.9 | - 32.4 | 510.21 | 30.4 | 9 | 2,3 |
| <i>Notemigonus crysoleucas</i> | Golden shiner | 3 | 0.0 | 2.8 | - 4.5 | 0.05 | 0.0 | 1 | 3 |
| <i>Semotilus atromaculatus</i> | Creek chub | 39 | 0.6 | 2 | - 5 | 0.55 | 0.0 | 5 | 1,3 |
| <i>Phenacobius mirabilis</i> | Suckermouth minnow | 10 | 0.1 | 2.9 | - 4 | 0.15 | 0.0 | 2 | 1,3 |
| <i>Luxilus chrysocephalus</i> | Striped shiner | 39 | 0.6 | 2.2 | - 4.4 | 0.44 | 0.0 | 4 | 1,2,3 |
| <i>Notropis photogenis</i> | Silver shiner | 57 | 0.8 | 2.3 | - 5.4 | 1.12 | 0.1 | 7 | 1,2,3 |
| <i>Notropis rubellus</i> | Roseyface shiner | 10 | 0.1 | 1.9 | - 3.1 | 0.04 | 0.0 | 3 | 1,3 |
| <i>Cyprinella spiloptera</i> | Spotfin shiner | 172 | 2.5 | 1.2 | - 4.4 | 1.11 | 0.1 | 11 | 1,2,3 |
| <i>Notropis stramineus</i> | Sand shiner | 59 | 0.9 | 1.5 | - 2.9 | 0.24 | 0.0 | 3 | 1,2,3 |
| <i>Pimephales notatus</i> | Bluntnose minnow | 124 | 1.8 | 1.4 | - 6.3 | 1.24 | 0.1 | 10 | 1,2,3 |
| <i>Pimephales promelas</i> | Fathead minnow | 1 | 0.0 | 5.2 | - 5.2 | 0.05 | 0.0 | 1 | 3 |
| <i>Campostoma anomalum</i> | Common stoneroller | 414 | 6.0 | 1.9 | - 5.5 | 7.19 | 0.4 | 6 | 1,2,3 |
| <i>Carpiodes carpio</i> | River carpsucker | 1 | 0.0 | 16 | - 16 | 1.84 | 0.1 | 1 | 3 |
| <i>Carpiodes cyprinus</i> | Quillback | 35 | 0.5 | 4.3 | - 18.5 | 31.55 | 1.9 | 7 | 1,2,3 |
| <i>Moxostoma anisurum</i> | Silver redhorse | 3 | 0.0 | 4.4 | - 18.2 | 2.51 | 0.1 | 2 | 2,3 |
| <i>Moxostoma duquesnei</i> | Black redhorse | 122 | 1.8 | 2.5 | - 18.2 | 30.87 | 1.8 | 12 | 1,2,3 |
| <i>Moxostoma erythrurum</i> | Golden redhorse | 168 | 2.5 | 2.5 | - 20.7 | 100.87 | 6.0 | 16 | 1,2,3 |
| <i>Hypentelium nigricans</i> | Northern hogsucker | 757 | 11.1 | 2.2 | - 15 | 178.78 | 10.6 | 13 | 1,2,3 |
| <i>Catostomus commersoni</i> | White sucker | 54 | 0.8 | 2.3 | - 16.6 | 33.38 | 2.0 | 10 | 1,2,3 |
| <i>Minytrema melanops</i> | Spotted sucker | 117 | 1.7 | 2.6 | - 16.6 | 29.96 | 1.8 | 12 | 2,3 |
| <i>Ameiurus natalis</i> | Yellow bullhead | 8 | 0.1 | 5.7 | - 10.2 | 2.66 | 0.2 | 3 | 1,2,3 |
| <i>Ictalurus punctatus</i> | Channel catfish | 78 | 1.1 | 3.9 | - 26.6 | 256.14 | 15.2 | 12 | 1,2,3 |
| <i>Pylodictis olivaris</i> | Flathead catfish | 9 | 0.1 | 7.5 | - 26.3 | 22.21 | 1.3 | 5 | 2,3 |
| <i>Noturus flavus</i> | Stonecat | 12 | 0.2 | 1.5 | - 5.6 | 0.42 | 0.0 | 7 | 1,2,3 |
| <i>Fundulus notatus</i> | Blackstripe topminnow | 8 | 0.1 | 1.7 | - 4.9 | 0.13 | 0.0 | 5 | 2,3 |
| <i>Labidesthes sicculus</i> | Brook silverside | 14 | 0.2 | 1.7 | - 3 | 0.05 | 0.0 | 3 | 2,3 |
| <i>Cotus bairdi</i> | Mottled sculpin | 33 | 0.5 | 2 | - 3.5 | 0.3 | 0.0 | 1 | 1 |
| <i>Morone chrysops</i> | White bass | 2 | 0.0 | 9.2 | - 10 | 1.07 | 0.1 | 1 | 3 |
| <i>Morone mississippiensis</i> | Yellow bass | 5 | 0.1 | 7.1 | - 9.2 | 1.61 | 0.1 | 1 | 3 |
| <i>Micropterus dolomieu</i> | Smallmouth bass | 748 | 10.9 | 1.8 | - 19.4 | 101.45 | 6.0 | 16 | 1,2,3 |
| <i>Micropterus punctulatus</i> | Spotted bass | 22 | 0.3 | 3.2 | - 7.5 | 1.2 | 0.1 | 5 | 2,3 |
| <i>Micropterus salmoides</i> | Largemouth bass | 72 | 1.1 | 2.2 | - 18.1 | 37.36 | 2.2 | 6 | 2,3 |
| <i>Lepomis cyanellus</i> | Green sunfish | 169 | 2.5 | 1.8 | - 6 | 7.82 | 0.5 | 13 | 1,2,3 |
| <i>Lepomis gulosus</i> | Warmouth | 16 | 0.2 | 2 | - 6.7 | 1.86 | 0.1 | 8 | 1,2,3 |
| <i>Lepomis humilis</i> | Orangespotted sunfish | 2 | 0.0 | 1.9 | - 2 | 0.02 | 0.0 | 1 | 3 |
| <i>Lepomis macrochirus</i> | Bluegill | 669 | 9.8 | 1.1 | - 8.4 | 36.78 | 2.2 | 15 | 1,2,3 |
| <i>Lepomis megalotis</i> | Longear sunfish | 962 | 14.0 | 1 | - 6.4 | 24.63 | 1.5 | 16 | 1,2,3 |
| <i>Lepomis microlophus</i> | Redear sunfish | 8 | 0.1 | 3.6 | - 9.6 | 2.74 | 0.2 | 6 | 2,3 |
| <i>Ambloplites rupestris</i> | Rock bass | 397 | 5.8 | 1.5 | - 9.2 | 70.93 | 4.2 | 15 | 1,2,3 |
| <i>Pomoxis annularis</i> | White crappie | 46 | 0.7 | 3.2 | - 10.8 | 9.6 | 0.6 | 5 | 2,3 |
| <i>Pomoxis nigromaculatus</i> | Black crappie | 61 | 0.9 | 3.9 | - 10.5 | 11.49 | 0.7 | 4 | 2,3 |
| <i>Lepomis hybrid</i> | Lepomis hybrid | 6 | 0.1 | 1.6 | - 5.8 | 0.26 | 0.0 | 4 | 1,2,3 |
| <i>Stizostedion canadense</i> | Sauger | 7 | 0.1 | 15.2 | - 19.9 | 11.36 | 0.7 | 6 | 2,3 |
| <i>Percina caprodes</i> | Logperch | 165 | 2.4 | 3 | - 6.4 | 3.56 | 0.2 | 13 | 1,2,3 |
| <i>Percina phoxocephala</i> | Slenderhead darter | 4 | 0.1 | 2.1 | - 2.5 | 0.01 | 0.0 | 1 | 3 |
| <i>Etheostoma blennioides</i> | Greenside darter | 355 | 5.2 | 1.9 | - 4.1 | 2.37 | 0.1 | 9 | 1,2,3 |
| <i>Etheostoma caeruleum</i> | Rainbow darter | 59 | 0.9 | 1.5 | - 2.2 | 0.17 | 0.0 | 6 | 1,2,3 |
| <i>Etheostoma nigrum</i> | Johnny darter | 6 | 0.1 | 1.4 | - 2.2 | 0.02 | 0.0 | 2 | 2,3 |
| <i>Etheostoma spectabile</i> | Orangethroat darter | 4 | 0.1 | 1.6 | - 2.2 | 0.04 | 0.0 | 3 | 2,3 |
| Total = 50 species | | 6848 | | | | 1680.80 | | | |

Appendix B. Stream habitat and QHEI forms for each station.

1) SUBSTRATE: (Check ONLY Two Substrate Type Boxes: Check all types present)(20) SUBSTRATE SCORE **15.5**

| TYPE | | POOL | | RIFFLE | | SUBSTRATE ORIGIN (all) | | | | SILT COVER (one) | | | |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|---|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Extent of Embeddedness (check one) | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| TOTAL NUMBER OF SUBSTRATE TYPES: <input checked="" type="checkbox"/> >4(2) <input type="checkbox"/> <4(0) | | | | | | | | | | | | | |

NOTE: (Ignore sludge that originates from point sources: score is based on natural substrates)

COMMENTS: _____

2) INSTREAM COVER: (20) COVER SCORE **15**

| TYPE (Check all that apply) | | | AMOUNT (Check only one or Check 2 and AVERAGE) | |
|-------------------------------------|-------------------------------------|-------------------------------------|--|-------------------------------------|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

COMMENTS: _____

3) CHANNEL MORPHOLOGY: (Check ONLY ONE per Category or Check 2 and AVERAGE)(20) **16**

| SINUOSITY | DEVELOPMENT | CHANNELIZATION | STABILITY | MODIFICATION/OTHER | |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

COMMENTS: _____

4) RIPARIAN ZONE AND BANK EROSION: (Check ONE box or Check 2 and AVERAGE per bank) (10) RIPARIAN SCORE **10**

River Right Looking Downstream

| RIPARIAN WIDTH (per bank) | | EROSION/RUNOFF-FLOODPLAIN QUALITY | | | | BANK EROSION | |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| L | R (per bank) | L | R (most predominant per bank) | L | R (per bank) | L | R (per bank) |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

COMMENTS: _____

5) POOL/GLIDE AND RIFFLE/RUN QUALITY (12) **NO POOL = 0** POOL SCORE **9**

| MAX. DEPTH (Check 1) | MORPHOLOGY (Check 1) | POOL/RUN/RIFFLE CURRENT VELOCITY (Check all that Apply) | |
|-------------------------------------|-------------------------------------|---|-------------------------------------|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

COMMENTS: Pool at upper end of site;

RIFFLE SCORE **6**

| RIFFLE/RUN DEPTH | RIFFLE/RUN SUBSTRATE | RIFFLE/RUN EMBEDDEDNESS | |
|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

COMMENTS: _____

6) GRADIENT (FEET/MILE)(10) 3.1 % POOL 20 % RIFFLE 60 % RUN 20 GRADIENT SCORE **8**

1) SUBSTRATE: (Check ONLY Two Substrate Type Boxes: Check all types present)(20) SUBSTRATE SCORE **7**

| | | | | | | | | | | | | | |
|---|--------------------------|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------|--------------------------|---|--------------------------|
| <u>TYPE</u> | | <u>POOL</u> | | <u>RIFFLE</u> | | <u>POOL</u> | | <u>RIFFLE</u> | | <u>SUBSTRATE ORIGIN (all)</u> | | <u>SILT COVER (one)</u> | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | BLDER/SLAB(10) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | LIMESTONE(1) | <input type="checkbox"/> | RIP/RAP(0) |
| <input type="checkbox"/> | BOULDER(9) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | TILLS(1) | <input type="checkbox"/> | HARDPAN(0) |
| <input type="checkbox"/> | COBBLE(8) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | SANDSTONE(0) | <u>Extent of Embeddedness (check one)</u> | |
| <input type="checkbox"/> | HARDPAN(4) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | SHALE(-1) | <input type="checkbox"/> | EXTENSIVE(-2) |
| <input checked="" type="checkbox"/> | MUCK/SILT(2) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | COAL FINES(-2) | <input type="checkbox"/> | LOW(0) |
| TOTAL NUMBER OF SUBSTRATE TYPES: <input type="checkbox"/> >4(2) | | <input checked="" type="checkbox"/> <4(0) | | | | | | | | | | | |

NOTE: (Ignore sludge that originates from point sources: score is based on natural substrates)

COMMENTS:

2) INSTREAM COVER: (20) COVER SCORE **10**

| | | | | | |
|-------------------------------------|-----------------------------|-------------------------------------|---|-------------------------------------|-------------------------|
| <u>TYPE (Check all that apply)</u> | | | <u>AMOUNT (Check only one or Check 2 and AVERAGE)</u> | | |
| <input type="checkbox"/> | UNDERCUT BANKS(1) | <input checked="" type="checkbox"/> | DEEP POOLS(2) | <input type="checkbox"/> | OXBOWS(1) |
| <input type="checkbox"/> | OVERHANGING VEGETATION(1) | <input checked="" type="checkbox"/> | ROOTWADS(1) | <input type="checkbox"/> | AQUATIC MACROPHYTES(1) |
| <input checked="" type="checkbox"/> | SHALLOWS (IN SLOW WATER)(1) | <input checked="" type="checkbox"/> | BOULDERS(1) | <input checked="" type="checkbox"/> | LOGS OR WOODY DEBRIS(1) |
| | | | <input type="checkbox"/> EXTENSIVE >75%(11) | | |
| | | | <input type="checkbox"/> MODERATE 25-75%(7) | | |
| | | | <input checked="" type="checkbox"/> SPARSE 5-25%(3) | | |
| | | | <input type="checkbox"/> NEARLY ABSENT <5%(1) | | |

COMMENTS:

3) CHANNEL MORPHOLOGY: (Check ONLY ONE per Category or Check 2 and AVERAGE)(20) **12**

| | | | | |
|---|---|---|---|--|
| <u>SINUOSITY</u> | <u>DEVELOPMENT</u> | <u>CHANNELIZATION</u> | <u>STABILITY</u> | <u>MODIFICATION/OTHER</u> |
| <input type="checkbox"/> HIGH(4) | <input type="checkbox"/> EXCELLENT(7) | <input checked="" type="checkbox"/> NONE(6) | <input type="checkbox"/> HIGH(3) | <input type="checkbox"/> SNAGGING |
| <input checked="" type="checkbox"/> MODERATE(3) | <input type="checkbox"/> GOOD(5) | <input type="checkbox"/> RECOVERED(4) | <input checked="" type="checkbox"/> MODERATE(2) | <input type="checkbox"/> RELOCATION |
| <input type="checkbox"/> LOW(2) | <input type="checkbox"/> FAIR(3) | <input type="checkbox"/> RECOVERING(3) | <input type="checkbox"/> LOW(1) | <input type="checkbox"/> CANOPY REMOVAL |
| <input type="checkbox"/> NONE(1) | <input checked="" type="checkbox"/> POOR(1) | <input type="checkbox"/> RECENT OR NO RECOVERY(1) | | <input type="checkbox"/> DREDGING |
| | | | | <input type="checkbox"/> ONE SIDE CHANNEL MODIFICATION |
| | | | | <input type="checkbox"/> IMPOUND |
| | | | | <input type="checkbox"/> ISLAND |
| | | | | <input type="checkbox"/> LEVEED |
| | | | | <input type="checkbox"/> BANK SHAPING |

COMMENTS:

4) RIPARIAN ZONE AND BANK EROSION: (Check ONE box or Check 2 and AVERAGE per bank) (10) RIPARIAN SCORE **7.5**

River Right Looking Downstream

| | | | | | | | |
|-------------------------------------|-------------------------------------|--|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| <u>RIPARIAN WIDTH (per bank)</u> | | <u>EROSION/RUNOFF-FLOODPLAIN QUALITY</u> | | | | <u>BANK EROSION</u> | |
| L | R (per bank) | L | R (most predominant per bank) | L | R (per bank) | L | R (per bank) |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | WIDE >150ft.(4) | | FOREST, SWAMP(3) | | URBAN OR INDUSTRIAL(0) | | NONE OR LITTLE(3) |
| | <input checked="" type="checkbox"/> | | OPEN PASTURE/ROW CROP(0) | | SHURB OR OLD FIELD(2) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| | MODERATE 30-150 ft.(3) | | <input checked="" type="checkbox"/> | | CONSERV. TILLAGE(1) | | MODERATE(2) |
| | NARROW 15-30 ft.(2) | | FENCED PASTURE(1) | | MINING/CONSTRUCTION(0) | | HEAVY OR SEVERE(1) |
| | VERY NARROW 3-15 ft.(1) | | | | | | |
| | NONE(0) | | | | | | |

COMMENTS:

5) POOL/GLIDE AND RIFFLE/RUN QUALITY (12) **NO POOL = 0** POOL SCORE **12**

| | | | |
|---|--|--|---|
| <u>MAX. DEPTH (Check 1)</u> | <u>MORPHOLOGY (Check 1)</u> | <u>POOL/RUN/RIFFLE CURRENT VELOCITY (Check all that Apply)</u> | |
| <input checked="" type="checkbox"/> >4 ft.(6) | <input checked="" type="checkbox"/> POOL WIDTH > RIFFLE WIDTH(2) | <input type="checkbox"/> TORRENTIAL(-1) | <input checked="" type="checkbox"/> EDDIES(1) |
| <input type="checkbox"/> 2.4-4 ft.(4) | <input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH(1) | <input checked="" type="checkbox"/> FAST(1) | <input type="checkbox"/> INTERSTITIAL(-1) |
| <input type="checkbox"/> 1.2-2.4 ft.(2) | <input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH(0) | <input checked="" type="checkbox"/> MODERATE(1) | <input type="checkbox"/> INTERMITTENT(-2) |
| <input type="checkbox"/> <1.2 ft.(1) | | <input checked="" type="checkbox"/> SLOW(1) | |
| <input type="checkbox"/> <0.6 ft. (Pool=0)(0) | | | |

COMMENTS: Pool at upper end of site;

RIFFLE SCORE **5**

| | | |
|--|--|--|
| <u>RIFFLE/RUN DEPTH</u> | <u>RIFFLE/RUN SUBSTRATE</u> | <u>RIFFLE/RUN EMBEDDEDNESS</u> |
| <input checked="" type="checkbox"/> GENERALLY >4 in. MAX. >20 in.(4) | <input type="checkbox"/> STABLE (e.g., Cobble, Boulder)(2) | <input type="checkbox"/> EXTENSIVE(-1) |
| <input type="checkbox"/> GENERALLY >4 in. MAX. <20 in.(3) | <input type="checkbox"/> MOD. STABLE (e.g., Pea Gravel)(1) | <input type="checkbox"/> MODERATE(0) |
| <input type="checkbox"/> GENERALLY 2-4 in.(1) | <input checked="" type="checkbox"/> UNSTABLE (Gravel, Sand)(0) | <input checked="" type="checkbox"/> LOW(1) |
| <input type="checkbox"/> GENERALLY <2 in. (Riffle=0)(0) | <input type="checkbox"/> NO RIFFLE(0) | <input type="checkbox"/> NONE(2) |
| | | <input type="checkbox"/> NO RIFFLE(0) |

COMMENTS:

6) GRADIENT (FEET/MILE)(10) 3.1 % POOL 60 % RIFFLE 5 % RUN 35 GRADIENT SCORE **10**

1) SUBSTRATE: (Check ONLY Two Substrate Type Boxes: Check all types present)(20) SUBSTRATE SCORE **17**

| TYPE | POOL | RIFFLE | POOL | RIFFLE | SUBSTRATE ORIGIN (all) | | SILT COVER (one) | |
|---|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--|---|--|---------------------------------------|
| <input type="checkbox"/> BLDER/SLAB(10) | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> LIMESTONE(1) | <input type="checkbox"/> RIP/RAP(0) | <input type="checkbox"/> SILT-HEAVY(-2) | <input type="checkbox"/> SILT-MOD(-1) |
| <input type="checkbox"/> BOULDER(9) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> TILLS(1) | <input type="checkbox"/> HARDPAN(0) | <input checked="" type="checkbox"/> SILT-NORM(0) | <input type="checkbox"/> SILT-FREE(1) |
| <input checked="" type="checkbox"/> COBBLE(8) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> SANDSTONE(0) | Extent of Embeddedness (check one) | | |
| <input type="checkbox"/> HARDPAN(4) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> SHALE(-1) | <input type="checkbox"/> EXTENSIVE(-2) | <input checked="" type="checkbox"/> MODERATE(-1) | <input type="checkbox"/> NONE(1) |
| <input type="checkbox"/> MUCK/SILT(2) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> COAL FINES(-2) | <input type="checkbox"/> LOW(0) | <input type="checkbox"/> | <input type="checkbox"/> |

TOTAL NUMBER OF SUBSTRATE TYPES: >4(2) <4(0)

NOTE: (Ignore sludge that originates from point sources; score is based on natural substrates)

COMMENTS: A weir of stakes pointing downstream still exists-should be removed(cut off).

2) INSTREAM COVER: (20) COVER SCORE **15**

| TYPE (Check all that apply) | AMOUNT (Check only one or Check 2 and AVERAGE) |
|---|--|
| <input checked="" type="checkbox"/> UNDERCUT BANKS(1) | <input type="checkbox"/> EXTENSIVE >75%(11) |
| <input checked="" type="checkbox"/> OVERHANGING VEGETATION(1) | <input checked="" type="checkbox"/> MODERATE 25-75%(7) |
| <input checked="" type="checkbox"/> SHALLOWS (IN SLOW WATER)(1) | <input type="checkbox"/> SPARSE 5-25%(3) |
| <input checked="" type="checkbox"/> DEEP POOLS(2) | <input type="checkbox"/> NEARLY ABSENT <5%(1) |
| <input type="checkbox"/> ROOTWADS(1) | |
| <input type="checkbox"/> BOULDERS(1) | |
| <input type="checkbox"/> OXBOWS(1) | |
| <input type="checkbox"/> AQUATIC MACROPHYTES(1) | |
| <input checked="" type="checkbox"/> LOGS OR WOODY DEBRIS(1) | |

COMMENTS: _____

3) CHANNEL MORPHOLOGY: (Check ONLY ONE per Category or Check 2 and AVERAGE)(20) **17**

| SINUOSITY | DEVELOPMENT | CHANNELIZATION | STABILITY | MODIFICATION/OTHER | |
|--|--|---|---|--|--|
| <input type="checkbox"/> HIGH(4) | <input checked="" type="checkbox"/> EXCELLENT(7) | <input checked="" type="checkbox"/> NONE(6) | <input type="checkbox"/> HIGH(3) | <input type="checkbox"/> SNAGGING | <input type="checkbox"/> IMPOUND |
| <input type="checkbox"/> MODERATE(3) | <input type="checkbox"/> GOOD(5) | <input type="checkbox"/> RECOVERED(4) | <input checked="" type="checkbox"/> MODERATE(2) | <input type="checkbox"/> RELOCATION | <input checked="" type="checkbox"/> ISLAND |
| <input checked="" type="checkbox"/> LOW(2) | <input type="checkbox"/> FAIR(3) | <input type="checkbox"/> RECOVERING(3) | <input type="checkbox"/> LOW(1) | <input type="checkbox"/> CANOPY REMOVAL | <input type="checkbox"/> LEVEED |
| <input type="checkbox"/> NONE(1) | <input type="checkbox"/> POOR(1) | <input type="checkbox"/> RECENT OR NO RECOVERY(1) | | <input type="checkbox"/> DREDGING | <input type="checkbox"/> BANK SHAPING |
| | | | | <input type="checkbox"/> ONE SIDE CHANNEL MODIFICATION | |

COMMENTS: A lot of rocks, similar to 2001, '02 and '04, suggest stability.

4) RIPARIAN ZONE AND BANK EROSION: (Check ONE box or Check 2 and AVERAGE per bank) (10) RIPARIAN SCORE **8**

River Right Looking Downstream

| RIPARIAN WIDTH (per bank) | | EROSION/RUNOFF-FLOODPLAIN QUALITY | | | | BANK EROSION | |
|-------------------------------------|--|-----------------------------------|---|-------------------------------------|---|-------------------------------------|---|
| L | R (per bank) | L | R (most predominant per bank) | L | R (per bank) | L | R (per bank) |
| <input type="checkbox"/> | <input type="checkbox"/> WIDE>150ft.(4) | <input type="checkbox"/> | <input type="checkbox"/> FOREST, SWAMP(3) | <input type="checkbox"/> | <input type="checkbox"/> URBAN OR INDUSTRIAL(0) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> NONE OR LITTLE(3) |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> MODERATE 30-150 ft.(3) | <input type="checkbox"/> | <input type="checkbox"/> OPEN PASTURE/ROW CROP(0) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> SHURB OR OLD FIELD(2) | <input type="checkbox"/> | <input type="checkbox"/> MODERATE(2) |
| <input type="checkbox"/> | <input type="checkbox"/> NARROW 15-30 ft.(2) | <input type="checkbox"/> | <input type="checkbox"/> RESID.,PARK,NEW FIELD(1) | <input type="checkbox"/> | <input type="checkbox"/> CONSERV. TILLAGE(1) | <input type="checkbox"/> | <input type="checkbox"/> HEAVY OR SEVERE(1) |
| <input type="checkbox"/> | <input type="checkbox"/> VERY NARROW 3-15 ft.(1) | <input type="checkbox"/> | <input type="checkbox"/> FENCED PASTURE(1) | <input type="checkbox"/> | <input type="checkbox"/> MINING/CONSTRUCTION(0) | | |
| <input type="checkbox"/> | <input type="checkbox"/> NONE(0) | | | | | | |

COMMENTS: _____

5) POOL/GLIDE AND RIFFLE/RUN QUALITY (12) **NO POOL = 0** POOL SCORE **12**

| MAX. DEPTH (Check 1) | MORPHOLOGY (Check 1) | POOL/RUN/RIFFLE CURRENT VELOCITY (Check all that Apply) | |
|---|--|---|---|
| <input checked="" type="checkbox"/> >4 ft.(6) | <input checked="" type="checkbox"/> POOL WIDTH>RIFFLE WIDTH(2) | <input type="checkbox"/> TORRENTIAL(-1) | <input checked="" type="checkbox"/> EDDIES(1) |
| <input type="checkbox"/> 2.4-4 ft.(4) | <input type="checkbox"/> POOL WIDTH=RIFFLE WIDTH(1) | <input checked="" type="checkbox"/> FAST(1) | <input type="checkbox"/> INTERSTITIAL(-1) |
| <input type="checkbox"/> 1.2-2.4 ft.(2) | <input type="checkbox"/> POOL WIDTH<RIFFLE WIDTH(0) | <input checked="" type="checkbox"/> MODERATE(1) | <input type="checkbox"/> INTERMITTENT(-2) |
| <input type="checkbox"/> <1.2 ft.(1) | | <input checked="" type="checkbox"/> SLOW(1) | |
| <input type="checkbox"/> <0.6 ft.(Pool=0)(0) | | | |

COMMENTS: Lower end of pool sampled;

RIFFLE SCORE **5**

| RIFFLE/RUN DEPTH | RIFFLE/RUN SUBSTRATE | RIFFLE/RUN EMBEDDEDNESS |
|---|--|---|
| <input checked="" type="checkbox"/> GENERALLY >4 in. MAX.>20 in.(4) | <input checked="" type="checkbox"/> STABLE (e.g., Cobble,Boulder)(2) | <input checked="" type="checkbox"/> EXTENSIVE(-1) |
| <input type="checkbox"/> GENERALLY >4 in. MAX.<20 in.(3) | <input type="checkbox"/> MOD. STABLE (e.g., Pea Gravel)(1) | <input type="checkbox"/> MODERATE(0) |
| <input type="checkbox"/> GENERALLY 2-4 in.(1) | <input type="checkbox"/> UNSTABLE (Gravel, Sand)(0) | <input type="checkbox"/> LOW(1) |
| <input type="checkbox"/> GENERALLY <2 in.(Riffle=0)(0) | <input type="checkbox"/> NO RIFFLE(0) | <input type="checkbox"/> NONE(2) |
| | | <input type="checkbox"/> NO RIFFLE(0) |

COMMENTS: Partially altered-a wood weir (old, but still effective) in place;

6) GRADIENT (FEET/MILE)(10) 2.1 % POOL 30 % RIFFLE 70 %RUN GRADIENT SCORE **8**

STREAM: Sta. 5, WFWR, Coffey Grounds RIVER MILE 275.9 DATE: 9/19/2007 QHEI SCORE **74**

1) SUBSTRATE: (Check ONLY Two Substrate Type Boxes: Check all types present)(20) SUBSTRATE SCORE **16**

| | | | | | | | | | | | | |
|--------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------|-------------------------------------|--------------------------|---|--------------------------|
| <u>TYPE</u> | | <u>POOL</u> | | <u>RIFFLE</u> | <u>POOL</u> | | <u>RIFFLE</u> | <u>SUBSTRATE ORIGIN (all)</u> | | <u>SILT COVER (one)</u> | | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | BLDER/SLAB(10) | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | LIMESTONE(1) | <input type="checkbox"/> | SILT-HEAVY(-2) |
| <input type="checkbox"/> | BOULDER(9) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | TILLS(1) | <input checked="" type="checkbox"/> | SILT-NORM(0) |
| <input type="checkbox"/> | COBBLE(8) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | HARDPAN(0) | <input type="checkbox"/> | SILT-FREE(1) |
| <input type="checkbox"/> | HARDPAN(4) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | SANDSTONE(0) | <u>Extent of Embeddedness (check one)</u> | |
| <input type="checkbox"/> | MUCK/SILT(2) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | SHALE(-1) | <input type="checkbox"/> | EXTENSIVE(-2) |
| | | | | | | | | | <input checked="" type="checkbox"/> | COAL FINES(-2) | <input checked="" type="checkbox"/> | LOW(0) |
| | | | | | | | | | | | <input type="checkbox"/> | MODERATE(-1) |
| | | | | | | | | | | | <input type="checkbox"/> | NONE(1) |

TOTAL NUMBER OF SUBSTRATE TYPES: >4(2) <4(0)

NOTE: (Ignore sludge that originates from point sources: score is based on natural substrates)

COMMENTS:

2) INSTREAM COVER: (20) COVER SCORE **13**

| | | | |
|-------------------------------------|-----------------------------|-------------------------------------|---|
| <u>TYPE (Check all that apply)</u> | | | <u>AMOUNT (Check only one or Check 2 and AVERAGE)</u> |
| <input type="checkbox"/> | UNDERCUT BANKS(1) | <input type="checkbox"/> | DEEP POOLS(2) |
| <input checked="" type="checkbox"/> | OVERHANGING VEGETATION(1) | <input checked="" type="checkbox"/> | ROOTWADS(1) |
| <input checked="" type="checkbox"/> | SHALLOWS (IN SLOW WATER)(1) | <input checked="" type="checkbox"/> | BOULDERS(1) |
| <input type="checkbox"/> | | <input type="checkbox"/> | OXBOWS(1) |
| <input type="checkbox"/> | | <input checked="" type="checkbox"/> | AQUATIC MACROPHYTES(1) |
| <input type="checkbox"/> | | <input checked="" type="checkbox"/> | LOGS OR WOODY DEBRIS(1) |
| | | <input type="checkbox"/> | EXTENSIVE >75%(11) |
| | | <input checked="" type="checkbox"/> | MODERATE 25-75%(7) |
| | | <input type="checkbox"/> | SPARSE 5-25%(3) |
| | | <input type="checkbox"/> | NEARLY ABSENT <5%(1) |

COMMENTS:

3) CHANNEL MORPHOLOGY: (Check ONLY ONE per Category or Check 2 and AVERAGE)(20) **13**

| | | | | | | | |
|-------------------------------------|--------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------|-------------------------------------|--------------|
| <u>SINUOSITY</u> | <u>DEVELOPMENT</u> | <u>CHANNELIZATION</u> | <u>STABILITY</u> | <u>MODIFICATION/OTHER</u> | | | |
| <input type="checkbox"/> | HIGH(4) | <input checked="" type="checkbox"/> | NONE(6) | <input type="checkbox"/> | SNAGGING | <input type="checkbox"/> | IMPOUND |
| <input type="checkbox"/> | MODERATE(3) | <input type="checkbox"/> | RECOVERED(4) | <input type="checkbox"/> | RELOCATION | <input checked="" type="checkbox"/> | ISLAND |
| <input checked="" type="checkbox"/> | LOW(2) | <input type="checkbox"/> | RECOVERING(3) | <input checked="" type="checkbox"/> | CANOPY REMOVAL | <input type="checkbox"/> | LEVEED |
| <input type="checkbox"/> | NONE(1) | <input type="checkbox"/> | RECENT OR NO RECOVERY(1) | <input type="checkbox"/> | DREDGING | <input type="checkbox"/> | BANK SHAPING |
| | | | | <input type="checkbox"/> | ONE SIDE CHANNEL MODIFICATION | | |

COMMENTS:

4) RIPARIAN ZONE AND BANK EROSION: (Check ONE box or Check 2 and AVERAGE per bank) (10) RIPARIAN SCORE **6**

River Right Looking Downstream

| | | | | | | | |
|----------------------------------|--------------------------|--|-------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| <u>RIPARIAN WIDTH (per bank)</u> | | <u>EROSION/RUNOFF-FLOODPLAIN QUALITY</u> | | | | <u>BANK EROSION</u> | |
| L | R (per bank) | L | R (most predominant per bank) | L | R (per bank) | L | R (per bank) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | WIDE >150ft.(4) | <input type="checkbox"/> | FOREST, SWAMP(3) | <input type="checkbox"/> | URBAN OR INDUSTRIAL(0) | <input type="checkbox"/> | NONE OR LITTLE(3) |
| <input type="checkbox"/> | MODERATE 30-150 ft.(3) | <input checked="" type="checkbox"/> | OPEN PASTURE/ROW CROP(0) | <input type="checkbox"/> | SHURB OR OLD FIELD(2) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> | NARROW 15-30 ft.(2) | <input type="checkbox"/> | RESID., PARK, NEW FIELD(1) | <input type="checkbox"/> | CONSERV. TILLAGE(1) | <input type="checkbox"/> | MODERATE(2) |
| <input type="checkbox"/> | VERY NARROW 3-15 ft.(1) | <input type="checkbox"/> | FENCED PASTURE(1) | <input type="checkbox"/> | MINING/CONSTRUCTION(0) | <input type="checkbox"/> | HEAVY OR SEVERE(1) |
| <input type="checkbox"/> | NONE(0) | | | | | | |

COMMENTS:

5) POOL/GLIDE AND RIFFLE/RUN QUALITY (12) **NO POOL = 0** POOL SCORE **11**

| | | | | | |
|-------------------------------------|-----------------------------|--|----------------|--------------------------|------------------|
| <u>MAX. DEPTH (Check 1)</u> | <u>MORPHOLOGY (Check 1)</u> | <u>POOL/RUN/RIFFLE CURRENT VELOCITY (Check all that Apply)</u> | | | |
| <input checked="" type="checkbox"/> | >4 ft.(6) | <input type="checkbox"/> | TORRENTIAL(-1) | <input type="checkbox"/> | EDDIES(1) |
| <input type="checkbox"/> | 2.4-4 ft.(4) | <input checked="" type="checkbox"/> | FAST(1) | <input type="checkbox"/> | INTERSTITIAL(-1) |
| <input type="checkbox"/> | 1.2-2.4 ft.(2) | <input checked="" type="checkbox"/> | MODERATE(1) | <input type="checkbox"/> | INTERMITTENT(-2) |
| <input type="checkbox"/> | <1.2 ft.(1) | <input checked="" type="checkbox"/> | SLOW(1) | | |
| <input type="checkbox"/> | <0.6 ft.(Pool=0)(0) | | | | |

COMMENTS:

RIFFLE SCORE **5**

| | | | | | |
|-------------------------------------|---------------------------------|-------------------------------------|----------------------------|-------------------------------------|--------------|
| <u>RIFFLE/RUN DEPTH</u> | <u>RIFFLE/RUN SUBSTRATE</u> | <u>RIFFLE/RUN EMBEDDEDNESS</u> | | | |
| <input checked="" type="checkbox"/> | GENERALLY >4 in. MAX.>20 in.(4) | <input type="checkbox"/> | EXTENSIVE(-1) | <input type="checkbox"/> | NONE(2) |
| <input type="checkbox"/> | GENERALLY >4 in. MAX.<20 in.(3) | <input type="checkbox"/> | MODERATE(0) | <input checked="" type="checkbox"/> | NO RIFFLE(0) |
| <input type="checkbox"/> | GENERALLY 2-4 in.(1) | <input checked="" type="checkbox"/> | UNSTABLE (Gravel, Sand)(0) | | |
| <input type="checkbox"/> | GENERALLY <2 in.(Riffle=0)(0) | <input type="checkbox"/> | NO RIFFLE(0) | <input checked="" type="checkbox"/> | LOW(1) |

COMMENTS:

6) GRADIENT (FEET/MILE)(10) 2.1 % POOL 5 % RIFFLE 15 % RUN 80 GRADIENT SCORE **10**

1) SUBSTRATE: (Check ONLY Two Substrate Type Boxes: Check all types present)(20) SUBSTRATE SCORE **14**

| | | | | | | | | | | | | |
|---|--------------------------|-------------|--|---------------|-------------------------------------|-------------------------------------|---------------|-------------------------------|-------------------------------------|--------------------------|---|--------------------------|
| <u>TYPE</u> | | <u>POOL</u> | | <u>RIFFLE</u> | <u>POOL</u> | | <u>RIFFLE</u> | <u>SUBSTRATE ORIGIN (all)</u> | | <u>SILT COVER (one)</u> | | |
| <input type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <u>Extent of Embeddedness (check one)</u> | |
| <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| TOTAL NUMBER OF SUBSTRATE TYPES: <input checked="" type="checkbox"/> >4(2) <input type="checkbox"/> <4(0) | | | | | | | | | | | | |

NOTE: (Ignore sludge that originates from point sources; score is based on natural substrates)

COMMENTS: _____

2) INSTREAM COVER: (20) COVER SCORE **10**

| | | | | | |
|-------------------------------------|-------------------------------------|-------------------------------------|---|--------------------------|-------------------------------------|
| <u>TYPE (Check all that apply)</u> | | | <u>AMOUNT (Check only one or Check 2 and AVERAGE)</u> | | |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | | | | | <input type="checkbox"/> |

COMMENTS: Most habitat along bank in very shallow water due to low water level.

3) CHANNEL MORPHOLOGY: (Check ONLY ONE per Category or Check 2 and AVERAGE)(20) **13**

| | | | | |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|---------------------------|
| <u>SINUOSITY</u> | <u>DEVELOPMENT</u> | <u>CHANNELIZATION</u> | <u>STABILITY</u> | <u>MODIFICATION/OTHER</u> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

COMMENTS: _____

4) RIPARIAN ZONE AND BANK EROSION: (Check ONE box or Check 2 and AVERAGE per bank) (10) RIPARIAN SCORE **4.5**

River Right Looking Downstream

| | | | | | | | |
|-------------------------------------|-------------------------------------|--|--------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|
| <u>RIPARIAN WIDTH (per bank)</u> | | <u>EROSION/RUNOFF-FLOODPLAIN QUALITY</u> | | | | <u>BANK EROSION</u> | |
| <u>L</u> | <u>R (per bank)</u> | <u>L</u> | <u>R (most predominant per bank)</u> | <u>L</u> | <u>R (per bank)</u> | <u>L</u> | <u>R (per bank)</u> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

COMMENTS: _____

5) POOL/GLIDE AND RIFFLE/RUN QUALITY (12) **NO POOL = 0** POOL SCORE **10**

| | | | |
|-------------------------------------|-------------------------------------|--|--------------------------|
| <u>MAX. DEPTH (Check 1)</u> | <u>MORPHOLOGY (Check 1)</u> | <u>POOL/RUN/RIFFLE CURRENT VELOCITY (Check all that Apply)</u> | |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

COMMENTS: _____

RIFFLE SCORE **6**

| | | |
|-------------------------------------|-------------------------------------|-------------------------------------|
| <u>RIFFLE/RUN DEPTH</u> | <u>RIFFLE/RUN SUBSTRATE</u> | <u>RIFFLE/RUN EMBEDDEDNESS</u> |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

COMMENTS: _____

6) GRADIENT (FEET/MILE)(10) 2.1 % POOL 5 % RIFFLE 5 % RUN 90 GRADIENT SCORE **10**

1) SUBSTRATE: (Check ONLY Two Substrate Type Boxes: Check all types present)(20) SUBSTRATE SCORE 17

| | | | | | | | | | | | | | |
|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|---|--------------------------|
| <u>TYPE</u> | | <u>POOL</u> | | <u>RIFFLE</u> | | <u>POOL</u> | | <u>RIFFLE</u> | | <u>SUBSTRATE ORIGIN (all)</u> | | <u>SILT COVER (one)</u> | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | BLDER/SLAB(10) | | | | | | GRAVEL(7) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | LIMESTONE(1) | <input type="checkbox"/> | RIP/RAP(0) |
| <input type="checkbox"/> | BOULDER(9) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | SAND(6) | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | TILLS(1) | <input type="checkbox"/> | HARDPAN(0) |
| <input checked="" type="checkbox"/> | COBBLE(8) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | BEDROCK(5) | | | <input checked="" type="checkbox"/> | SANDSTONE(0) | <u>Extent of Embeddedness (check one)</u> | |
| <input type="checkbox"/> | HARDPAN(4) | | | | | | DETRITUS(3) | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | SHALE(-1) | <input type="checkbox"/> | EXTENSIVE(-2) |
| <input type="checkbox"/> | MUCK/SILT(2) | | | | | | ARTIFIC(0) | | | <input type="checkbox"/> | COAL FINES(-2) | <input checked="" type="checkbox"/> | MODERATE(-1) |
| TOTAL NUMBER OF SUBSTRATE TYPES: | | <input checked="" type="checkbox"/> | >4(2) | <input type="checkbox"/> | <4(0) | | | | | <input type="checkbox"/> | LOW(0) | <input type="checkbox"/> | NONE(1) |

NOTE: (Ignore sludge that originates from point sources: score is based on natural substrates)

COMMENTS: _____

2) INSTREAM COVER: (20) COVER SCORE 14

| | | | | | |
|-------------------------------------|-----------------------------|-------------------------------------|---|-------------------------------------|-------------------------|
| <u>TYPE (Check all that apply)</u> | | | <u>AMOUNT (Check only one or Check 2 and AVERAGE)</u> | | |
| <input type="checkbox"/> | UNDERCUT BANKS(1) | <input checked="" type="checkbox"/> | DEEP POOLS(2) | <input type="checkbox"/> | OXBOWS(1) |
| <input checked="" type="checkbox"/> | OVERHANGING VEGETATION(1) | <input type="checkbox"/> | ROOTWADS(1) | <input checked="" type="checkbox"/> | AQUATIC MACROPHYTES(1) |
| <input checked="" type="checkbox"/> | SHALLOWS (IN SLOW WATER)(1) | <input checked="" type="checkbox"/> | BOULDERS(1) | <input type="checkbox"/> | LOGS OR WOODY DEBRIS(1) |
| | | | <input type="checkbox"/> | EXTENSIVE >75%(11) | |
| | | | <input checked="" type="checkbox"/> | MODERATE 25-75%(7) | |
| | | | <input type="checkbox"/> | SPARSE 5-25%(3) | |
| | | | <input type="checkbox"/> | NEARLY ABSENT <5%(1) | |

COMMENTS: 2 bridges gave ample cover, including 18" deep runs.

3) CHANNEL MORPHOLOGY: (Check ONLY ONE per Category or Check 2 and AVERAGE)(20) 14

| | | | | | |
|-------------------------------------|--------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------|
| <u>SINUOSITY</u> | <u>DEVELOPMENT</u> | <u>CHANNELIZATION</u> | <u>STABILITY</u> | <u>MODIFICATION/OTHER</u> | |
| <input type="checkbox"/> | HIGH(4) | <input checked="" type="checkbox"/> | NONE(6) | <input type="checkbox"/> | SNAGGING |
| <input type="checkbox"/> | MODERATE(3) | <input type="checkbox"/> | RECOVERED(4) | <input type="checkbox"/> | RELOCATION |
| <input type="checkbox"/> | LOW(2) | <input type="checkbox"/> | RECOVERING(3) | <input checked="" type="checkbox"/> | CANOPY REMOVAL |
| <input checked="" type="checkbox"/> | NONE(1) | <input type="checkbox"/> | RECENT OR NO RECOVERY(1) | <input type="checkbox"/> | DREDGING |
| | | | | <input type="checkbox"/> | ONE SIDE CHANNEL MODIFICATION |
| | | | | <input type="checkbox"/> | IMPOUND |
| | | | | <input checked="" type="checkbox"/> | ISLAND |
| | | | | <input type="checkbox"/> | LEVEED |
| | | | | <input checked="" type="checkbox"/> | BANK SHAPING |

COMMENTS: Some nice deep channels, also ample shallows in riffles & backwater.

4) RIPARIAN ZONE AND BANK EROSION: (Check ONE box or Check 2 and AVERAGE per bank) (10) RIPARIAN SCORE 4.5

River Right Looking Downstream

| | | | | | | | |
|-------------------------------------|-------------------------------------|--|-------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| <u>RIPARIAN WIDTH (per bank)</u> | | <u>EROSION/RUNOFF-FLOODPLAIN QUALITY</u> | | | | <u>BANK EROSION</u> | |
| L | R (per bank) | L | R (most predominant per bank) | L | R (per bank) | L | R (per bank) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| | WIDE>150ft.(4) | | FOREST, SWAMP(3) | | URBAN OR INDUSTRIAL(0) | | NONE OR LITTLE(3) |
| | MODERATE 30-150 ft.(3) | | OPEN PASTURE/ROW CROP(0) | | SHURB OR OLD FIELD(2) | | MODERATE(2) |
| | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | RESID.,PARK,NEW FIELD(1) | | CONSERV. TILLAGE(1) | | HEAVY OR SEVERE(1) |
| | NARROW 15-30 ft.(2) | | FENCED PASTURE(1) | | MINING/CONSTRUCTION(0) | | |
| | VERY NARROW 3-15 ft.(1) | | | | | | |
| <input checked="" type="checkbox"/> | NONE(0) | | | | | | |

COMMENTS: Strictly urban setting, couldn't count riparian width.

5) POOL/GLIDE AND RIFFLE/RUN QUALITY (12) **NO POOL = 0** POOL SCORE 8

| | | | |
|-------------------------------------|-----------------------------|--|------------------|
| <u>MAX. DEPTH (Check 1)</u> | <u>MORPHOLOGY (Check 1)</u> | <u>POOL/RUN/RIFFLE CURRENT VELOCITY (Check all that Apply)</u> | |
| <input type="checkbox"/> | >4 ft.(6) | <input type="checkbox"/> | TORRENTIAL(-1) |
| <input checked="" type="checkbox"/> | 2.4-4 ft.(4) | <input type="checkbox"/> | FAST(1) |
| <input type="checkbox"/> | 1.2-2.4 ft.(2) | <input checked="" type="checkbox"/> | MODERATE(1) |
| <input type="checkbox"/> | <1.2 ft.(1) | <input checked="" type="checkbox"/> | SLOW(1) |
| <input type="checkbox"/> | <0.6 ft.(Pool=0)(0) | <input checked="" type="checkbox"/> | EDDIES(1) |
| | | <input type="checkbox"/> | INTERSTITIAL(-1) |
| | | <input type="checkbox"/> | INTERMITTENT(-2) |

COMMENTS: _____

RIFFLE SCORE 5

| | | | |
|-------------------------------------|---------------------------------|-------------------------------------|---------------|
| <u>RIFFLE/RUN DEPTH</u> | <u>RIFFLE/RUN SUBSTRATE</u> | <u>RIFFLE/RUN EMBEDDEDNESS</u> | |
| <input checked="" type="checkbox"/> | GENERALLY >4 in. MAX.>20 in.(4) | <input type="checkbox"/> | EXTENSIVE(-1) |
| <input type="checkbox"/> | GENERALLY >4 in. MAX.<20 in.(3) | <input checked="" type="checkbox"/> | MODERATE(0) |
| <input type="checkbox"/> | GENERALLY 2-4 in.(1) | <input type="checkbox"/> | LOW(1) |
| <input type="checkbox"/> | GENERALLY <2 in.(Riffle=0)(0) | <input type="checkbox"/> | NONE(2) |
| | | <input checked="" type="checkbox"/> | NO RIFFLE(0) |
| | | | |

COMMENTS: _____

6) GRADIENT (FEET/MILE)(10) 2.1 % POOL 5 % RIFFLE 65 %RUN 30 GRADIENT SCORE 10

1) SUBSTRATE: (Check ONLY Two Substrate Type Boxes: Check all types present)(20) SUBSTRATE SCORE **17**

| | | | | | | | | | | | | |
|--------------------------|--------------------------|-------------|--|-------------------------------------|-------------|--|---------------|-------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| <u>TYPE</u> | | <u>POOL</u> | | <u>RIFFLE</u> | <u>POOL</u> | | <u>RIFFLE</u> | <u>SUBSTRATE ORIGIN (all)</u> | | <u>SILT COVER (one)</u> | | |
| <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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1) SUBSTRATE: (Check ONLY Two Substrate Type Boxes: Check all types present)(20) SUBSTRATE SCORE **16**

| | | | | | | | | | | | | | |
|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|---|--------------------------|-------------------------------------|--------------------------|
| <u>TYPE</u> | | <u>POOL</u> | | <u>RIFFLE</u> | | <u>POOL</u> | | <u>RIFFLE</u> | | <u>SUBSTRATE ORIGIN (all)</u> | | <u>SILT COVER (one)</u> | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | BLDER/SLAB(10) | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | GRAVEL(7) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | LIMESTONE(1) | <input type="checkbox"/> | RIP/RAP(0) | <input type="checkbox"/> | SILT-HEAVY(-2) |
| <input type="checkbox"/> | BOULDER(9) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | SAND(6) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | TILLS(1) | <input type="checkbox"/> | HARDPAN(0) | <input checked="" type="checkbox"/> | SILT-NORM(0) |
| <input type="checkbox"/> | COBBLE(8) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | BEDROCK(5) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | SANDSTONE(0) | <u>Extent of Embeddedness (check one)</u> | | | |
| <input type="checkbox"/> | HARDPAN(4) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | DETRITUS(3) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | SHALE(-1) | <input type="checkbox"/> | EXTENSIVE(-2) | <input type="checkbox"/> | MODERATE(-1) |
| <input type="checkbox"/> | MUCK/SILT(2) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ARTIFIC(0) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | COAL FINES(-2) | <input checked="" type="checkbox"/> | LOW(0) | <input type="checkbox"/> | NONE(1) |

TOTAL NUMBER OF SUBSTRATE TYPES: >4(2) <4(0)

NOTE: (Ignore sludge that originates from point sources: score is based on natural substrates)

COMMENTS:

2) INSTREAM COVER: (20) COVER SCORE **13**

| | | | | | |
|-------------------------------------|-----------------------------|-------------------------------------|--|-------------------------------------|-------------------------|
| <u>TYPE (Check all that apply)</u> | | | <u>AMOUNT (Check only one or Check 2 and AVERAGE)</u> | | |
| <input type="checkbox"/> | UNDERCUT BANKS(1) | <input checked="" type="checkbox"/> | DEEP POOLS(2) | <input type="checkbox"/> | OXBOWS(1) |
| <input type="checkbox"/> | OVERHANGING VEGETATION(1) | <input type="checkbox"/> | ROOTWADS(1) | <input checked="" type="checkbox"/> | AQUATIC MACROPHYTES(1) |
| <input checked="" type="checkbox"/> | SHALLOWS (IN SLOW WATER)(1) | <input checked="" type="checkbox"/> | BOULDERS(1) | <input type="checkbox"/> | LOGS OR WOODY DEBRIS(1) |
| | | | <input type="checkbox"/> EXTENSIVE >75%(11) | | |
| | | | <input checked="" type="checkbox"/> MODERATE 25-75%(7) | | |
| | | | <input type="checkbox"/> SPARSE 5-25%(3) | | |
| | | | <input type="checkbox"/> NEARLY ABSENT <5%(1) | | |

COMMENTS:

3) CHANNEL MORPHOLOGY: (Check ONLY ONE per Category or Check 2 and AVERAGE)(20) **11**

| | | | | |
|--|---|---|---|--|
| <u>SINUOSITY</u> | <u>DEVELOPMENT</u> | <u>CHANNELIZATION</u> | <u>STABILITY</u> | <u>MODIFICATION/OTHER</u> |
| <input type="checkbox"/> HIGH(4) | <input type="checkbox"/> EXCELLENT(7) | <input checked="" type="checkbox"/> NONE(6) | <input type="checkbox"/> HIGH(3) | <input type="checkbox"/> SNAGGING |
| <input type="checkbox"/> MODERATE(3) | <input type="checkbox"/> GOOD(5) | <input type="checkbox"/> RECOVERED(4) | <input checked="" type="checkbox"/> MODERATE(2) | <input type="checkbox"/> RELOCATION |
| <input checked="" type="checkbox"/> LOW(2) | <input type="checkbox"/> FAIR(3) | <input type="checkbox"/> RECOVERING(3) | <input type="checkbox"/> LOW(1) | <input type="checkbox"/> CANOPY REMOVAL |
| <input type="checkbox"/> NONE(1) | <input checked="" type="checkbox"/> POOR(1) | <input type="checkbox"/> RECENT OR NO RECOVERY(1) | | <input type="checkbox"/> DREDGING |
| | | | | <input type="checkbox"/> ONE SIDE CHANNEL MODIFICATION |
| | | | | <input type="checkbox"/> IMPOUND |
| | | | | <input type="checkbox"/> ISLAND |
| | | | | <input type="checkbox"/> LEVEED |
| | | | | <input type="checkbox"/> BANK SHAPING |

COMMENTS:

4) RIPARIAN ZONE AND BANK EROSION: (Check ONE box or Check 2 and AVERAGE per bank) (10) RIPARIAN SCORE **6**

River Right Looking Downstream Resid., park in riparian space doesn't qualify as riparian habitat.

| | | | | | | | |
|-------------------------------------|---|--|--|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| <u>RIPARIAN WIDTH (per bank)</u> | | <u>EROSION/RUNOFF-FLOODPLAIN QUALITY</u> | | | | <u>BANK EROSION</u> | |
| L | R (per bank) | L | R (most predominant per bank) | L | R (per bank) | L | R (per bank) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> | WIDE >150ft.(4) | <input type="checkbox"/> | FOREST, SWAMP(3) | <input type="checkbox"/> | URBAN OR INDUSTRIAL(0) | <input type="checkbox"/> | NONE OR LITTLE(3) |
| <input type="checkbox"/> | MODERATE 30-150 ft.(3) | <input type="checkbox"/> | OPEN PASTURE/ROW CROP(0) | <input type="checkbox"/> | SHURB OR OLD FIELD(2) | <input type="checkbox"/> | MODERATE(2) |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> NARROW 15-30 ft.(2) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> RESID., PARK, NEW FIELD(1) | <input type="checkbox"/> | CONSERV. TILLAGE(1) | <input type="checkbox"/> | HEAVY OR SEVERE(1) |
| <input type="checkbox"/> | VERY NARROW 3-15 ft.(1) | <input type="checkbox"/> | FENCED PASTURE(1) | <input type="checkbox"/> | MINING/CONSTRUCTION(0) | | |
| <input checked="" type="checkbox"/> | NONE(0) | | | | | | |

COMMENTS:

5) POOL/GLIDE AND RIFFLE/RUN QUALITY (12) **NO POOL = 0** POOL SCORE **9**

| | | | |
|---|--|--|---|
| <u>MAX. DEPTH (Check 1)</u> | <u>MORPHOLOGY (Check 1)</u> | <u>POOL/RUN/RIFFLE CURRENT VELOCITY (Check all that Apply)</u> | |
| <input checked="" type="checkbox"/> >4 ft.(6) | <input checked="" type="checkbox"/> POOL WIDTH > RIFFLE WIDTH(2) | <input type="checkbox"/> TORRENTIAL(-1) | <input type="checkbox"/> EDDIES(1) |
| <input type="checkbox"/> 2.4-4 ft.(4) | <input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH(1) | <input type="checkbox"/> FAST(1) | <input type="checkbox"/> INTERSTITIAL(-1) |
| <input type="checkbox"/> 1.2-2.4 ft.(2) | <input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH(0) | <input type="checkbox"/> MODERATE(1) | <input type="checkbox"/> INTERMITTENT(-2) |
| <input type="checkbox"/> <1.2 ft.(1) | | <input checked="" type="checkbox"/> SLOW(1) | |
| <input type="checkbox"/> <0.6 ft. (Pool=0)(0) | | | |

COMMENTS:

RIFFLE SCORE **5**

| | | |
|--|--|--|
| <u>RIFFLE/RUN DEPTH</u> | <u>RIFFLE/RUN SUBSTRATE</u> | <u>RIFFLE/RUN EMBEDDEDNESS</u> |
| <input checked="" type="checkbox"/> GENERALLY >4 in. MAX. >20 in.(4) | <input type="checkbox"/> STABLE (e.g., Cobble, Boulder)(2) | <input type="checkbox"/> EXTENSIVE(-1) |
| <input type="checkbox"/> GENERALLY >4 in. MAX. <20 in.(3) | <input type="checkbox"/> MOD. STABLE (e.g., Pea Gravel)(1) | <input type="checkbox"/> MODERATE(0) |
| <input type="checkbox"/> GENERALLY 2-4 in.(1) | <input checked="" type="checkbox"/> UNSTABLE (Gravel, Sand)(0) | <input checked="" type="checkbox"/> LOW(1) |
| <input type="checkbox"/> GENERALLY <2 in. (Riffle=0)(0) | <input type="checkbox"/> NO RIFFLE(0) | <input type="checkbox"/> NONE(2) |
| | | <input type="checkbox"/> NO RIFFLE(0) |

COMMENTS:

6) GRADIENT (FEET/MILE)(10) 2.2 % POOL 10 % RIFFLE 5 % RUN 85 GRADIENT SCORE **10**

1) SUBSTRATE: (Check ONLY Two Substrate Type Boxes: Check all types present)(20) SUBSTRATE SCORE **17**

| | | | | | | | | | | | | |
|-------------------------------------|--------------------------|-------------|--|---------------|-------------------------------------|--|---------------|-------------------------------|-------------------------------------|-------------------------------------|---|-------------------------------------|
| <u>TYPE</u> | | <u>POOL</u> | | <u>RIFFLE</u> | <u>POOL</u> | | <u>RIFFLE</u> | <u>SUBSTRATE ORIGIN (all)</u> | | <u>SILT COVER (one)</u> | | |
| <input type="checkbox"/> | <input type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | | | | | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <u>Extent of Embeddedness (check one)</u> | |
| | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

TOTAL NUMBER OF SUBSTRATE TYPES: >4(2) <4(0)

NOTE: (Ignore sludge that originates from point sources: score is based on natural substrates)

COMMENTS:

2) INSTREAM COVER: (20) COVER SCORE **19**

| | | | |
|-------------------------------------|-------------------------------------|-------------------------------------|---|
| <u>TYPE (Check all that apply)</u> | | | <u>AMOUNT (Check only one or Check 2 and AVERAGE)</u> |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | | | <input type="checkbox"/> |

COMMENTS:

3) CHANNEL MORPHOLOGY: (Check ONLY ONE per Category or Check 2 and AVERAGE)(20) **17**

| | | | | |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| <u>SINUOSITY</u> | <u>DEVELOPMENT</u> | <u>CHANNELIZATION</u> | <u>STABILITY</u> | <u>MODIFICATION/OTHER</u> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> |
| <input type="checkbox"/> |

COMMENTS: River partially re-directed at "overflow" at end of station.

4) RIPARIAN ZONE AND BANK EROSION: (Check ONE box or Check 2 and AVERAGE per bank) (10) RIPARIAN SCORE **6.5**

River Right Looking Downstream

| | | | | | | | |
|-------------------------------------|-------------------------------------|--|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| <u>RIPARIAN WIDTH (per bank)</u> | | <u>EROSION/RUNOFF-FLOODPLAIN QUALITY</u> | | | | <u>BANK EROSION</u> | |
| L | R (per bank) | L | R (most predominant per bank) | L | R (per bank) | L | R (per bank) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

COMMENTS: Riparian zone on only west shore.

5) POOL/GLIDE AND RIFFLE/RUN QUALITY (12) **NO POOL = 0** POOL SCORE **11**

| | | | |
|-------------------------------------|-------------------------------------|--|-------------------------------------|
| <u>MAX. DEPTH (Check 1)</u> | <u>MORPHOLOGY (Check 1)</u> | <u>POOL/RUN/RIFFLE CURRENT VELOCITY (Check all that Apply)</u> | |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

COMMENTS: Riffle at "overflow" at downstream end, upper end.

RIFFLE SCORE **5**

| | | |
|-------------------------------------|-------------------------------------|-------------------------------------|
| <u>RIFFLE/RUN DEPTH</u> | <u>RIFFLE/RUN SUBSTRATE</u> | <u>RIFFLE/RUN EMBEDDEDNESS</u> |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

COMMENTS: Riffle at upper end of station only.

6) GRADIENT (FEET/MILE)(10) 3 % POOL 95 % RIFFLE 5 % RUN GRADIENT SCORE **10**

1) SUBSTRATE: (Check ONLY Two Substrate Type Boxes: Check all types present)(20) SUBSTRATE SCORE **13**

| | | | | | | | | | | | | | |
|---|--------------------------|---|--------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|---|--------------------------|
| <u>TYPE</u> | | <u>POOL</u> | | <u>RIFFLE</u> | | <u>POOL</u> | | <u>RIFFLE</u> | | <u>SUBSTRATE ORIGIN (all)</u> | | <u>SILT COVER (one)</u> | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | BLDER/SLAB(10) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | LIMESTONE(1) | <input checked="" type="checkbox"/> | RIP/RAP(0) |
| <input type="checkbox"/> | BOULDER(9) | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | TILLS(1) | <input checked="" type="checkbox"/> | HARDPAN(0) |
| <input type="checkbox"/> | COBBLE(8) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | SANDSTONE(0) | <u>Extent of Embeddedness (check one)</u> | |
| <input type="checkbox"/> | HARDPAN(4) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | SHALE(-1) | <input type="checkbox"/> | EXTENSIVE(-2) |
| <input type="checkbox"/> | MUCK/SILT(2) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | COAL FINES(-2) | <input checked="" type="checkbox"/> | LOW(0) |
| TOTAL NUMBER OF SUBSTRATE TYPES: <input type="checkbox"/> >4(2) | | <input checked="" type="checkbox"/> <4(0) | | | | | | | | | | | |

NOTE: (Ignore sludge that originates from point sources: score is based on natural substrates)

COMMENTS: An excavated sand pit with deep connection to river.

2) INSTREAM COVER: (20) COVER SCORE **14**

| | | | | | |
|-------------------------------------|-----------------------------|-------------------------------------|---|-------------------------------------|-------------------------|
| <u>TYPE (Check all that apply)</u> | | | <u>AMOUNT (Check only one or Check 2 and AVERAGE)</u> | | |
| <input type="checkbox"/> | UNDERCUT BANKS(1) | <input checked="" type="checkbox"/> | DEEP POOLS(2) | <input type="checkbox"/> | OXBOWS(1) |
| <input checked="" type="checkbox"/> | OVERHANGING VEGETATION(1) | <input type="checkbox"/> | ROOTWADS(1) | <input checked="" type="checkbox"/> | AQUATIC MACROPHYTES(1) |
| <input checked="" type="checkbox"/> | SHALLOWS (IN SLOW WATER)(1) | <input checked="" type="checkbox"/> | BOULDERS(1) | <input checked="" type="checkbox"/> | LOGS OR WOODY DEBRIS(1) |
| | | | <input type="checkbox"/> EXTENSIVE >75%(11) | | |
| | | | <input type="checkbox"/> MODERATE 25-75%(7) | | |
| | | | <input checked="" type="checkbox"/> SPARSE 5-25%(3) | | |
| | | | <input type="checkbox"/> NEARLY ABSENT <5%(1) | | |

COMMENTS: Two sides with some overhanging trees.

3) CHANNEL MORPHOLOGY: (Check ONLY ONE per Category or Check 2 and AVERAGE)(20) **9**

| | | | | |
|--|---|---|---|--|
| <u>SINUOSITY</u> | <u>DEVELOPMENT</u> | <u>CHANNELIZATION</u> | <u>STABILITY</u> | <u>MODIFICATION/OTHER</u> |
| <input type="checkbox"/> HIGH(4) | <input type="checkbox"/> EXCELLENT(7) | <input type="checkbox"/> NONE(6) | <input type="checkbox"/> HIGH(3) | <input type="checkbox"/> SNAGGING |
| <input type="checkbox"/> MODERATE(3) | <input type="checkbox"/> GOOD(5) | <input checked="" type="checkbox"/> RECOVERED(4) | <input checked="" type="checkbox"/> MODERATE(2) | <input type="checkbox"/> RELOCATION |
| <input checked="" type="checkbox"/> LOW(2) | <input type="checkbox"/> FAIR(3) | <input type="checkbox"/> RECOVERING(3) | <input type="checkbox"/> LOW(1) | <input type="checkbox"/> CANOPY REMOVAL |
| <input type="checkbox"/> NONE(1) | <input checked="" type="checkbox"/> POOR(1) | <input type="checkbox"/> RECENT OR NO RECOVERY(1) | | <input checked="" type="checkbox"/> DREDGING |
| | | | | <input type="checkbox"/> ONE SIDE CHANNEL MODIFICATION |
| | | | | <input checked="" type="checkbox"/> IMPOUND |
| | | | | <input type="checkbox"/> ISLAND |
| | | | | <input type="checkbox"/> LEVEED |
| | | | | <input checked="" type="checkbox"/> BANK SHAPING |

COMMENTS: Channel morphology does not strictly apply--not in the river channel.

4) RIPARIAN ZONE AND BANK EROSION: (Check ONE box or Check 2 and AVERAGE per bank) (10) RIPARIAN SCORE **5**

River Right Looking Downstream

| | | | | | | | |
|-------------------------------------|-------------------------------------|--|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|
| <u>RIPARIAN WIDTH (per bank)</u> | | <u>EROSION/RUNOFF-FLOODPLAIN QUALITY</u> | | | | <u>BANK EROSION</u> | |
| L | R (per bank) | L | R (most predominant per bank) | L | R (per bank) | L | R (per bank) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | WIDE >150ft.(4) | <input type="checkbox"/> | FOREST, SWAMP(3) | <input type="checkbox"/> | URBAN OR INDUSTRIAL(0) | <input type="checkbox"/> | NONE OR LITTLE(3) |
| <input type="checkbox"/> | MODERATE 30-150 ft.(3) | <input type="checkbox"/> | OPEN PASTURE/ROW CROP(0) | <input type="checkbox"/> | SHURB OR OLD FIELD(2) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | RESID.,PARK,NEW FIELD(1) | <input type="checkbox"/> | CONSERV. TILLAGE(1) | <input type="checkbox"/> | MODERATE(2) |
| <input type="checkbox"/> | NARROW 15-30 ft.(2) | <input type="checkbox"/> | FENCED PASTURE(1) | <input type="checkbox"/> | MINING/CONSTRUCTION(0) | <input type="checkbox"/> | HEAVY OR SEVERE(1) |
| <input type="checkbox"/> | VERY NARROW 3-15 ft.(1) | | | | | | |
| <input checked="" type="checkbox"/> | NONE(0) | | | | | | |

COMMENTS: Some steep, eroding banks; gently sloping by condos, marina.

5) POOL/GLIDE AND RIFFLE/RUN QUALITY (12) **NO POOL = 0** POOL SCORE **9**

| | | | |
|---|--|--|---|
| <u>MAX. DEPTH (Check 1)</u> | <u>MORPHOLOGY (Check 1)</u> | <u>POOL/RUN/RIFFLE CURRENT VELOCITY (Check all that Apply)</u> | |
| <input checked="" type="checkbox"/> >4 ft.(6) | <input checked="" type="checkbox"/> POOL WIDTH > RIFFLE WIDTH(2) | <input type="checkbox"/> TORRENTIAL(-1) | <input checked="" type="checkbox"/> EDDIES(1) |
| <input type="checkbox"/> 2.4-4 ft.(4) | <input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH(1) | <input type="checkbox"/> FAST(1) | <input type="checkbox"/> INTERSTITIAL(-1) |
| <input type="checkbox"/> 1.2-2.4 ft.(2) | <input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH(0) | <input type="checkbox"/> MODERATE(1) | <input type="checkbox"/> INTERMITTENT(-2) |
| <input type="checkbox"/> <1.2 ft.(1) | | <input type="checkbox"/> SLOW(1) | |
| <input type="checkbox"/> <0.6 ft.(Pool=0)(0) | | | |

COMMENTS: _____

RIFFLE/RUN DEPTH RIFFLE/RUN SUBSTRATE RIFFLE/RUN EMBEDDEDNESS RIFFLE SCORE **0**

| | | |
|--|--|--|
| <u>RIFFLE/RUN DEPTH</u> | <u>RIFFLE/RUN SUBSTRATE</u> | <u>RIFFLE/RUN EMBEDDEDNESS</u> |
| <input type="checkbox"/> GENERALLY >4 in. MAX.>20 in.(4) | <input type="checkbox"/> STABLE (e.g., Cobble,Boulder)(2) | <input type="checkbox"/> EXTENSIVE(-1) |
| <input type="checkbox"/> GENERALLY >4 in. MAX.<20 in.(3) | <input type="checkbox"/> MOD. STABLE (e.g., Pea Gravel)(1) | <input type="checkbox"/> MODERATE(0) |
| <input type="checkbox"/> GENERALLY 2-4 in.(1) | <input type="checkbox"/> UNSTABLE (Gravel, Sand)(0) | <input checked="" type="checkbox"/> NONE(2) |
| <input type="checkbox"/> GENERALLY <2 in.(Riffle=0)(0) | <input type="checkbox"/> NO RIFFLE(0) | <input checked="" type="checkbox"/> NO RIFFLE(0) |
| | | <input type="checkbox"/> LOW(1) |

COMMENTS: _____

6) GRADIENT (FEET/MILE)(10) 3 % POOL 100 % RIFFLE 0 % RUN GRADIENT SCORE **10**

1) SUBSTRATE: (Check ONLY Two Substrate Type Boxes: Check all types present)(20) SUBSTRATE SCORE **15**

| | | | | | | | | | | | | | |
|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|---|-------------------------------------|
| TYPE | | POOL | | RIFFLE | | POOL | | RIFFLE | | SUBSTRATE ORIGIN (all) | | SILT COVER (one) | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | LIMESTONE(1) | RIP/RAP(0) | SILT-HEAVY(-2) | SILT-MOD(-1) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | TILLS(1) | HARDPAN(0) | <input type="checkbox"/> | SILT-NORM(0) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | SANDSTONE(0) | | Extent of Embeddedness (check one) | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | SHALE(-1) | | <input checked="" type="checkbox"/> | EXTENSIVE(-2) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | COAL FINES(-2) | | <input type="checkbox"/> | LOW(0) |
| | | | | | | | | | | | | <input type="checkbox"/> | MODERATE(-1) |
| | | | | | | | | | | | | <input type="checkbox"/> | NONE(1) |

TOTAL NUMBER OF SUBSTRATE TYPES: >4(2) <4(0)

NOTE: (Ignore sludge that originates from point sources: score is based on natural substrates)

COMMENTS: Includes outflow riffle to Williams Creek at upper end.

2) INSTREAM COVER: (20) COVER SCORE **19**

| | | | | | |
|-------------------------------------|-------------------------------------|-------------------------------------|--|--------------------------|--------------------------|
| TYPE (Check all that apply) | | | AMOUNT (Check only one or Check 2 and AVERAGE) | | |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| UNDERCUT BANKS(1) | DEEP POOLS(2) | OXBOWS(1) | EXTENSIVE >75%(11) | | |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | MODERATE 25-75%(7) | | |
| OVERHANGING VEGETATION(1) | ROOTWADS(1) | AQUATIC MACROPHYTES(1) | SPARSE 5-25%(3) | | |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | NEARLY ABSENT <5%(1) | | |
| SHALLOWS (IN SLOW WATER)(1) | BOULDERS(1) | LOGS OR WOODY DEBRIS(1) | | | |

COMMENTS: A bit of milfoil, very scattered emergents.

3) CHANNEL MORPHOLOGY: (Check ONLY ONE per Category or Check 2 and AVERAGE)(20) **14**

| | | | | |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------|
| <u>SINUOSITY</u> | <u>DEVELOPMENT</u> | <u>CHANNELIZATION</u> | <u>STABILITY</u> | <u>MODIFICATION/OTHER</u> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| HIGH(4) | EXCELLENT(7) | NONE(6) | HIGH(3) | SNAGGING |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | RELOCATION |
| MODERATE(3) | GOOD(5) | RECOVERED(4) | MODERATE(2) | CANOPY REMOVAL |
| <input type="checkbox"/> | <input type="checkbox"/> | RECOVERING(3) | LOW(1) | DREDGING |
| LOW(2) | FAIR(3) | RECENT OR NO RECOVERY(1) | | ONE SIDE CHANNEL MODIFICATION |
| <input type="checkbox"/> | POOR(1) | | | |
| NONE(1) | | | | |

COMMENTS:

4) RIPARIAN ZONE AND BANK EROSION: (Check ONE box or Check 2 and AVERAGE per bank) (10) RIPARIAN SCORE **6.5**

River Right Looking Downstream

| | | | | | | | |
|-------------------------------------|-------------------------------------|--|-------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| <u>RIPARIAN WIDTH (per bank)</u> | | <u>EROSION/RUNOFF-FLOODPLAIN QUALITY</u> | | | | <u>BANK EROSION</u> | |
| L | R (per bank) | L | R (most predominant per bank) | L | R (per bank) | L | R (per bank) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| WIDE >150ft.(4) | | FOREST, SWAMP(3) | | URBAN OR INDUSTRIAL(0) | | NONE OR LITTLE(3) | |
| <input type="checkbox"/> | <input type="checkbox"/> | OPEN PASTURE/ROW CROP(0) | | SHURB OR OLD FIELD(2) | | MODERATE(2) | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | RESID., PARK, NEW FIELD(1) | | CONSERV. TILLAGE(1) | | HEAVY OR SEVERE(1) | |
| NARROW 15-30 ft.(2) | | FENCED PASTURE(1) | | MINING/CONSTRUCTION(0) | | | |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | |
| VERY NARROW 3-15 ft.(1) | | | | | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| NONE(0) | | | | | | | |

COMMENTS:

5) POOL/GLIDE AND RIFFLE/RUN QUALITY (12) **NO POOL = 0** POOL SCORE **10**

| | | | |
|-------------------------------------|-------------------------------------|--|-------------------------------------|
| <u>MAX. DEPTH (Check 1)</u> | <u>MORPHOLOGY (Check 1)</u> | <u>POOL/RUN/RIFFLE CURRENT VELOCITY (Check all that Apply)</u> | |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| >4 ft.(6) | POOL WIDTH > RIFFLE WIDTH(2) | TORRENTIAL(-1) | EDDIES(1) |
| <input type="checkbox"/> | <input type="checkbox"/> | FAST(1) | INTERSTITIAL(-1) |
| 2.4-4 ft.(4) | POOL WIDTH = RIFFLE WIDTH(1) | MODERATE(1) | INTERMITTENT(-2) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 1.2-2.4 ft.(2) | POOL WIDTH < RIFFLE WIDTH(0) | SLOW(1) | |
| <input type="checkbox"/> | | | |
| <1.2 ft.(1) | | | |
| <input type="checkbox"/> | | | |
| <0.6 ft.(Pool=0)(0) | | | |

COMMENTS: One shallow side channel.

RIFFLE SCORE **5**

| | | |
|-------------------------------------|-------------------------------------|-------------------------------------|
| <u>RIFFLE/RUN DEPTH</u> | <u>RIFFLE/RUN SUBSTRATE</u> | <u>RIFFLE/RUN EMBEDDEDNESS</u> |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| GENERALLY >4 in. MAX. >20 in.(4) | STABLE (e.g., Cobble, Boulder)(2) | EXTENSIVE(-1) |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| GENERALLY >4 in. MAX. <20 in.(3) | MOD. STABLE (e.g., Pea Gravel)(1) | MODERATE(0) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| GENERALLY 2-4 in.(1) | UNSTABLE (Gravel, Sand)(0) | LOW(1) |
| <input type="checkbox"/> | <input type="checkbox"/> | |
| GENERALLY <2 in.(Riffle=0)(0) | NO RIFFLE(0) | |

COMMENTS: No riffle-ends at dam, begins just below "overflow";

6) GRADIENT (FEET/MILE)(10) 3 % POOL 95 % RIFFLE 5 % RUN 0 GRADIENT SCORE **10**

1) SUBSTRATE: (Check ONLY Two Substrate Type Boxes: Check all types present)(20) SUBSTRATE SCORE 18

| | | | | | | | | | | | | | |
|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------|--------------------------|---|--------------------------|
| <u>TYPE</u> | | <u>POOL</u> | | <u>RIFFLE</u> | | <u>POOL</u> | | <u>RIFFLE</u> | | <u>SUBSTRATE ORIGIN (all)</u> | | <u>SILT COVER (one)</u> | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | BLDER/SLAB(10) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | LIMESTONE(1) | <input type="checkbox"/> | SILT-HEAVY(-2) |
| <input type="checkbox"/> | BOULDER(9) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | TILLS(1) | <input type="checkbox"/> | SILT-NORM(0) |
| <input checked="" type="checkbox"/> | COBBLE(8) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | SANDSTONE(0) | <u>Extent of Embeddedness (check one)</u> | |
| <input type="checkbox"/> | HARDPAN(4) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | SHALE(-1) | <input type="checkbox"/> | EXTENSIVE(-2) |
| <input type="checkbox"/> | MUCK/SILT(2) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | COAL FINES(-2) | <input type="checkbox"/> | LOW(0) |
| | | | | | | | | | | | | <input checked="" type="checkbox"/> | MODERATE(-1) |
| | | | | | | | | | | | | <input type="checkbox"/> | NONE(1) |

TOTAL NUMBER OF SUBSTRATE TYPES: >4(2) <4(0)

NOTE: (Ignore sludge that originates from point sources: score is based on natural substrates)

COMMENTS: Small pools on southeast, up to almost 2 ft depth.

2) INSTREAM COVER: (20) COVER SCORE 16

| | | | | | |
|-------------------------------------|-----------------------------|-------------------------------------|---|-------------------------------------|----------------------|
| <u>TYPE (Check all that apply)</u> | | | <u>AMOUNT (Check only one or Check 2 and AVERAGE)</u> | | |
| <input checked="" type="checkbox"/> | UNDERCUT BANKS(1) | <input checked="" type="checkbox"/> | DEEP POOLS(2) | <input type="checkbox"/> | OXBOWS(1) |
| <input checked="" type="checkbox"/> | OVERHANGING VEGETATION(1) | <input checked="" type="checkbox"/> | ROOTWADS(1) | <input checked="" type="checkbox"/> | EXTENSIVE >75%(11) |
| <input checked="" type="checkbox"/> | SHALLOWS (IN SLOW WATER)(1) | <input checked="" type="checkbox"/> | BOULDERS(1) | <input checked="" type="checkbox"/> | MODERATE 25-75%(7) |
| | | | | <input type="checkbox"/> | SPARSE 5-25%(3) |
| | | | | <input type="checkbox"/> | NEARLY ABSENT <5%(1) |

COMMENTS: _____

3) CHANNEL MORPHOLOGY: (Check ONLY ONE per Category or Check 2 and AVERAGE)(20) 15

| | | | | | | | | | |
|-------------------------------------|--------------------|-------------------------------------|--------------------------|-------------------------------------|-------------|--------------------------|-------------------------------|-------------------------------------|--------------|
| <u>SINUOSITY</u> | <u>DEVELOPMENT</u> | <u>CHANNELIZATION</u> | <u>STABILITY</u> | <u>MODIFICATION/OTHER</u> | | | | | |
| <input type="checkbox"/> | HIGH(4) | <input checked="" type="checkbox"/> | NONE(6) | <input type="checkbox"/> | SNAGGING | <input type="checkbox"/> | IMPOUND | | |
| <input checked="" type="checkbox"/> | MODERATE(3) | <input type="checkbox"/> | RECOVERED(4) | <input checked="" type="checkbox"/> | HIGH(3) | <input type="checkbox"/> | RELOCATION | <input checked="" type="checkbox"/> | ISLAND |
| <input type="checkbox"/> | LOW(2) | <input checked="" type="checkbox"/> | RECOVERING(3) | <input type="checkbox"/> | MODERATE(2) | <input type="checkbox"/> | CANOPY REMOVAL | <input checked="" type="checkbox"/> | LEVEED |
| <input type="checkbox"/> | NONE(1) | <input type="checkbox"/> | RECENT OR NO RECOVERY(1) | <input type="checkbox"/> | LOW(1) | <input type="checkbox"/> | DREDGING | <input type="checkbox"/> | BANK SHAPING |
| | | | | | | <input type="checkbox"/> | ONE SIDE CHANNEL MODIFICATION | | |

COMMENTS: _____

4) RIPARIAN ZONE AND BANK EROSION: (Check ONE box or Check 2 and AVERAGE per bank) (10) RIPARIAN SCORE 6.5

River Right Looking Downstream

| | | | | | | | |
|-------------------------------------|-------------------------------------|--|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| <u>RIPARIAN WIDTH (per bank)</u> | | <u>EROSION/RUNOFF-FLOODPLAIN QUALITY</u> | | | | <u>BANK EROSION</u> | |
| L | R (per bank) | L | R (most predominant per bank) | L | R (per bank) | L | R (per bank) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |

COMMENTS: Riparian zone squeezed in between river and levee on west side.

5) POOL/GLIDE AND RIFFLE/RUN QUALITY (12) **NO POOL = 0** POOL SCORE 6

| | | | |
|-------------------------------------|-----------------------------|--|------------------|
| <u>MAX. DEPTH (Check 1)</u> | <u>MORPHOLOGY (Check 1)</u> | <u>POOL/RUN/RIFFLE CURRENT VELOCITY (Check all that Apply)</u> | |
| <input type="checkbox"/> | >4 ft.(6) | <input type="checkbox"/> | TORRENTIAL(-1) |
| <input type="checkbox"/> | 2.4-4 ft.(4) | <input checked="" type="checkbox"/> | FAST(1) |
| <input checked="" type="checkbox"/> | 1.2-2.4 ft.(2) | <input checked="" type="checkbox"/> | MODERATE(1) |
| <input type="checkbox"/> | <1.2 ft.(1) | <input checked="" type="checkbox"/> | SLOW(1) |
| <input type="checkbox"/> | <0.6 ft.(Pool=0)(0) | <input checked="" type="checkbox"/> | EDDIES(1) |
| | | <input type="checkbox"/> | INTERSTITIAL(-1) |
| | | <input type="checkbox"/> | INTERMITTENT(-2) |

COMMENTS: No pool;

RIFFLE SCORE 6

| | | | |
|-------------------------------------|---------------------------------|-------------------------------------|---------------|
| <u>RIFFLE/RUN DEPTH</u> | <u>RIFFLE/RUN SUBSTRATE</u> | <u>RIFFLE/RUN EMBEDDEDNESS</u> | |
| <input checked="" type="checkbox"/> | GENERALLY >4 in. MAX.>20 in.(4) | <input type="checkbox"/> | EXTENSIVE(-1) |
| <input type="checkbox"/> | GENERALLY >4 in. MAX.<20 in.(3) | <input checked="" type="checkbox"/> | MODERATE(0) |
| <input type="checkbox"/> | GENERALLY 2-4 in.(1) | <input type="checkbox"/> | LOW(1) |
| <input type="checkbox"/> | GENERALLY <2 in.(Riffle=0)(0) | <input type="checkbox"/> | NONE(2) |
| | | <input checked="" type="checkbox"/> | NO RIFFLE(0) |
| | | | |

COMMENTS: A pretty riffle with some deep holes, bolers, cobble--deep enough for angling;

6) GRADIENT (FEET/MILE)(10) 6.4 % POOL 5 % RIFFLE 90 % RUN 5 GRADIENT SCORE 10

1) SUBSTRATE: (Check ONLY Two Substrate Type Boxes: Check all types present)(20) SUBSTRATE SCORE **17**

| | | | | | | | | | | | | | | | |
|--------------------------|-------------------------------------|----------------|-------------------------------------|-------------------------------------|--------------------------|-------------|-------------------------------------|-------------------------------------|----------------|---|---------------|-------------------------------------|----------------|-------------------------------------|--------------|
| <u>TYPE</u> | | <u>POOL</u> | | <u>RIFFLE</u> | <u>POOL</u> | | <u>RIFFLE</u> | <u>SUBSTRATE ORIGIN (all)</u> | | <u>SILT COVER (one)</u> | | | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | BLDER/SLAB(10) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | GRAVEL(7) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | LIMESTONE(1) | <input type="checkbox"/> | RIP/RAP(0) | <input type="checkbox"/> | SILT-HEAVY(-2) | <input checked="" type="checkbox"/> | SILT-MOD(-1) |
| <input type="checkbox"/> | <input type="checkbox"/> | BOULDER(9) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | SAND(6) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | TILLS(1) | <input type="checkbox"/> | HARDPAN(0) | <input checked="" type="checkbox"/> | SILT-NORM(0) | <input type="checkbox"/> | SILT-FREE(1) |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | COBBLE(8) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | BEDROCK(5) | <input type="checkbox"/> | <input type="checkbox"/> | SANDSTONE(0) | <u>Extent of Embeddedness (check one)</u> | | | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | HARDPAN(4) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | DETRITUS(3) | <input type="checkbox"/> | <input type="checkbox"/> | SHALE(-1) | <input type="checkbox"/> | EXTENSIVE(-2) | <input checked="" type="checkbox"/> | MODERATE(-1) | | |
| <input type="checkbox"/> | <input type="checkbox"/> | MUCK/SILT(2) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ARTIFIC(0) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | COAL FINES(-2) | <input type="checkbox"/> | LOW(0) | <input type="checkbox"/> | NONE(1) | | |

TOTAL NUMBER OF SUBSTRATE TYPES: >4(2) <4(0)

NOTE: (Ignore sludge that originates from point sources: score is based on natural substrates)

COMMENTS: Slow run most of length, big riffle downstream-electrofished in that area. Run is deep on west side, shallow with milfoil on east side.

2) INSTREAM COVER: (20) COVER SCORE **16**

| | | | | | | | |
|-------------------------------------|-----------------------------|-------------------------------------|---|-------------------------------------|-------------------------|-------------------------------------|----------------------|
| <u>TYPE (Check all that apply)</u> | | | <u>AMOUNT (Check only one or Check 2 and AVERAGE)</u> | | | | |
| <input checked="" type="checkbox"/> | UNDERCUT BANKS(1) | <input checked="" type="checkbox"/> | DEEP POOLS(2) | <input type="checkbox"/> | OXBOWS(1) | <input type="checkbox"/> | EXTENSIVE >75%(11) |
| <input checked="" type="checkbox"/> | OVERHANGING VEGETATION(1) | <input checked="" type="checkbox"/> | ROOTWADS(1) | <input checked="" type="checkbox"/> | AQUATIC MACROPHYTES(1) | <input checked="" type="checkbox"/> | MODERATE 25-75%(7) |
| <input checked="" type="checkbox"/> | SHALLOWS (IN SLOW WATER)(1) | <input checked="" type="checkbox"/> | BOULDERS(1) | <input checked="" type="checkbox"/> | LOGS OR WOODY DEBRIS(1) | <input type="checkbox"/> | SPARSE 5-25%(3) |
| | | | | | | <input type="checkbox"/> | NEARLY ABSENT <5%(1) |

COMMENTS: Deep pool (5') with boulders, gravel, apparently swept clean of silt.

3) CHANNEL MORPHOLOGY: (Check ONLY ONE per Category or Check 2 and AVERAGE)(20) **13**

| | | | | | | | |
|-------------------------------------|--------------------|-------------------------------------|--------------------------|---------------------------|-------------------------------|-------------------------------------|--------------|
| <u>SINUOSITY</u> | <u>DEVELOPMENT</u> | <u>CHANNELIZATION</u> | <u>STABILITY</u> | <u>MODIFICATION/OTHER</u> | | | |
| <input type="checkbox"/> | HIGH(4) | <input checked="" type="checkbox"/> | NONE(6) | <input type="checkbox"/> | SNAGGING | <input type="checkbox"/> | IMPOUND |
| <input type="checkbox"/> | MODERATE(3) | <input type="checkbox"/> | RECOVERED(4) | <input type="checkbox"/> | RELOCATION | <input checked="" type="checkbox"/> | ISLAND |
| <input checked="" type="checkbox"/> | LOW(2) | <input type="checkbox"/> | RECOVERING(3) | <input type="checkbox"/> | CANOPY REMOVAL | <input checked="" type="checkbox"/> | LEVEED |
| <input type="checkbox"/> | NONE(1) | <input type="checkbox"/> | RECENT OR NO RECOVERY(1) | <input type="checkbox"/> | DREDGING | <input type="checkbox"/> | BANK SHAPING |
| | | | | <input type="checkbox"/> | ONE SIDE CHANNEL MODIFICATION | | |

COMMENTS: Levee on east side.

4) RIPARIAN ZONE AND BANK EROSION: (Check ONE box or Check 2 and AVERAGE per bank) (10) RIPARIAN SCORE **6.5**

River Right Looking Downstream

| | | | | | | | |
|-------------------------------------|--------------------------|--|-------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| <u>RIPARIAN WIDTH (per bank)</u> | | <u>EROSION/RUNOFF-FLOODPLAIN QUALITY</u> | | | | <u>BANK EROSION</u> | |
| L | R (per bank) | L | R (most predominant per bank) | L | R (per bank) | L | R (per bank) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | WIDE >150ft.(4) | <input type="checkbox"/> | FOREST, SWAMP(3) | <input type="checkbox"/> | URBAN OR INDUSTRIAL(0) | <input type="checkbox"/> | NONE OR LITTLE(3) |
| <input type="checkbox"/> | MODERATE 30-150 ft.(3) | <input type="checkbox"/> | OPEN PASTURE/ROW CROP(0) | <input type="checkbox"/> | SHURB OR OLD FIELD(2) | <input type="checkbox"/> | MODERATE(2) |
| <input type="checkbox"/> | NARROW 15-30 ft.(2) | <input checked="" type="checkbox"/> | RESID., PARK, NEW FIELD(1) | <input type="checkbox"/> | CONSERV. TILLAGE(1) | <input type="checkbox"/> | HEAVY OR SEVERE(1) |
| <input type="checkbox"/> | VERY NARROW 3-15 ft.(1) | <input type="checkbox"/> | FENCED PASTURE(1) | <input type="checkbox"/> | MINING/CONSTRUCTION(0) | | |
| <input type="checkbox"/> | NONE(0) | | | | | | |

COMMENTS:

5) POOL/GLIDE AND RIFFLE/RUN QUALITY (12) **NO POOL = 0** POOL SCORE **11**

| | | | | | |
|-------------------------------------|-----------------------------|--|----------------|--------------------------|------------------|
| <u>MAX. DEPTH (Check 1)</u> | <u>MORPHOLOGY (Check 1)</u> | <u>POOL/RUN/RIFFLE CURRENT VELOCITY (Check all that Apply)</u> | | | |
| <input checked="" type="checkbox"/> | >4 ft.(6) | <input type="checkbox"/> | TORRENTIAL(-1) | <input type="checkbox"/> | EDDIES(1) |
| <input type="checkbox"/> | 2.4-4 ft.(4) | <input checked="" type="checkbox"/> | FAST(1) | <input type="checkbox"/> | INTERSTITIAL(-1) |
| <input type="checkbox"/> | 1.2-2.4 ft.(2) | <input checked="" type="checkbox"/> | MODERATE(1) | <input type="checkbox"/> | INTERMITTENT(-2) |
| <input type="checkbox"/> | <1.2 ft.(1) | <input checked="" type="checkbox"/> | SLOW(1) | | |
| <input type="checkbox"/> | <0.6 ft.(Pool=0)(0) | | | | |

COMMENTS: Pool/Glide not shocked-below and across river from shoreline shocked.

RIFFLE SCORE **6**

| | | | | | |
|-------------------------------------|---------------------------------|-------------------------------------|-----------------------------------|-------------------------------------|--------------|
| <u>RIFFLE/RUN DEPTH</u> | <u>RIFFLE/RUN SUBSTRATE</u> | <u>RIFFLE/RUN EMBEDDEDNESS</u> | | | |
| <input checked="" type="checkbox"/> | GENERALLY >4 in. MAX.>20 in.(4) | <input type="checkbox"/> | EXTENSIVE(-1) | <input type="checkbox"/> | NONE(2) |
| <input type="checkbox"/> | GENERALLY >4 in. MAX.<20 in.(3) | <input checked="" type="checkbox"/> | MODERATE(0) | <input checked="" type="checkbox"/> | NO RIFFLE(0) |
| <input type="checkbox"/> | GENERALLY 2-4 in.(1) | <input type="checkbox"/> | LOW(1) | | |
| <input type="checkbox"/> | GENERALLY <2 in.(Riffle=0)(0) | <input checked="" type="checkbox"/> | STABLE (e.g., Cobble,Boulder)(2) | | |
| | | <input type="checkbox"/> | MOD. STABLE (e.g., Pea Gravel)(1) | | |
| | | <input type="checkbox"/> | UNSTABLE (Gravel, Sand)(0) | | |
| | | <input type="checkbox"/> | NO RIFFLE(0) | | |

COMMENTS: Shocked both riffle and pool/glide.

6) GRADIENT (FEET/MILE)(10) 5.8 % POOL 20 % RIFFLE 30 % RUN 50 GRADIENT SCORE **10**

1) SUBSTRATE: (Check ONLY Two Substrate Type Boxes: Check all types present)(20) SUBSTRATE SCORE **5.5**

| | | | | | | | | | | | |
|--|--------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|---|-------------------------------------|
| <u>TYPE</u> | | <u>POOL</u> | | <u>RIFFLE</u> | <u>POOL</u> | | <u>RIFFLE</u> | <u>SUBSTRATE ORIGIN (all)</u> | | <u>SILT COVER (one)</u> | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <u>Extent of Embeddedness (check one)</u> | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| TOTAL NUMBER OF SUBSTRATE TYPES: <input type="checkbox"/> >4(2) <input checked="" type="checkbox"/> <4=0 | | | | | | | | | | | |

NOTE: (Ignore sludge that originates from point sources: score is based on natural substrates)

COMMENTS: Mostly sand, some gravel and cobble.

2) INSTREAM COVER: (20) COVER SCORE **18**

| | | | | | |
|-------------------------------------|-------------------------------------|-------------------------------------|---|--------------------------|--------------------------|
| <u>TYPE (Check all that apply)</u> | | | <u>AMOUNT (Check only one or Check 2 and AVERAGE)</u> | | |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

COMMENTS: Lots of milfoil throughout, and some emergents and woody debris.

3) CHANNEL MORPHOLOGY: (Check ONLY ONE per Category or Check 2 and AVERAGE)(20) **14**

| | | | | |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| <u>SINUOSITY</u> | <u>DEVELOPMENT</u> | <u>CHANNELIZATION</u> | <u>STABILITY</u> | <u>MODIFICATION/OTHER</u> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> |

COMMENTS: Some shore stabilization with gabions along golf course.

4) RIPARIAN ZONE AND BANK EROSION: (Check ONE box or Check 2 and AVERAGE per bank) (10) RIPARIAN SCORE **5.5**

River Right Looking Downstream

| | | | | | | | |
|-------------------------------------|-------------------------------------|--|--------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| <u>RIPARIAN WIDTH (per bank)</u> | | <u>EROSION/RUNOFF-FLOODPLAIN QUALITY</u> | | | | <u>BANK EROSION</u> | |
| <u>L</u> | <u>R (per bank)</u> | <u>L</u> | <u>R (most predominant per bank)</u> | <u>L</u> | <u>R (per bank)</u> | <u>L</u> | <u>R (per bank)</u> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

COMMENTS:

5) POOL/GLIDE AND RIFFLE/RUN QUALITY (12) **NO POOL = 0** POOL SCORE **10**

| | | | |
|-------------------------------------|-------------------------------------|--|-------------------------------------|
| <u>MAX. DEPTH (Check 1)</u> | <u>MORPHOLOGY (Check 1)</u> | <u>POOL/RUN/RIFFLE CURRENT VELOCITY (Check all that Apply)</u> | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

COMMENTS:

RIFFLE SCORE **0**

| | | |
|--------------------------|-------------------------------------|-------------------------------------|
| <u>RIFFLE/RUN DEPTH</u> | <u>RIFFLE/RUN SUBSTRATE</u> | <u>RIFFLE/RUN EMBEDDEDNESS</u> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

COMMENTS:

6) GRADIENT (FEET/MILE)(10) 2.9 % POOL 100 % RIFFLE 0 % RUN 0 GRADIENT SCORE **10**

**INDIANA DIVISION OF FISH AND WILDLIFE
STREAM HABITAT EVALUATION FORM**

STREAM: Station 1, West Fork White River, Mounds SP Canoe Launch RIVER MILE: 296.9

NEAREST TOWN: Anderson COUNTY: Madison

QUADRANGLE: Middletown TWP: 19N RNG: 8E SEC: 16

LATITUDE: N40.1064 (Upstream end) LONGITUDE: W85.6251 (Upstream end)

LATITUDE: N40.1058 (downstream end) LONGITUDE: W85.6235 (downstream end)

U.S.G.S. GAUGING STATION LOCATION: Anderson AVG. DISCHARGE (cfs): 103.5

IS REACH REPRESENTATIVE OF STREAM (Y/N) N IF NOT, WHY? This is State Park property; downstream is the city of Anderson, and upstream is private land, mostly farm land.

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Canoe launch at Mounds State Park. Wide riparian corridor on both sides of river. Not deep enough for boats, and there is no accommodation for boats at the canoe launch. Nice, natural setting. Both sides of long island were sampled.

COLLECTION SUMMARY

DATE: 9/17/2007 GEAR: Barge electrofisher EFFORT: 0.71 h

CREW: Bob Ball, Carl Wodrich, Jennifer Humphrey, Brant Fisher, Sara Bales

OTHER GEAR/EFFORT: None WATER STAGE: Low

CANOPY (%OPEN): 40 PHOTOS (Y/N): N SECCHI DISK (inches): Bottom (4')

AIR TEMP (F): 78 WATER TEMP (F): 64 D.O. (ppm): 11.7

CONDUCTIVITY: 1400 μ pH: 8 ALKALINITY: 171 ppm

TDS: _____

STREAM MEASUREMENTS AVG. WIDTH: 81.7 ft AVG. DEPTH: 15.4" MAX DEPTH: 40"

STATION LENGTH: (1st date) 393' (2nd date) _____

| | WIDTH (ft) | DEPTH (in) | |
|-----|------------|------------|----|
| | 40,25 | 23 | 12 |
| 108 | 4 | 12 | 16 |
| 69 | 9 | 15 | 20 |
| 66 | 5,14 | 2 | 16 |
| 84 | 27 | 18 | 3 |
| | | | |

9
10
 SUBJECTIVE RATING (1-10) AESTHETIC RATING (1-10)

ADDITIONAL COMMENTS/POLLUTION IMPACTS: Excellent riparian cover on east side of river, but less on west side. Low banks, island with several small sycamores, other trees on upstream end. Conductivity very high, at least in part due to very dry summer, fall. Also, accounts for narrower channel this year than in 2004.

**INDIANA DIVISION OF FISH AND WILDLIFE
STREAM HABITAT EVALUATION FORM**

STREAM: Station 2, Raible Ave. Bridge, West Fork White River RIVER MILE: 290.1

NEAREST TOWN: Anderson COUNTY: Madison

QUADRANGLE: Anderson South TWP: 19N RNG: 7E SEC: 10,11

LATITUDE: N40.1108 LONGITUDE: W85.7084

LATITUDE: N40.11294 LONGITUDE: W85.7156

U.S.G.S. GAUGING STATION LOCATION: Anderson AVG. DISCHARGE (cfs): 99.5

IS REACH REPRESENTATIVE OF STREAM (Y/N) Y IF NOT, WHY? _____

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Access at Raible Avenue bridge, began at bridge and sampled downstream to WWTP outfall, sampled both banks. Milfoil, curlyleaf, filamentous algae, water stargrass? common.

COLLECTION SUMMARY

DATE: 9/19/2007 GEAR: D.C. Electrofishing Boat EFFORT: 0.59 h

CREW: Rhett Wisener, Jamie Smyth, Andy Richards

OTHER GEAR/EFFORT: None WATER STAGE: Low

CANOPY (%OPEN): 75% PHOTOS (Y/N): N SECCHI DISK (inches): Bottom

AIR TEMP (F): 78 WATER TEMP (F): 66 D.O. (ppm): 7.7

CONDUCTIVITY: 830 μ pH: 9 ALKALINITY: 68 ppm

TDS: _____

STREAM MEASUREMENTS AVG. WIDTH: 130.4' AVG. DEPTH: 22" MAX DEPTH: 3.1'

STATION LENGTH: (1st date) 1,267 ft (2nd date) 9/19/07 distance=1312'

| WIDTH (ft) | DEPTH (in) | | |
|------------|------------|----|----|
| 144 | 24 | 36 | 37 |
| 132 | 23 | 29 | 24 |
| 138 | 30 | 17 | 6 |
| 138 | 24 | 28 | 17 |
| 156 | 14 | 17 | 6 |
| | | | |

| | |
|--|--|
| 8 | 7 |
| SUBJECTIVE RATING (1-10) | AESTHETIC RATING (1-10) |

ADDITIONAL COMMENTS/POLLUTION IMPACTS: City encroaches on east bank, a golf course is on west bank. Not much of a riparian corridor, and about half of shoreline has no riparian habitat. Boating and fishing access is located on the east side above bridge; a large parking lot that is private property.

**INDIANA DIVISION OF FISH AND WILDLIFE
STREAM HABITAT EVALUATION FORM**

STREAM: Station 3, County Road 600 W., West Fork White River RIVER MILE: 284.4

NEAREST TOWN: Perkinsville COUNTY: Madison

QUADRANGLE: Frankton TWP: 19 N RNG: 6E SEC: 1

LATITUDE: N40.1324 LONGITUDE: W85.7859

LATITUDE: N40.1329 LONGITUDE: W85.7928

U.S.G.S. GAUGING STATION LOCATION: Anderson AVG. DISCHARGE (cfs): 97.5

IS REACH REPRESENTATIVE OF STREAM (Y/N) Y IF NOT, WHY? _____

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Started 20-30 yards above bridge and shocked downstream on right bank through 1st riffle, sampled left and right banks between 1st and 2nd riffle and right (deeper) bank downstream of 2nd riffle.

COLLECTION SUMMARY

DATE: 9/20/2007 GEAR: DC Boat EFFORT: 1.0 h

CREW: Rhett Wisener, Jamie Smyth

OTHER GEAR/EFFORT: None WATER STAGE: Low

CANOPY (%OPEN): 75 PHOTOS (Y/N): N SECCHI DISK (inches): Bottom

AIR TEMP (F): 80 WATER TEMP (F): 72 D.O. (ppm): 10.2

CONDUCTIVITY: 810 μ pH: 9 ALKALINITY: 68ppm

TDS: _____

STREAM MEASUREMENTS AVG. WIDTH: 146 ft. AVG. DEPTH: 39" MAX DEPTH: 8.0 ft.

STATION LENGTH: (1st date) 2429' (2nd date) _____

| WIDTH (ft) | DEPTH (in) | | |
|------------|------------|----|----|
| 162 | 64 | 72 | 44 |
| 129 | 11 | 12 | 13 |
| 132 | 54 | 76 | 77 |
| 150 | 26 | 18 | 31 |
| 156 | 25 | 30 | 25 |
| | | | |

| | |
|--------------------------------|-------------------------------|
| 5 | 7 |
| SUBJECTIVE RATING (1-10) | AESTHETIC RATING (1-10) |

ADDITIONAL COMMENTS/POLLUTION IMPACTS: Submergent veg.: E. watermilfoil, elodea, Am. Pondweed, curlyleaf, sago, water stargrass?, also filamentous algae, duckweed.

**INDIANA DIVISION OF FISH AND WILDLIFE
STREAM HABITAT EVALUATION FORM**

STREAM: Station 4, Perkinsville, West Fork White River RIVER MILE: 279.0

NEAREST TOWN: Perkinsville COUNTY: Madison

QUADRANGLE: Frankton TWP: 20N RNG: 6E SEC: 33

LATITUDE: N40.1427 LONGITUDE: W85.8582

LATITUDE: N40.1428 LONGITUDE: W85.8599

U.S.G.S. GAUGING STATION LOCATION: Anderson AVG. DISCHARGE (cfs): 103.5

IS REACH REPRESENTATIVE OF STREAM (Y/N) Y IF NOT, WHY? _____

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Overhanging maples, island on west side of site; site was entire length of island; riffle, pool at head of site.

COLLECTION SUMMARY

DATE: 9/17/2007 GEAR: Barge electrofisher EFFORT: 0.52 h

CREW: Bob Ball, Carl Wodrich, Jennifer Humphrey, Brant Fisher, Sara Bales

OTHER GEAR/EFFORT: None WATER STAGE: Low

CANOPY (%OPEN): 60% PHOTOS (Y/N): N SECCHI DISK (inches): 36 (Bottom)

AIR TEMP (F): 70 WATER TEMP (F): 62 D.O. (ppm): 9.6

CONDUCTIVITY: 820 μ pH: 7.5 ALKALINITY: 291

TDS: _____

STREAM MEASUREMENTS AVG. WIDTH: 61' AVG. DEPTH: 25" MAX DEPTH: 54"

STATION LENGTH: (1st date) 229' (2nd date) _____

| WIDTH (ft) | DEPTH (in) | | |
|------------|------------|----|----|
| 66 | 16 | 28 | 35 |
| 62 | 18 | 25 | 22 |
| 47 | 23 | 30 | 25 |
| 72 | 6 | 37 | 30 |
| 58 | 23 | 35 | 26 |
| | | | |

| | |
|--------------------------------|-------------------------------|
| 7 | 8 |
| SUBJECTIVE RATING (1-10) | AESTHETIC RATING (1-10) |

ADDITIONAL COMMENTS/POLLUTION IMPACTS: Campground with mowed area along north bank. Slight smell of sewage. Houses close to shore on north bank, also much cultivated land in close proximity. The upper river bottom had remnants of a fish weir in it, but had not been usable in years. Riffle had rocky bottom, mostly silt/sand bottom elsewhere.

**INDIANA DIVISION OF FISH AND WILDLIFE
STREAM HABITAT EVALUATION FORM**

STREAM: Station 5, Coffey Grounds, West Fork White River RIVER MILE: 275.9

NEAREST TOWN: Strawtown COUNTY: Hamilton

QUADRANGLE: Omega TWP: 19N RNG: 5E SEC: 1

LATITUDE: N40.1287 LONGITUDE: W85.9087

LATITUDE: N40.1303 LONGITUDE: W85.9110

U.S.G.S. GAUGING STATION LOCATION: Noblesville AVG DISCHARGE (cfs): 103.5

IS REACH REPRESENTATIVE OF STREAM (Y/N) Y IF NOT, WHY? _____

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Started just below 1st riffle above access and sampled downstream to 1st riffle below island. Did not sample through narrow chute along island or through riffle on other side of island; sampling downstream.

COLLECTION SUMMARY

DATE: 9/19/2007 GEAR: DC Boat EFFORT: 0.79 h

CREW: Rhett Wisener, Jamie Smyth, Andy Richards

OTHER GEAR/EFFORT: None WATER STAGE: Low

CANOPY (%OPEN): 85% PHOTOS (Y/N): N SECCHI DISK (inches): Bottom

AIR TEMP (F): 83 WATER TEMP (F): 74 D.O. (ppm): 16.6

CONDUCTIVITY: 830 μ pH: 9 ALKALINITY: 68 ppm

TDS: _____

STREAM MEASUREMENTS AVG. WIDTH: 152' AVG. DEPTH: 24" MAX DEPTH: 54"

STATION LENGTH: (1st date) 845' (2nd date) _____

| WIDTH (ft) | DEPTH (in) | | |
|------------|------------|----|----|
| 147 | 20 | 26 | 12 |
| 156 | 37 | 49 | 23 |
| 159 | 18 | 19 | 13 |
| 162 | 23 | 54 | 19 |
| 135 | 17 | 19 | 17 |
| | | | |

| | |
|--|--|
| <div style="border: 1px solid black; padding: 2px 10px;">6</div> | <div style="border: 1px solid black; padding: 2px 10px;">8</div> |
| SUBJECTIVE RATING (1-10) | AESTHETIC RATING (1-10) |

ADDITIONAL COMMENTS/POLLUTION IMPACTS: Cattle on right shore are fenced out of river and apparently no cattle on left shore. Nice island and riffles. A tire in river, but little other foreign waste visible. Veg.: milfoil, curlyleaf, water stargrass?, filamentous algae.

**INDIANA DIVISION OF FISH AND WILDLIFE
STREAM HABITAT EVALUATION FORM**

STREAM: Station 6, Clare, West Fork White River RIVER MILE: 269.4

NEAREST TOWN: Clare COUNTY: Hamilton

QUADRANGLE: Riverwood TWP: 19N RNG: 5E SEC: 16

LATITUDE: N40.1113 (Upstream) LONGITUDE: W85.9660 (Upstream)

LATITUDE: N40.0951 (Downstream) LONGITUDE: W85.9689

U.S.G.S. GAUGING STATION LOCATION: Anderson AVG. DISCHARGE (cfs): 103.5

IS REACH REPRESENTATIVE OF STREAM (Y/N) N IF NOT, WHY? Impounded stretch

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Sampled from dam upstream to above high voltage transmission lines.

The impoundment has filled in to a large degree; a small dam not much wider than the river itself, backs water up about 2 miles.

River has Clare on east bank, Riverwood on west bank; very little riparian habitat. Many homes right on bank, also RVs on US E side.

COLLECTION SUMMARY

DATE: 9/24-25/2007 GEAR: DC Boat EFFORT: 1.26h

CREW: bob Ball, Jennifer Humphrey, Carl Wodrich

OTHER GEAR/EFFORT: 3 Gill Nets, 4 Trap Nets WATER STAGE: Low

CANOPY (%OPEN): 95% PHOTOS (Y/N): N SECCHI DISK (inches): 84"

AIR TEMP (F): 76 WATER TEMP (F): 71 D.O. (ppm): 10.2

CONDUCTIVITY: 1000 μ pH: 8 ALKALINITY: 222 ppm

TDS: _____

STREAM MEASUREMENTS AVG. WIDTH: 282' AVG. DEPTH: 6' MAX DEPTH: 12'

STATION LENGTH: (1st date) 5260' (2nd date) 5200"

| WIDTH (ft) | DEPTH (in) | | |
|------------|------------|--|--|
| 398 | | | |
| 382 | | | |
| 199 | | | |
| 278 | | | |
| 231 | | | |
| 207 | | | |

| | |
|--------------------------------|-------------------------------|
| 4 | 3 |
| SUBJECTIVE RATING (1-10) | AESTHETIC RATING (1-10) |

ADDITIONAL COMMENTS/POLLUTION IMPACTS: Power plant heated effluent discharged at dam. Little riparian habitat.

Instream habitat includes submerged trees, side channel, mud, sand and cobble bottom; deep bend with

bank having sharp dropoffs in places. A few root wads and slightly undercut banks.

**INDIANA DIVISION OF FISH AND WILDLIFE
STREAM HABITAT EVALUATION FORM**

STREAM: Station 7, Noblesville PAS, West Fork White River RIVER MILE: 263.6

NEAREST TOWN: Noblesville COUNTY: Hamilton

QUADRANGLE: Noblesville TWP: 19N RNG: 4E SEC: 36

LATITUDE: N40.0525 LONGITUDE: W85.0144

LATITUDE: N40.0468 LONGITUDE: W85.0166

U.S.G.S. GAUGING STATION LOCATION: Noblesville AVG. DISCHARGE (cfs): 137.2

IS REACH REPRESENTATIVE OF STREAM (Y/N) Y IF NOT, WHY? _____

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Access at Noblesville PAS, started downstream of power lines nearly in line with round house and shocked downstream to 2nd bridge. Worked both banks, middle where water level sufficient. Site is in city, construction on 2nd bridge 3 years ago removed some cover.

COLLECTION SUMMARY

DATE: 9/18/2007 GEAR: DC Boat EFFORT: 0.78 h

CREW: Rhett Wisener, Jamie Smyth

OTHER GEAR/EFFORT: None WATER STAGE: Low

CANOPY (%OPEN): 90% PHOTOS (Y/N): N SECCHI DISK (inches): Bottom

AIR TEMP (F): 84 WATER TEMP (F): 73 D.O. (ppm): 18.2

CONDUCTIVITY: 620 μ pH: 10 ALKALINITY: 86 ppm

TDS: _____

STREAM MEASUREMENTS AVG. WIDTH: 193' AVG. DEPTH: 24" MAX DEPTH: 64"

STATION LENGTH: (1st date) 2534' (2nd date) _____

| WIDTH (ft) | DEPTH (in) | | |
|------------|------------|----|----|
| 216 | 13 | 1 | 12 |
| 195 | 38 | 29 | 22 |
| 192 | 26 | 40 | 12 |
| 162 | 35 | 49 | 29 |
| 201 | 24 | 13 | 20 |
| | | | |

| | |
|---|--|
| <div style="border: 1px solid black; width: 30px; height: 30px; margin: 0 auto; display: flex; align-items: center; justify-content: center;">7</div> <p>SUBJECTIVE RATING (1-10)</p> | <div style="border: 1px solid black; width: 30px; height: 30px; margin: 0 auto; display: flex; align-items: center; justify-content: center;">7</div> <p>AESTHETIC RATING (1-10)</p> |
|---|--|

ADDITIONAL COMMENTS/POLLUTION IMPACTS: Bridges, homes (east side), businesses (west side) infringe on bank. The riparian cover very narrow to nonexistent. Submergents: mifoil, sago, unknown pondweed/water stargrass? Also filamentous algae.

**INDIANA DIVISION OF FISH AND WILDLIFE
STREAM HABITAT EVALUATION FORM**

STREAM: Station 8, HWY 32 bridge, West Fork White River RIVER MILE: 263.5

NEAREST TOWN: Noblesville COUNTY: Hamilton

QUADRANGLE: Noblesville TWP: 19N RNG: 4E SEC: 36

LATITUDE: N40.0470 LONGITUDE: W86.0166

LATITUDE: N40.0459 LONGITUDE: W86.0177

U.S.G.S. GAUGING STATION LOCATION: Noblesville AVG. DISCHARGE (cfs): 125

IS REACH REPRESENTATIVE OF STREAM (Y/N) Y IF NOT, WHY? _____

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Access at new boat ramp between bridges, west side.

Woody debris, bottom gravel/rubble, few boulders, submersed weeds (run), sand, rubble (some artificial) at shores.

Much Spirogyra.

COLLECTION SUMMARY

DATE: 9/19/2007 GEAR: Barge elect. EFFORT: 0.83 h

CREW: Brant Fisher, Sara Bales, Randy Lang, Jennifer Humphrey, Bob Ball

OTHER GEAR/EFFORT: None WATER STAGE: Very low

CANOPY (%OPEN): 97% not incl. 2 wide bridges PHOTOS (Y/N): N SECCHI DISK (inches): 45" (bottom)

AIR TEMP (F): 85 WATER TEMP (F): 69 D.O. (ppm): 11

CONDUCTIVITY: 900 μ pH: 9 ALKALINITY: 188 ppm

TDS: _____

STREAM MEASUREMENTS AVG. WIDTH: 143.2' AVG. DEPTH: 19" MAX DEPTH: 45"

STATION LENGTH: (1st date) 380' (2nd date) _____

| WIDTH (ft) | DEPTH (in) | | |
|------------|------------|------|------|
| 124 | 5.5 | 17 | 12 |
| 123 | 32.5 | 11 | 15.5 |
| 126 | 21.5 | 43 | 40.5 |
| 148 | 17 | 6 | 17.5 |
| 185 | 10 | 15.2 | 16 |
| 153 | | | |

4 2
 SUBJECTIVE AESTHETIC
 RATING RATING
 (1-10) (1-10)

ADDITIONAL COMMENTS/POLLUTION IMPACTS: Bridges in both ends of site (especially Logan St at upper end) provide the only shade. New boat ramp at Logan St. reduces natural shoreline.

**INDIANA DIVISION OF FISH AND WILDLIFE
STREAM HABITAT EVALUATION FORM**

STREAM: Station 9, Fishers riffle, West Fork White River RIVER MILE: 253.5

NEAREST TOWN: Trails End COUNTY: Hamilton

QUADRANGLE: Fishers TWP: 17N RNG: 4E SEC: 3

LATITUDE: N39.9582 LONGITUDE: W86.0545

LATITUDE: N39.95812 LONGITUDE: W86.0559

U.S.G.S. GAUGING STATION LOCATION: Noblesville AVG. DISCHARGE (cfs): 125

IS REACH REPRESENTATIVE OF STREAM (Y/N) Y IF NOT, WHY? _____

Station has mix of riffles, runs; runs predominate, however.

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Island 20 ft. wide, riffles on both sides, shocked both sides. Overhanging trees, steep banks both sides, fast water in places; submerged trees; much aquatic vegetation: smartweed on upper (shallow) end of island, Spirogyra, milfoil. Boulders, rubble in fast riffles; mostly boulder, gravel.

COLLECTION SUMMARY

DATE: 9/19/2007 GEAR: Barge electrofisher EFFORT: 0.83 h

CREW: Brant Fisher, Sara Bales, Randy Lang, Jennifer Humphrey, Bob Ball

OTHER GEAR/EFFORT: None WATER STAGE: Low

CANOPY (%OPEN): 70% PHOTOS (Y/N): N SECCHI DISK (inches): 32" (bottom)

AIR TEMP (F): 70 WATER TEMP (F): 68 D.O. (ppm): 6 (10AM)

CONDUCTIVITY: 1100µ pH: 8.5 ALKALINITY: 205 ppm

TDS: _____

STREAM MEASUREMENTS AVG. WIDTH: 179' AVG. DEPTH: 17.2" MAX DEPTH: 32"

STATION LENGTH: (1st date) 392' (2nd date) _____

| | WIDTH (ft) | DEPTH (in) | |
|-----|------------|------------|-----|
| 206 | 10 | 12 | 8 |
| 171 | 15.5 | 25 | 15 |
| 170 | 7 | 12 | 7.5 |
| 181 | 13 | 19.5 | 30 |
| 176 | 30 | 32 | 21 |
| 172 | | | |

8 8
 SUBJECTIVE AESTHETIC
 RATING RATING
 (1-10) (1-10)

ADDITIONAL COMMENTS/POLLUTION IMPACTS: Homes with lawns on high east bank. No river smells. Some trash in river. Spirogyra in shallows. Riparian habitat more extensive on west bank. Docks are more developed than in 2004, with new wood stairs. Lots of submerged trees, overhanging trees.

**INDIANA DIVISION OF FISH AND WILDLIFE
STREAM HABITAT EVALUATION FORM**

STREAM: Station 10, 116th St., West Fork White River RIVER MILE: 253.3

NEAREST TOWN: Fishers COUNTY: Hamilton

QUADRANGLE: Fishers TWP: 17N RNG: 4E SEC: 3

LATITUDE: N39.9577 LONGITUDE: W86.0611

LATITUDE: N39.9540 LONGITUDE: W86.0674

U.S.G.S. GAUGING STATION LOCATION: Noblesville AVG. DISCHARGE (cfs): 137.2

IS REACH REPRESENTATIVE OF STREAM (Y/N) Y IF NOT, WHY? _____

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Access at 116th St. ramp, started at 1st riffle above ramp, sampled downstream to island downstream of bridge, primarily west bank due to low water. Also short stretch in mid river upstream of bridge.

COLLECTION SUMMARY

DATE: 9/10/2007 GEAR: DC Boat EFFORT: 0.60 h

CREW: Rhett Wisener, Jamie Smyth

OTHER GEAR/EFFORT: None WATER STAGE: Low

CANOPY (%OPEN): 95% PHOTOS (Y/N): N SECCHI DISK (inches): Bottom

AIR TEMP (F): 75 WATER TEMP (F): 66 D.O. (ppm): 10.8

CONDUCTIVITY: 620 μ pH: 9.0 ALKALINITY: 68 ppm

TDS: _____

STREAM MEASUREMENTS AVG. WIDTH: 187' AVG. DEPTH: 2.3' (28") MAX DEPTH: 5.6'

STATION LENGTH: (1st date) 2323' (2nd date) _____

| | WIDTH (ft) | DEPTH (in) | |
|-----|------------|------------|-----|
| 249 | 1.7' | 1.3 | 1.4 |
| 207 | 1.6' | 2.4 | 3.8 |
| 129 | 1.2 | 3.8 | 2.1 |
| 156 | 2.4 | 3.9 | 2.4 |
| 195 | 1.7 | 2.8 | 2.1 |
| | | | |

5
4
 SUBJECTIVE RATING (1-10) AESTHETIC RATING (1-10)

ADDITIONAL COMMENTS/POLLUTION IMPACTS: Not much riparian habitat on east shore; homes on bank, lawns, some trees. More trees on west shore, where bank is lower. Variety of submergents: milfoil, curlyleaf, American, sago, unknown pondweed (picture), filamentous algae.

**INDIANA DIVISION OF FISH AND WILDLIFE
STREAM HABITAT EVALUATION FORM**

STREAM: Station 12, Upper Broad Ripple, West Fork White River RIVER MILE: 246.6

NEAREST TOWN: Nora COUNTY: Marion

QUADRANGLE: Fishers TWP: 17N RNG: 4E SEC: 30, 19

LATITUDE: N39.8951 LONGITUDE: W86.1163 (Upstream)

LATITUDE: N39.8874 LONGITUDE: W86.1367 (Downstream)

U.S.G.S. GAUGING STATION LOCATION: Nora AVG. DISCHARGE (cfs): 391

IS REACH REPRESENTATIVE OF STREAM (Y/N) N IF NOT, WHY? Impounded stretch and shoreline highly developed. Also, has a partial stream diversion into Williams Creek at south end of station.

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): This station extends upstream 2.08 miles from the upstream edge of outlet which joins Williams Creek to the end of the impoundment above the connection to Sand Point Pit. Many homes on banks, docks, plus boat access to two pits with big condos, docks.

COLLECTION SUMMARY

DATE: 9/26-27, 10/01-02, 10/24/07 GEAR: 5.0 GPP DC Boat EFFORT: 0.51 h

CREW: Bob Ball, Jennifer Humphrey, Carl Wodrich, Rob Donithan

OTHER GEAR/EFFORT: 4 TN, 2 exp. Mesh GN WATER STAGE: Very low

CANOPY (%OPEN): 85% PHOTOS (Y/N): N SECCHI DISK (inches): 68

AIR TEMP (F): 78 WATER TEMP (F): 68 D.O. (ppm): 10.2

CONDUCTIVITY: 1100 μ pH: 8.0 ALKALINITY: 188 ppm

TDS: _____

STREAM MEASUREMENTS AVG. WIDTH: 224' AVG. DEPTH: 6.06' (73") MAX DEPTH: 12'

STATION LENGTH: (1st date) 11,000' (2nd date) _____

| WIDTH (ft) | DEPTH (in) | | |
|------------|------------|-----|-----|
| 312 | 36 | 48 | 72 |
| 200 | 84 | 108 | 96 |
| 224 | 84 | 144 | 120 |
| 248 | 48 | 60 | 12 |
| 200 | 72 | 84 | 72 |
| 160 | 60 | 60 | 48 |

6 5
 SUBJECTIVE AESTHETIC
 RATING RATING
 (1-10) (1-10)

ADDITIONAL COMMENTS/POLLUTION IMPACTS: River channel with slow current when low, mostly hard bottom. Very clear due to low rainfall. High conductivity spoiled EF until 10/24, dropped to 900,& GPP EF unit used. Gravel mostly, boulders, overhang trees, submerged trees, milfoil, smartweed, side channels, some sand substrate, island with trees.

**INDIANA DIVISION OF FISH AND WILDLIFE
STREAM HABITAT EVALUATION FORM**

STREAM: Station 13, Landings Pit, West Fork White River RIVER MILE: 247.3

NEAREST TOWN: Nora COUNTY: Marion

QUADRANGLE: Fishers TWP: 17N RNG: 4E SEC: 30

LATITUDE: N39.8933 LONGITUDE: W86.1176 (Inlet)

LATITUDE: N39.8968 LONGITUDE: W86.1200 (West end)

U.S.G.S. GAUGING STATION LOCATION: Nora AVG. DISCHARGE (cfs): 391

IS REACH REPRESENTATIVE OF STREAM (Y/N) N IF NOT, WHY? Former sand pit left with a connection to the river.

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): A small, rather shallow former gravel pit with a thin riparian bank between river to east and the pit. West of pit is the Landings Apartments, with open lawn and a boat rental concession. There is some bank fishing opportunity. A narrow channel that is adequately deep for access by boat at low river stages connects it to river.

COLLECTION SUMMARY

DATE: 9/27, 10/02, 10/24/2007 GEAR: 5.0 GPP DC Boat EFFORT: 0.361 h

CREW: Bob Ball, Jennifer Humphrey, Carl Wodrich, Rob Donithan

OTHER GEAR/EFFORT: 3 exp. mesh GN WATER STAGE: Low

CANOPY (%OPEN): 95 PHOTOS (Y/N): N SECCHI DISK (inches): 68"

AIR TEMP (F): 78 WATER TEMP (F): 68 D.O. (ppm): 10.3

CONDUCTIVITY: 1100 μ pH: 8.0 ALKALINITY: 137

TDS: _____

STREAM MEASUREMENTS AVG. WIDTH: 301' AVG. DEPTH: 11.7' MAX DEPTH: 26'

STATION LENGTH: (1st date) 1375' (2nd date) _____

| WIDTH (ft) | DEPTH (in) | | |
|------------|------------|----|----|
| 80 | 4 | 7 | 5 |
| 240 | 5 | 26 | 12 |
| 440 | 5 | 18 | 13 |
| 360 | 12 | 20 | 14 |
| 384 | 8 | 17 | 9 |
| | 4 | 7 | 5 |

| | |
|--|--|
| <div style="border: 1px solid black; padding: 2px 10px;">5</div> | <div style="border: 1px solid black; padding: 2px 10px;">4</div> |
| SUBJECTIVE RATING (1-10) | AESTHETIC RATING (1-10) |

ADDITIONAL COMMENTS/POLLUTION IMPACTS: High conductivity, like Station 12, until Oct. 24, when it had gone down to approx. 900. Used D7's GPP electrofisher that date successfully. Bottom is sand, has one shallow point; some shady shallows on south side. New condos being built on south, west sides at this time, so lots of construction, bulldozing.

**INDIANA DIVISION OF FISH AND WILDLIFE
STREAM HABITAT EVALUATION FORM**

STREAM: Station 14, Lower Broad Ripple, West Fork White River RIVER MILE: 244.2

NEAREST TOWN: Nora COUNTY: Marion

QUADRANGLE: Carmel TWP: 17N RNG: 4E SEC: 25, 36

LATITUDE: N39.8874 LONGITUDE: W86.1368

LATITUDE: N39.8735 LONGITUDE: W86.1403

U.S.G.S. GAUGING STATION LOCATION: Nora AVG. DISCHARGE (cfs): 391

IS REACH REPRESENTATIVE OF STREAM (Y/N) N IF NOT, WHY? Impounded by high dam, very slow current at low water levels.

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): One public and various private ramps, new fishing pier. About 1/2 shoreline is developed. Station extends from Broad Ripple Dam upstream about 1.7 miles to, and including outlet which joins Williams Creek.

COLLECTION SUMMARY

DATE: 9/20, 9/25-26, 10/24/2007 GEAR: 5.0 GPP DC Boat EFFORT: 0.65 h

CREW: Bob Ball, Jennifer Humphrey, Carl Wodrich, Rob Donithan

OTHER GEAR/EFFORT: 2 Gill Net, 3 Trap Net sets WATER STAGE: Low

CANOPY (%OPEN): 92% PHOTOS (Y/N): N SECCHI DISK (inches): 96"

AIR TEMP (F): 73 WATER TEMP (F): 73 D.O. (ppm): 7.3

CONDUCTIVITY: 1400µ on 9/20, 1100µ on 10/24 pH: 8.0 ALKALINITY: 205 ppm

TDS: _____

STREAM MEASUREMENTS AVG. WIDTH: 234' AVG. DEPTH: 6.5' MAX DEPTH: 12'

STATION LENGTH: (1st date) 9000' (2nd date) _____

| WIDTH (ft) | DEPTH (in) | | |
|------------|------------|----|---|
| 200 | 12 | 11 | 6 |
| 240 | 2 | 7 | 6 |
| 240 | 4 | 6 | 4 |
| 300 | 6 | 5 | 6 |
| 188 | | | |
| | | | |

6 5
 SUBJECTIVE AESTHETIC
 RATING RATING
 (1-10) (1-10)

ADDITIONAL COMMENTS/POLLUTION IMPACTS: Bottom embedded gravel channel, mostly mud towards shores, some embedded gravel, rock at uppermost outlet. Water level for both station is controlled through concrete dam and separate dam for Canal, which is just upstream of concrete structure. Substrate mostly sand and gravel.

**INDIANA DIVISION OF FISH AND WILDLIFE
STREAM HABITAT EVALUATION FORM**

STREAM: Station 15, Meridian St., West Fork White River RIVER MILE: 241.3

NEAREST TOWN: Holiday Park, Indianapolis COUNTY: Marion

QUADRANGLE: Indianapolis West TWP: 17N RNG: 3E SEC: 35

LATITUDE: N39.8704 LONGITUDE: W86.1571 (Upstream)

LATITUDE: N39.8690 LONGITUDE: W86.1590 (Downstream)

U.S.G.S. GAUGING STATION LOCATION: Indianapolis AVG. DISCHARGE (cfs): 275.4

IS REACH REPRESENTATIVE OF STREAM (Y/N) Y IF NOT, WHY? _____

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Begins about 600' below Meridian bridge, continues downstream away from bridge. A riffle with mostly cobble substrate, islands, little deep water. Foot access only, but is fished regularly. Bordered by Holiday Park on NW side, Indianapolis Art Museum is on S side.

COLLECTION SUMMARY

DATE: 9/20/2007 GEAR: Barge Electrofisher EFFORT: 0.68 h

CREW: Brant Fisher, Carl Wodrich, Sara Bales, Jennifer Humphrey, Bob Ball

OTHER GEAR/EFFORT: None WATER STAGE: Very low

CANOPY (%OPEN): 75% PHOTOS (Y/N): N SECCHI DISK (inches): 23" (bottom)

AIR TEMP (F): 78 WATER TEMP (F): 65 D.O. (ppm): 8.0

CONDUCTIVITY: 1400 μ pH: 8.0 ALKALINITY: 205

TDS: _____

STREAM MEASUREMENTS AVG. WIDTH: 154' AVG. DEPTH: 11.2" MAX DEPTH: 23"

STATION LENGTH: (1st date) 560' (2nd date) _____

| WIDTH (ft) | DEPTH (in) | | |
|------------|------------|----|----|
| 157 | 4 | 23 | 10 |
| 134 | 8 | 7 | 5 |
| 159 | 10 | 8 | 9 |
| 154 | 8 | 10 | 10 |
| 141 | 11 | 12 | 19 |
| 180 | 16 | 18 | 14 |

| | |
|--------------------------------|-------------------------------|
| 6 | 7 |
| SUBJECTIVE RATING (1-10) | AESTHETIC RATING (1-10) |

ADDITIONAL COMMENTS/POLLUTION IMPACTS: A beautiful site, with woods on both sides at least 100 feet back on NW; buildings, shaded lawns on SE. Boulders, rubble, etc. A high levee is about 100 feet back from west shore. A bridge is visible near lower end. A giant storm drain enters just below site.

**INDIANA DIVISION OF FISH AND WILDLIFE
STREAM HABITAT EVALUATION FORM**

STREAM: Station 16, 53rd St., West Fork White River RIVER MILE: 238.5

NEAREST TOWN: Rocky Ripple COUNTY: Marion

QUADRANGLE: Indianapolis West TWP: 16N RNG: 3E SEC: 10

LATITUDE: N39.8470 LONGITUDE: W86.1793

LATITUDE: _____ LONGITUDE: _____

U.S.G.S. GAUGING STATION LOCATION: Indianapolis AVG. DISCHARGE (cfs): 275.4

IS REACH REPRESENTATIVE OF STREAM (Y/N) Y IF NOT, WHY? _____

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): A lazy run most of length, big riffle downstream end; most of electrofishing in rifle. Run is deep on west side, shallow with milfoil east side. Rubble in deep areas, riffle; sandbar east side. Homes, some trees along high bank (levee) on east, wider riparian corridor on west.

COLLECTION SUMMARY

DATE: 9/18/2007 GEAR: Barge electrofisher EFFORT: 1.21 h

CREW: Brant Fisher, Carl Wodrich, Sara Bales, Jennifer Humphrey, Bob Ball

OTHER GEAR/EFFORT: None WATER STAGE: Low

CANOPY (%OPEN): 90% PHOTOS (Y/N): N SECCHI DISK (inches): 36" (bottom)

AIR TEMP (F): 78 WATER TEMP (F): 65 D.O. (ppm): 11

CONDUCTIVITY: 1480 μ pH: 8.0 ALKALINITY: 222 ppm

TDS: _____

STREAM MEASUREMENTS AVG. WIDTH: 116' AVG. DEPTH: 26.0" MAX DEPTH: 60"

STATION LENGTH: (1st date) 1400' (2nd date) _____

| WIDTH (ft) | DEPTH (in) | | |
|------------|------------|----|----|
| 135 | 18 | 38 | 54 |
| 95 | 54 | 38 | 60 |
| 119 | 17 | 48 | 60 |
| | 17.5 | 17 | 32 |
| | 12.5 | 17 | 10 |
| | 13.5 | 21 | 6 |

| | |
|--------------------------------|-------------------------------|
| 8 | 7 |
| SUBJECTIVE RATING (1-10) | AESTHETIC RATING (1-10) |

ADDITIONAL COMMENTS/POLLUTION IMPACTS: Residences on east side, 20-100' riparian vegetation. Steep bank on west side; no homes visible; 150' riparian border. Nice area, isolated visually from residences on W (lots of traffic noise). false loosestrife on sandbar; rubble in riffle. Shallow, slow current, w/ ample milfoil on E side.

**INDIANA DIVISION OF FISH AND WILDLIFE
STREAM HABITAT EVALUATION FORM**

STREAM: Station 17, Lake Indy, West Fork White River RIVER MILE: 235.1
 NEAREST TOWN: Indianapolis COUNTY: Marion
 QUADRANGLE: Indianapolis West TWP: 16N RNG: 3E SEC: 33, 34
 LATITUDE: N39.7999 (Upstream@ N39.8194) LONGITUDE: W86.1956 (Upstream end: W86.1899)
 LATITUDE: (Downstream end: N39.7871) LONGITUDE: (Downstream end: W86.19503)
 U.S.G.S. GAUGING STATION LOCATION: Indianapolis AVG. DISCHARGE (cfs): 275.4
 IS REACH REPRESENTATIVE OF STREAM (Y/N) Y IF NOT, WHY? _____

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Approximately a 2 mile impoundment with bridges, various access points. Includes Riverside Park on east bank which has a boat ramp and a separate parking lot; I-65 bridge with street-side parking on west side; Family Center on west side with massive concrete fishing pier facing deepest portion of lake (14 ft); walk-up access at dam with convenient parking. A golf course on west bank uses bank right up to water. Very dry season increased secchi disk value.

COLLECTION SUMMARY

DATE: 10/02-03, 10/10/07 GEAR: DC Boat, only 4+4droppers EFFORT: 1.14 h
 CREW: Bob Ball, Jennifer Humphrey, Rob Donithan
 OTHER GEAR/EFFORT: 3 Gill Nets, 3 Trap Nets WATER STAGE: Low
 CANOPY (%OPEN): 95% PHOTOS (Y/N): N SECCHI DISK (inches): 60"
 AIR TEMP (F): 83 WATER TEMP (F): 70 D.O. (ppm): 8.1
 CONDUCTIVITY: 900μ pH: 8.0 ALKALINITY: 171 ppm
 TDS: _____
 STREAM MEASUREMENTS AVG. WIDTH: 426' AVG. DEPTH: 7.7' MAX DEPTH: 14'
 STATION LENGTH: (1st date) 9600' (2nd date) _____

| WIDTH (ft) | DEPTH (in) | | |
|------------|------------|----|----|
| 402 | 7 | 8 | 7 |
| 362 | 5 | 9 | 8 |
| 563 | 8 | 10 | 12 |
| 322 | 10 | 7 | 4 |
| 483 | 7 | 8 | 6 |
| | 7 | | |

4 4
 SUBJECTIVE AESTHETIC
 RATING RATING
 (1-10) (1-10)

ADDITIONAL COMMENTS/POLLUTION IMPACTS: Little wooded riparian habitat. Buildings, 2 homes, golf courses encroach on shoreline.
Some undercut banks, root wads, submerged logs, sandbars just above dam create shallow side channel. River has deep (12-14')
channels in bends in lower portion. Veg. includes lots of milfoil in shallows, also a variety of other aq. plants.